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High-End Radio Scanner Rivals Meet Up at CES

page 4





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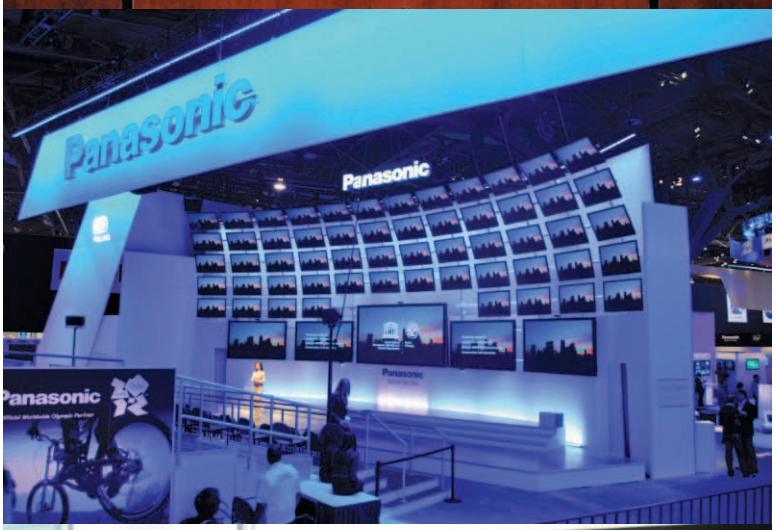
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COVER STORY

High-End Radio Scanner Rivals Meet Up at CES

By Gordon West, WB6NOA

Each year the Las Vegas Consumer Electronics Show attracts 3100 exhibitors, to be seen by nearly one quarter million consumer electronics trade delegates, during this annual 4 day event.

Over the years, two scanner rivals – Uniden and GRE – emerge with the hottest scanning products in the marketplace.

The GRE line of scanner radios is directed by Wayne Wilson, WR5S, who has over forty years in personal communications marketing. Wayne worked with Heathkit Ham radio training courses, then with Radio Shack in bringing in the latest in scanning and personal communications equipment. Most recently he signed aboard GRE America, Inc. based out of Belmont, California. (near San Francisco)

Wayne is a legend.

At Uniden, Paul Opitz, N5TPQ, is Uniden's Product Manager of actually, a lot of different radio products with scanners as his personal favorite.

Paul Opitz is a legend.

OK, a personal note, while I certainly don't consider myself a legend like these two gentlemen, 40 years ago I worked with SBE in the development and sales of the very first marine synthesized VHF/FM transceiver with keyboard channel entry, rather than the common optical shaft big-knob encoder. But where SBE shone in the scanner market was my input on a digital way of programming frequencies via an optical reader, found in the SBE Optiscan (scanner) with light shining through (pre-programmed by the user) cards!

COVER STORY

Many of you remember crystal scanners, with Regency taking one kind of crystal, Bearcat with another IF crystal, and several other manufacturers attempting to come up with the correct IF, but goofed up on the internal crystal capacitance to throw each channel a couple of kilohertz off!

Bearcat is Uniden, and Bearcat has 12 no-crystal synthesized scanners in their line, plus 1 more remarkable scanner with a very simple name HomePatrol-1.

GRE goes all the way back to when my SBE alliance was competition to their great products out of Japan. GRE has been the "silent label" behind many name brand scanner products over the last thirty years. They blossomed on this shore several years ago with also a dozen synthesized scanners plus 1 + 1.

That 1+1 is the product GRE introduced last year, the EZ Scan Digital, known as the PSR-800. Brand new THIS year is the PSR-900, the mobile version of the "800" with a detachable head.

What makes the GRE and Uniden top of the line – about $550 – digital trunking scanners so unique is their automatic self-programming capability.

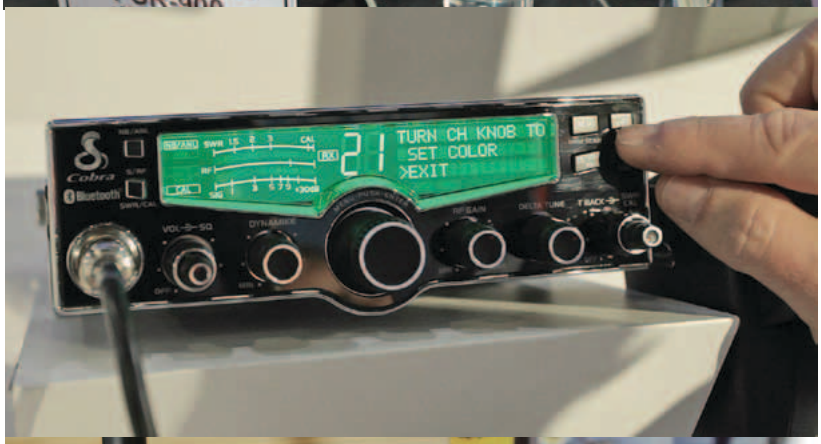
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High-End Radio Scanner Rivals Meet Up at CES

"Public safety communications have become so advanced, so fluid in talk-group changes, and relatively complex to program without leaving out a valuable listening post, many users were missing some of the action even though it was indeed on the air, all around them," comments both Wayne and Paul when I got them together for a Leo Laporte TWIT interview. That, in itself, was exciting – 2 legends, 2 brands of scanner, all together at the CES show!

"With our PSR-800 handheld EZS-can Digital Receiver anyone from beginner to a scanning master can program it for local channels, just by entering their zipcode!" comments Wayne Wilson, with GRE.

With our Uniden HomePatrol-1 scanner, not only did we pioneer zipcode programming, we also pioneered our scanner taking on a local channel load through a simple GPS receiver (we have our own) that outputs the common 4800 bps NMEA 0183 data stream," comments Paul Opitz, during our get together with Leo Laporte.

Both brands have some similarities – each includes a 2GB SD Card with the entire USA and Canada database, with virtually unlimited added storage space for additional hot channels in your area. The database comes from Radio Reference, the absolute king of up to date scanning specs that change on an almost daily basis. Each company offers users an easy way to keep their scan lists absolutely fresh, even with capabilities of firmware updates.

The GRE handheld scanner operates much like your kid's













Continued on page 8

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High-End Radio Scanner Rivals Meet Up at CES

(maybe yours?) media player with simple buttons on the front to jog in some of your settings:

Select by City or State?

Select by Zipcode?

Select to add new channels?

Automatic backup to first available V-scanner folder?

Select service types, like Fire, Law, Emergency Ops?

You get the idea – I watched Wayne blasting through many of the channels in Las Vegas, and he was a whiz!

The PSR-800 has a nice amber and black display, and there is enough on the screen to get you all the way down to digital modes like P-25, Motorola, LTR, and EDACS. Yes, a weather alert receiver also on board!

New from GRE is their PSR-900, awaiting FCC certification, but expected delivery by the time you read this in National Communications. Looking at the specs, it does everything that the handheld scanner does, plus a multi-color alert LED can give you a heads up if there is action on a certain radio service you have chosen. The mobile PSR-900 scans 70 channels per second, offers recording capability like the handheld, IF discriminator output and the PC interface with a USB –mini B connector. Like the handheld, with the supplied SD 2 GB card, it would be nearly impossible to load in more memories of your local area than the scanner can accommodate.

The mobile head is magnetically attached to the holder, so securing the head when you're ready to turn your vehicle to the parking attendant is as quick as grab and go. The mobile runs on 12 VDC, and Wayne assures me there is all sort of voltage conditioning within the unit to guard against starter spikes or alternator whine.

At Uniden, the HomePatrol-1 scanner is both portable as well as mobile-capable. We held it up to the bright Las Vegas sunshine pouring in to their display suite at the top of the Hilton, and the 3.5 inch color TOUCH-SCREEN (!) remained quite visible. The touch screen really lets your fingers fly when adding or subtracting services you want to monitor. Too much chatter on the Las Vegas parking police channel? One tap and they go away. Want to listen to helicopter traffic in the area? One tap and there they were, flying to the Grand Canyon.

Paul showed me the ultra-simple connection for GPS auto-location for auto-programming.

"This is handy for drivers going across the country – without doing a thing – the scanner self-loads the local channels, especially those for Interstate highway patrols," states Paul Opitz, adding that listening to a scanner on a long highway journey has increased driver awareness of road conditions as well as the potential for fast stops on a traffic accident ahead.

The HomePatrol-1 will run 4 hours on common 2 AA batteries. The touch screen gobbles up a lot of battery capacity, and there are ways to dim the display to squeak a couple extra hours when running on just the AA cells.







Like GRE, Uniden also includes some relatively new upgrades to this popular model that has been out about a year.

Trunked system analyzers

Band scope

RF power plot

Raw data output

USB audio output and control

LCN finder for EDACS and LTR systems



Gordon West

Another neat feature of the Uniden scanner is its ability to figure out a local load of channels, even though you have no clue about zipcode and no connection to GPS. What the scanner can do is go into an all out where-the-heck-am-I? search mode. It self-identifies local channel patterns, and very quickly, figures out which area has those particular radio systems, and presto, you get the full load.

Both Wayne and Paul acknowledge that professional scanner listeners NEED to know how to work local radio systems into and out of their scanner receivers. Both of these scanner legends agree that the complexity of working all these channels into a scanner may cause the more casual scanner user to end up with just the local weather channels. But with both the GRE and Uniden top of the line scanners programming becomes fully automatic, with unlimited latitude for the savvy scanner user to customize precisely what they want to hear, and what they want to keep ready at just the push of a button.





The little GRE had terrific full fidelity volume. The HomePartol-1, with its color LCD, has so many on-screen options that you want to just keep on looking. With both of these competing scanners, either one will take you to the top of your scanning experience!

Wayne Wilson





Paul Opitz

Getting The Most From Your Uniden HomePatrol

By Jon Van Allen, KF7YN

In the last issue, Tom Swisher covered some of the features in the Uniden HomePatrol HP1, extreme upgrade, etc. In this article, we will take it a little further with some detailed hands-on info.



Straight out of the box the HP1 is an amazing scanner, simple to use yet chock full of powerful features. The end result is a culmination of years of development for an easy to use scanner for the beginner or expert alike. Like any other product, the HP1 is evolving but unlike most products, users have a direct line to Uniden to make suggestions for features, improvements, software changes, etc. The Uniden development team reads the forums on the Home Patrol website and RadioReference.com and responds to posted questions and comments directly. How many products can make that claim? Uniden actively listens to their customers!

With the continuing evolution of the HP1, we have several new options to enhance the HP1 including Extreme Upgrade, GPS option and a windshield mount. You can see in the photos the HP1 is bigger than a standard GPS such as my Garmin Nuvi 255W. The windshield mount is substantial but not cumbersome. I have it mounted in my 2009 Silverado and does not block my view of the road in any way. I like having the touch screen controls at my fingertips and not taking my eyes off the road. With the GPS option, I consider my HP1 the ultimate road trip scanner.

Even though setting up the HP1 is as simple as entering your zip code, you still must choose which services (fire, police, medical, etc) In this way, the HP1 compares to the Radio Shack iScan and GRE EZ Scan line of scanners. If you want to scan a large trunked system, you need to create a 'favorites' list with specific trunked sites and talkgroups, otherwise you will be scanning the whole system which is not feasible because of the time required to scan through all known talkgroups and frequencies. The way you choose the individual sites within the system and talkgroups still takes time. For this reason, make sure you download and use the free Sentinel software and update it to the latest version.

There are a couple areas where the HP1 really shines, the Extreme Upgrade (which we will discuss more in detail) and the ability to update the database every Monday from the Home Patrol website. This is done from the Sentinel software.

Here is how to do the updates and upgrade: point your browser to http://info.uniden.com/HomePatrol. There you will find links to update the Extreme Upgrade, Sentinel software and firmware updates. It is important to upgrade to the latest version.

Step 1: install the latest version of Sentinel on your computer. This software is the easiest and best way to getting the very latest information into your HP1. On the website you'll also find a printable User's Guide.



After you have installed Sentinel, connect your HP1 to your computer, run the Sentinel software then do these three things:

1. Update Firmware ñ This will put the very latest operating system in your HP1. This ensures best performance.
2. Update Master HPDB ñ This will put the latest database in Sentinel. The database is updated every Monday morning.
3. Write to HomePatrol ñ This will put the newest database in your HP1.

Update your HP1 Firmware:

Connect your HomePatrol-1 to your PC using the provided USB cable.

In HomePatrol Sentinel, select "Update Firmware."

Download the new HP1 Owner's Manual by clicking HomePatrol V2 Owner's Manual.

Follow the on-screen prompts to update your HP1's firmware.

If You Purchase the Extreme Upgrade:

Be sure you've updated the HomePatrol-1's firmware following the above steps.

On your HP1 select MENU > Advanced Menu > Advanced Option > Register Advanced.

Enter the registration key provided when you purchased the Extreme Upgrade, including the hyphens.

You can retrieve your key by logging into http://my.uniden.com and selecting "All My Scanners."

Download the latest HP1 Extreme Owner's Manual by clicking HomePatrol-1 Extreme Owner's Manual.

That's it! After these steps you have in your hands powerful features never seen before in a scanner. In particular, the Extreme Upgrade gives you the ability to Analyze a trunked system and Discovery Mode for conventional frequencies and trunked systems. In the Analyze menu you will find Trunked System Analyzer, EDACS/LTR LCN (Logical Channel Number) finder. This plots out the LCN of all trunked systems eliminating the need to find the info (if available) from other sources such as the internet. This is cool because EDACS trunked systems logical channel numbers MUST be in precise order to successfully scan! Motorola trunked systems also have LCN but virtually all trunking scanners get the LCN from data contained in the control channel. Still, taking the time

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Getting The Most From Your Uniden HomePatrol

continued

consuming process of finding LCN for any trunked systems is huge!

For example, I loaded the Analyzer for a local Motorola trunked system. It shows the data channel in use on the first line and all the voice channels (see photos). In addition, the LCN, Frequency, TGID (talkgroup ID) Unit ID (radio ID) and Mode are displayed. This is the same kind of info previously available only with computer programs such as Trunker or UniTrunker. This means we can obtain the same info without the PC! Now we can take our HP1s on the road to discover and analyze with no external help! This really is a very exciting development.

GPS option: once you connect the proper Uniden or Garmin GPS module, the GPS icon on the screen lights up green. The real advantage with GPS scanning is you don't have to manually change your position while you are driving; the HP1 follows along automatically which is a real plus on road trips. You can limit what you hear (or don't want to hear) in your immediate area by limiting your scanning area by adjusting the 'Range' in miles and further defining range using circles or rectangles. Rectangles are more precise and you can even define boundaries such as county and state lines, for example. On my road trip last week, the HP1 changed from one county to the next nearly simultaneously as I passed the freeway sign showing the county I just entered. It is very precise once you define your listening areas. It is not necessary to place the GPS antenna outside the vehicle. I get great reception with the antenna on the dashboard close to the windshield (see photo).







Continued on page 14

Uniden

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Getting The Most From Your Uniden HomePatrol

continued



As with any gadget, the HP1 is not perfect. My main complaints mostly have to do with software. For example, when building favorites lists, it is not possible to append (add) new sites in an existing database trunked system from the Sentinel software. You have to start over and add the whole system with the new sites then delete all the stuff you don't want, very frustrating and time consuming. It really would be a simple thing to enable the append function and I posted requests in both forums to address this in the future but apparently the Uniden people didn't think it was an issue so I got no feedback from either request. Hopefully Uniden will fix this glaring deficiency soon.

Another complaint is the SMA antenna connection. While I prefer good old BNC antenna connector, you must use an adapter if you want to connect a better antenna. There are several styles of adapters; you can see I am using a SMA cable that adapts to my mobile scanner antenna's BNC connector. If you prefer to use an antenna attached to the HP1, consider getting a 45 degree SMA to BNC adapter, this will minimize stress on the HP1's SMA connector.

Conclusions: I was slow getting on the HP1 bandwagon; I was not impressed with a scanner that only scanned a preprogrammed database downloaded from the internet that couldn't be edited. When it was announced you could edit and customize the database, my ears perked up a bit but it was the Extreme Upgrade that got my attention and I took the plunge. The Extreme Upgrade will put a hurt on your extra coin to the tune of $100 but it is worth it if you are serious about finding new systems using the discovery and analyze mode. Nobody said this hobby was going to be inexpensive! I also love the record mode, you can record several minutes or more of audio for later playback. A menu selection lets you change the maximum amount of recording minutes.

All in all the HP1 is the best choice of the 'easy to use' scanners. It simply has more useful features and options and is the first touch screen scanner that I know of. If you already have an HP1 and haven't updated it, now is the time to get the most out of your investment.

As always, I welcome your questions and comments via email at kf7yn@yaoo.com. Until next time, Happy Scanning!

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Pick a Good CB Handle That Gets Attention

Choose your on-air name so it grabs attention

By Chuck Gysi, N2DUP

Citizens band radio operators for a long time have used "handles" to identify themselves on the air. These nicknames can range from quite simplistic to quite interesting. It all becomes the persona of a CBer when he is talking to other operators.

I've always been of the opinion that the more original and unique that your handle is on the air that more operators will remember you. There are 20 million "Cowboys" or "Princesses" on the air. None of them stand out from the other, especially in a mobile environment. Sure, you may live in a small town and there's a "Cowboy" on the air that everyone there knows. However, if Cowboy were to take to the road, he'd encounter many others with the same handle along the way.

So how do you pick out a handle that stands out above the rest of the CB operators on the air? Be unique, be unusual or be yourself. Let the handle you select tell your story. When you find the right handle, everyone will know it's you when you are on the air because you've got a handle that stands out treetop tall on the channel.

So how do you find the right moniker for you to use? Take a look at yourself and who you are. Here are some ideas to find the right identity:



Is the person behind the CB microphone who they really say they are? This one-time satirical cartoon takes a look at CB handles.

Where are you from? If you're in New York, Empire Mel might just tell folks where you are from, just as easily as Big Apple Momma. If you're from Iowa, try Hawkeye Hound. Or, how about Jersey Joe if you live in New Jersey? See how easy it is to attach a location to a handle?

What are your hobbies? If you're a stamp collector, how about Philatelist Phil? If you like watching football, why not Gridiron Guy? Or, if you love your pet cats, why not Kitty Mommy or even Catty Kathy?

What does your future look like? Are you in college to become a physician? How about Future Doc? Or suppose you training to run in



Former first lady Betty Ford took on the CB handle of First Mama when her husband President Gerald Ford was in the White House. Here are two of her QSL cards that she used.

Pick a Good CB Handle That Gets Attention



Red Devil is the handle of a CBer living in Kansas and here's his QSL card showing what his handle is all about.



This Indiana CBer has his one-time CB handle emblazoned on a license plate that was on his vehicle. You may be surprised to find other CBers with vanity license plates with their handles on them.

continued

a marathon? Why not try Minute Miler?

How do people see you in life? Are you in charge? Big Boss might help convey your job. Or suppose you're always the one losing? Maybe Loser Louie would work.

What do you do for work? Are you a blackjack dealer in the casino on the night shift? How about Midnight Shuffler? Or suppose you drive a truck delivering soda pop to grocery stores? Try these: Pop Goes the Weasel or perhaps Pop Pop or even Soda Wheels.

What do you look like? It's easy to figure out your appearance when you are using the handle Redhead or Big John. How about a step further? Try Redhead Rebel or Big Bad John?

How about a really fun handle like these: Wart Licker, Snake Eyes Jake, Dead Preacherman or Sir Smokes A Lot.

What's your heritage? You can be the Italian Chef or the Mad German or perhaps even the Crazy Canadian or Cherokee Charlie.

All in all, CB handles can define us when we're talking with other CB operators on the air, whether it's a long-winded roundtable on Channel 3 or you're barreling down the highway on Channel 19. The more you get around, the more unique a CB handle you should give yourself. When you pass a certain location again while mobile and jump on the channel, the locals will remember you if your handle stands out like Pumpernickel Pete.

I've gone through a number of CB handles over the years. My very first handle when I got a 100-milliwatt walkie-talkie as a teen to talk to the locals with CB base stations in the neighborhood simply was "Mailbox," which signified my role in my family of walking down the street to the mailbox every day to get our mail. Later on in my career as a newspaper journalist, I used handles such as "Midnight Reporter" to signify my work in the evening as a news reporter or "Midnight Slotman," which indicated my work on the newspaper copy desk as an editor. Of course, someone could have easily misconstrued that as someone who works at a casino or perhaps just frequents the one-armed bandits at the gaming houses. It was a vague enough of a handle to keep them guessing, which isn't a bad thing – you don't totally give away who you are by your handle.

Today, you see email addresses and online identities take on the same persona as CB handles do. Your email address as SweetLady90120099@yahoo.com also can easily become "Sweet Lady" on CB. It's almost the same selection method!

continued

Choose the right handle and you'll be remembered well on the chatter channels. Your CB handle is all about you and you might as well choose one that sticks out. You can't go wrong with a descriptive or fun CB handle.

If you want to have some fun coming up with CB handles, here are two online CB "handle generators" that are designed mainly for their entertainment value, but perhaps you'll find something that might even work for you – or you'll just have some good laughs plugging in several possibilities:

http://www.comedycentral.com/sitewide/game_player/index.jhtml?game=79940

http://krankytheklown.tripod.com/handle_generator.htm

Write in

How did you pick your current CB handle? Have you ever changed your handle over the years? What's the most interesting handle you've ever heard on the air? What types of CB information would you like to see in Nat-Com? You can write to me at nat-com@citizensband.net (be sure to put "Nat-Com" in the subject line or your e-mail may wind up in my spam bin). This e-mail address is only for the author of this column.



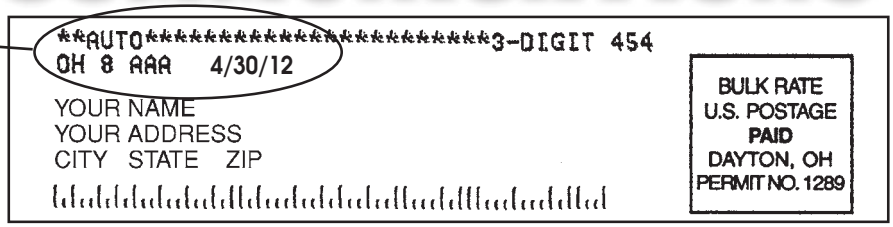
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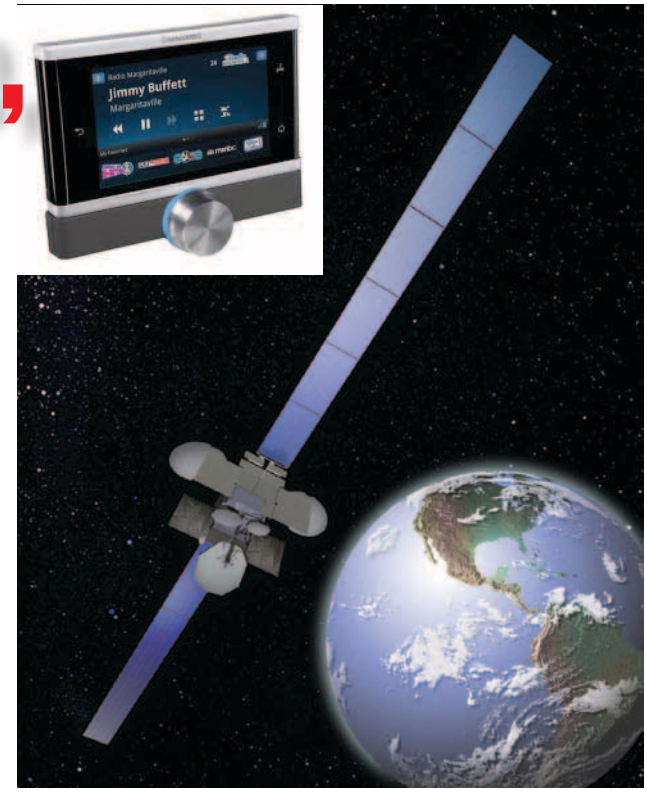
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Satellite Radio, The 'Jewel' of Broadcasting



By: Dorothy Rieke

Radio has become an all-time favorite form of entertainment for many of us. Down through the years, many changes have taken place. One major change was in the 1950s with the addition of FM frequencies. Later, in the 1990's radio underwent another radical change with the advent of satellite radio. This new listening option has undergone some successes as well as some struggles. Now, it is definitely a listening option for many.

December 12,1961, was the 60th anniversary of Guglielmo Marconi's success radio transmission across the Atlantic Ocean. This same date, 60 years later, Amateur Radio operators all over the world succeeded in building and sending many amateur radio communications by way of satellites to orbit the earth.

Satellite radio is a digital or analog signal traveling through one or more structurally developed satellites that have been launched into space. This type of radio is like listening to a CD with high quality, uninterrupted sound. The many stations are varied and unlimited; they include many offerings such as music, talk shows, news, and more.

The history of satellite radio is linked with the first attempts to explore space. The launching of satellites and commercial satellites began in the 1950s with Russia and the United States. In December, four years after the first satellite Sputnik I was launched by USSR, a ten pound Orbital Satellite Carrying Amateur Radio or OSCAR, was launched as ballast on a Thor-Agena rocket which carried the military satellite Discoverer-36. California amateur radio operators built this first radio satellite. The rocket was disengaged from OSCAR high above the earth. OSCAR was a tiny 11 pound hamsat measuring 9 by 12 inches by 6 inches tall. Not offering two -way communications, OSCAR's radio transmitted HI in International Morse Code with 140 milliwatts of power on a frequency of 144.983 MHz -fourteen times the power of the 10 milliwatt radio installed in America's first satellite, Explorer I, a scientific exploratory unit.

OSCAR transmitted BEEP-BEEP-BEEP. Because OSCAR's battery was not rechargeable, transmission only lasted 22 days. However, During that time, amateurs from twenty-eight nations responded to this message and mailed in reception reports. Because of the satellite's low altitude, it only orbited the earth for 50 days burning on January 31, 1962. Of course, such success brought more experimentation. The second OSCAR, with transmitter power reduced to 100 milliwatts to lengthen the life of the battery, was launched in June of 1962. While this hamsat had innovations, it operated only 19 days before falling through the atmosphere and burning up.

A third OSCAR, launched in 1965, was unique with a two-way signal transponder making it a radio-relay station in the sky. This transponder receiving signals using a 1 watt-transmitter to repeat those signals, was operational for 18 days. It had two radio beacons, one a signal for tracking and propagation studies; the other sent telemetry data concerning temperatures and battery voltages. Because solar cells were added to this satellite to recharge the battery powering the beacons, it was the first amateur spacecraft utilizing solar power. This time over one thousand hams from 22 nations communicated, and improved technology resulted in the first trans- Atlantic ham satellite link being made.

Because of the success of previous OSCARS, another hamsat was

launched by a Titan 3-C rocket, but its usefulness was destroyed in a partial launch failure. However, this was the first satellite powered by solar-cells generating electricity, and it used two bands, receiving signals on 144 MHz and transmitting three watts of power on 432 MHz.

No proof ever existed as to why OSCAR-4's radio failed when it did. Maybe the battery overheated or radiation damaged the solar cells. However, the radio operated approximately two months. The satellite stayed in space almost 11 years finally being destroyed in 1976. From this time, over seventy OSCARS have been launched with more to be launched in the near future.

Satellite radio, as we know it, began in 1992 when the 'S'spectrum frequency was given to four companies. This was when radio was removed from the terrestrial service environ for the first time with the establishment of the Digital Audio Radio Service by the Federal Communications Commission (FCC).

The FCC established certain segments of radio frequency for satellite radio broadcasting. In order to decide which companies would utilize these frequencies, an auction was held in which American Mobile Radio and Sirius Satellite Radio showed interest. American Mobile Radio and Sirius Satellite Radio, later CD Radio, paid millions for eight years of service. These satellites were placed in parallel geostationary orbit, one at 85 degrees west longitude and one at 115 degrees west longitude.

The signals broadcast from 22,000 miles away are clear and static- free. One can travel across the country listening to favorite CD quality music without ever changing channels.

American Mobile Radio. now XM Radio launched two satellites, 'XM Rock' and 'XM Roll.' With this act, United States digital satellite radio service established markets in Dallas/Ft. Worth and San Diego. Shortly after, XM Radio reached subscribers nationwide.

XM Radio, one of the first pioneers in satellite radio, has now grown to millions of subscribers. XM Rock and XM Roll present sixty-eight channels of commercial-free music and over fifty channels of news, sports, talk, music, and traffic. This radio also broadcasts Major League Baseball.

CD Radio became Sirius. In 2002, this company launched services in Denver, Houston, Phoenix and Jackson, Mississippi. This group uses three satellites, with multiple ground repeaters to cover the United States.

In an effort to counteract XM radio's Major League Baseball broadcasts, Sirius paid Howard Stern $500 million for a long-term contract to broadcast on their service beginning in 2005. His arrival on this radio system generated much publicity for satellite radio. One listener commented, "When I first bought Sirius it was because of Howard Stern. Now Sirius and XM are together."

Daimler, Chrysler, Ford and BMW, as well as all Hertz rentals, featured Sirius satellite radio receivers in 2001 and 2002 models. In 2004, car navigation systems that color code the roads according to the speed of traffic, are using traffic data from XM satellites. Today, nearly all cars are equipped with either XM or Sirius systems as standard equipment.

In 2007, a merger was proposed for Sirius and XM. This merger was first opposed by the Department of Justice and the FCC because of anti-trust and licensing issues. Finally, opposition ceased, and a new company Sirius XM Radio was established.

Satellite radio is advantageous in that broadcasts are not subject to the same FCC rules as are FM/AM radio broadcasts and has a great assortment of channels used to send information and music to satellites; then broadcasts are beamed to satellite radios.

The diverse content of satellite broadcasts is amazing. For example, Sirius XM in 2010 broadcast a program including a conversation with Rolling Stones members, Mick Jagger, Keith Richards and Charlie Watts. Don Was, the producer of the Rolling Stones' studio albums, discussed working on the release of 'Exile on Main Street.'

This type of radio broadcasts send out clear, satellite digital signals from orbiting satellites. In fact, Sirius and XM both have extra satellites in case any satellite fails. Of course, the downside is that listeners must pay for this service, buy hardware, and signals can be blocked by tunnels, high buildings, and other obstructions unless counteracted by land repeaters. Usually, cell phone towers aid reception.

Even though Sirius and XM are now merged, each continues to offer certain programming similar in content. Sirius has more that 130 programming channels with sixty-nine commercial-free music channels; XM has more than 170 channels including over seventy commercial-free music channels.

Imagine channels and channels of whatever you desire to listen to. No problem with reception or fading out. No burden of carrying around CDs or of downloading favorite songs. Stations also transmit additional data, such as the artist and track information. Commercial-free music, favorite sports, exclusive talk and entertainment, not to mention comedy, news traffic, weather and more. It's all here in the world of satellite radio which has enhanced the radio environment forever.

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NAS Patuxent River, Maryland

By Mark Meece

The Algonquian Indian word for a village "at a big river." is Chesepiooc. Early explorers moving north from the Roanoke Colony first applied it as Chesepiook around 1585. It is considered the seventh oldest surviving English place name. As generations have moved on and time has went by we know it by the more modern application of Chesapeake. Today, Chesapeake Bay is comprised of 11,684 miles of shoreline including bays and tributaries and an open surface area of 4,479 square miles. It is 200 miles long and spans from the Susquehanna River in the north to the Atlantic Ocean in the south. This issue we travel the Chesapeake Bay to the mouth of the Patuxent River, located 90 miles south of Baltimore and 65 miles southeast of Washington D.C.

Naval Air Station Patuxent River, known better as "Pax River" to the U.S. Navy, is situated on 6,400 acres on the peninsula between the Patuxent River and Chesapeake Bay in St. Mary's County, Maryland.

Once the grand home to several large plantations consisting of prime farmland Mattapony, Susquehanna, and Cedar Point, not to mention numerous tenant and sharecropper properties and a few clusters of vacation homes. The community of Cedar Point was home to several churches, a post office and even a gas station. Some of the old homes still exist today and serve as quarters for Navy personnel stationed there.

By 1937, many of the U.S. Navy's aviation test programs were spread out among several different bases and stations. Dahlgren and Norfolk, the Washington Navy Yard, Naval Air Station Anacostia in Washington, D.C., and the Naval Aircraft Factory in Philadelphia, Pennsylvania were all involved in naval aviation testing. Seeking to consolidate these test programs, the Navy's Bureau of Aeronautics selected Cedar Point as the ideal spot for its remote location along the shoreline well removed from air traffic congestion, with lots of space for weapons testing.

As America entered World War II the urgency for establishing a new air station was placed into high gear. On December 22, 1941, fifteen days after the attack on Pearl Harbor, Hawaii, Rear Admiral John Henry Towers, Chief of Bureau of Aeronautics, requested approval and authorization to begin construction. That approval was given on January 7, 1942 by Secretary of the Navy, Frank Knox. The U.S. Government purchased the land through eminent domain for $712,287 for 6,412 acres. Residents had about one month to relocate. Construction of the base began on April 4, 1942. Around 7,000 workers were employed during the height of construction, giving the area a 'boom town" atmosphere as people from all over the country arrived for the high paying jobs.

Continued on page 22

NAS Patuxent River

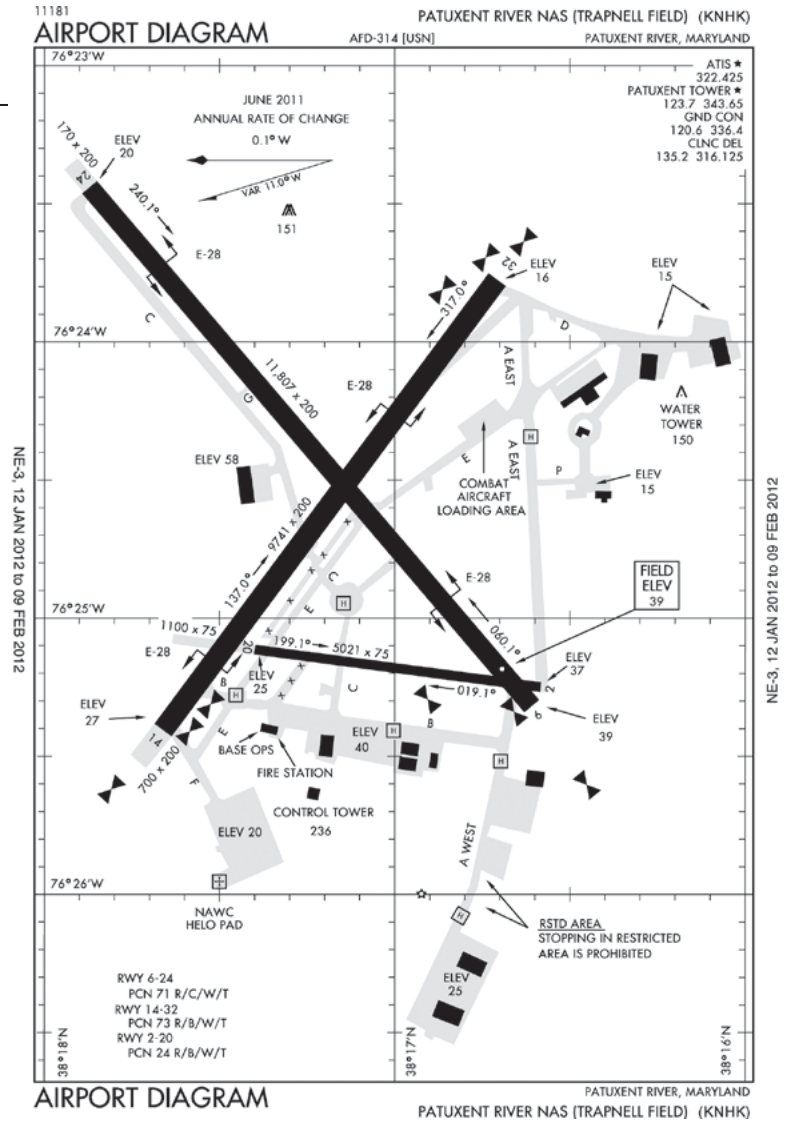
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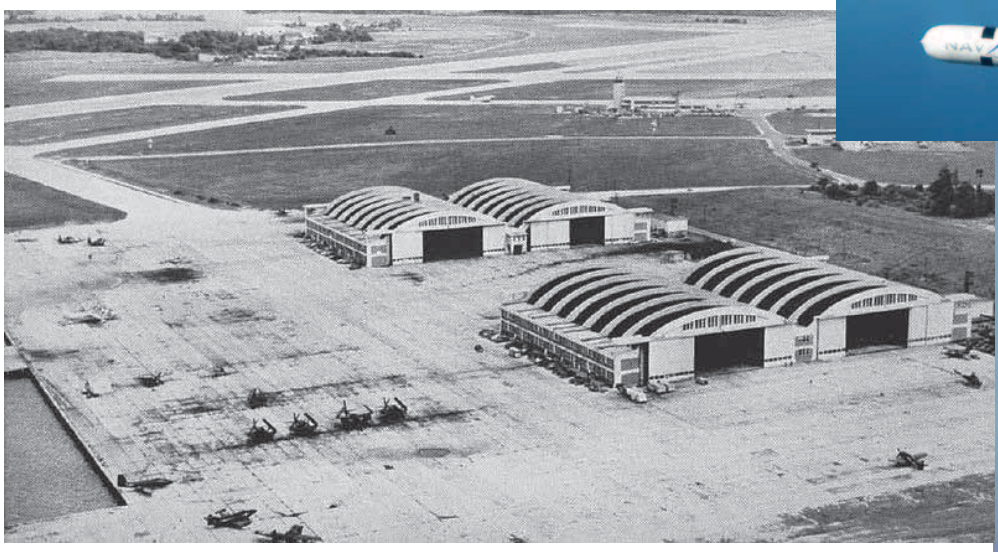
The U.S. Marines arrived on October 20, 1942 to provide security for the new station.

The base was officially commissioned on April 1, 1943, presided over by RADM John S. McCain, Sr. (Yes, he was the grandfather of U.S. Senator from Arizona and 2008 Republican presidential nominee John S. McCain III.). As the events of World War II took shape NAS Patuxent River grew rapidly. A build out of the facilities during the 50s and 60s, which included the U.S. Naval Test Pilot School (1958), the Weapons Systems Test Division (1960), and the Propulsion System Evaluation Facility. The base became the center for naval testing. In the 80s and 90s NAS Patuxent River was the center stage for the development and testing of the Bell Boeing V-22 Osprey.

For a twenty year period running from the 1950s to the 1970s, NAS Patuxent River was an operational base for Transport Squadron - VR-1, a TACAMO squadron - VQ-4, Airborne Training Unit Atlantic - AEWTULANT, and VW-11, VW-13 AN VW-15 and a number of Patrol Squadrons including VP-8, VP-44, VP-49, VP-24, VP-30 and VP-68. You will find in TABLE 1 a complete listing of current tenant commands stationed at NAS Patuxent River.

It was not until April 1, 1976 that the airfield at NAS Patuxent River was named and dedicated to pioneering aviator VADM Frederick M. Trapnell, a former commander of the Naval Air









NAS Patuxent River

continued

Test Center at the station. Trapnell Field consists of two runways 6/24 (11,807 x 200) and 14/32 (9,741 x 200). In TABLE 2 we list the aeronautical and support operations frequencies.

Today, security at NAS Patuxent River is provided by Navy Masters-At-Arms (MA) and Department of Defense Police for standard local law enforcement. For high profile criminal investigations Naval Criminal Investigative Service (NCIS) takes over. Access control is provided by a contract security force. During the research for this article, I was not able to find frequencies in use for these activities. It is possible they may be using the U.S. Department of Defense P-25 trunked system, although I could not confirm any sites in use for NAS Patuxent. Obviously this will require further monitoring by our readers. For those in the area with digital scanners a search through the 380 - 390 MHZ band may turn up a control channel or two.

This is a beautiful area to visit and vacation, especially during the summer months. Should you find yourself in the area, nearby in Lexington Park is the location of the Patuxent River Naval Air Museum. Established in 1975, the museum preserves the history of U.S. naval aviation technology and offers a very impressive display of naval aircraft. More info on hours of operations and other detail can be found on their website at: http://paxmuseum.com/

As always, we ask help from our readers, if you happen to visit the area with your trusty scanner, please keep us updated on what you hear, and any corrections to the above material you may find. Just drop us a note at 'ohioscan@gmail.com' or via Nat Com headquarters, please put 'Nat Com' in the subject line. ●

TABLE 1

TENANT COMMANDS AT NAS PATUXENT RIVER

U.S. Naval Test Pilot School
Naval Air Systems Command (NAVAIR)
Scientific Development Squadron 1 (VXS-1)
Air Test and Evaluation Squadron 20 (VX-20)
Rotary Wing Test Squadron 21 (HX-21)
Air Test and Evaluation Squadron 23 (VX-23)

TABLE 2

AERONAUTICAL OPERATIONS

NAVAL AIR STATION PATUXENT RIVER
TRAPNELL FIELD (KNHK)

120.0500	Approach/Departure - West
120.6000	Ground VHF
121.0000	Approach/Departure - West Low Altitude
121.1000	Approach Control Arrivals
123.7000	Tower VHF
127.9500	Approach/Departure - East
135.0250	Approach
135.2000	Clearance Delivery
233.8500	Flight Test "SHADETREE"
235,7250	BAYWATCH
236.3000	NRWATS/HX-21 Base "BLACKJACK"
238.0500	NFATS/VX-20 Operations/Base
249.6500	V22 Osprey Operations/Base "OSPREY BASE"
250.3000	Approach/Departure - West Low Altitude
250.7000	NSATS/VX-23 Operations/Base "SALTY DOG"
250.8500	Approach
262.9500	ECHO CONTROL
264.1500	Test Pilot School Base "TESTER"
264.5500	ECHO ADVISORY
270.8000	BAYWATCH
281.8000	Approach/Departure - West
291.1500	ECHO CONTROL
301.2000	Approach
302.2500	Flight Test
302.5500	Base Operations
310.5500	ECHO CONTROL
314.0000	Approach/Departure - East
316.1250	Clearance Delivery
322.4250	Automatic Terminal Information Service (ATIS)
336.4000	Ground UHF
337.9000	NRL FSD Operations/Base "RESEARCHER"
340.2000	Tower Alternate
341.1000	VX1 Operations/Base "PIONEER"
341.9500	ECHO CONTROL
343.6500	Tower UHF
348.0000	Approach
356.2000	Metro
362.2000	Approach
363.3500	Navy Aircraft Refueling Operations
387.9000	Cockpit Voice System

SUPPORT OPERATIONS

138.6250	Test Pilot School	FM
138.9750	Flight Line	FM
139.5250	Aircraft Maintenance ("Strike")	FM
139.5000	Public Works	FM
140.1000	Flight Line	FM
142.0750	Ground Electronics	FM
143.7250	"TESTER"	FM
409.2000	Pax Range Control	P25

National Communications 20 Years Ago This Issue

Cover of "National Scanning Report" March/April, 1992



Here is a story from National Scanning Report (our first name before becoming National Communications). This is a sample of what was happening in scanning 20 years ago.

Beatty and Cheney The Real Miami Vice

It's another Friday night in Miami, Florida. Members of the Miami Police Department's Task Force / Street Narcotics Unit are preparing for the evening's work.

Members call themselves "Delta Force" because they can also be ready for special operations in just 15 minutes. In January of 1988 they were called out to the Liberty City neighborhood to assist field officers who were pinned down by weapons fire. When "Delta Force" arrived, they were ambushed. One officer said the situation reminded him of the U.S. invasion of Iraq. On another evening, "The Force" within a period of just 45 minutes – got into three major shootings in a three block area. Police vehicles were riddled with bullets. In fact, in one incident, officers expended over 75 rounds of ammunition. ON yet another occasion, the officers ran out of ammunition, necessitating the dispatch of an officer to headquarters to obtain additional rounds. One officer was forced to steer his vehicle with his knees while firing a shotgun out the driver's window. This isn't TV, either. This is real life.

The Real Miami Vice

"Delta Force" duties aside, members of the squad spend the majority of their time dealing with the drug problem in Miami. The division commander, Lt. John E. Brooks, said that his unit, which consists of 60 officers and 8 squads, has several duties.

The officers perform undercover surveillance, stake-outs and work a mid-level drug squad. This squad is known as "Intercept". They intercept monies or narcotics being delivered within the city. This can amount to pounds of marijuana or

Continued on page 25

Continued

kilos of cocaine. Miami probably has more drug traffic within its limits than any other American city, but the majority of the narcotics is destined for other areas of the U.S. Therefore, it is the job of the "Intercept" officers to interdict the distribution of drugs through Miami.

The Jump Out Unit

There is also the "Jump Out" unit. These officers work with street level buys and reverses (where an officer acts as a drug salesperson). They also do surveillance and search warrants.

Officers Robert Beatty and Ray Cheney start out their Friday evening watch examining equipment in the trunk of their vehicle. Items they check out are the flashlights, cameras, property tags, radios and weapons. Shortly after 5:00 PM they leave the confines of the Miami Police Headquarters and head out to the Overtown neighborhood.

Overtown is not only a high crime area, but also a high drug usage especially crack cocaine. Within minutes they are responding with other officers to a neighborhood street corner. When they arrive, a team member is searching a subject on a street corner. It doesn't take long for a crowd to gather. This time nothing is found and the units proceed further into the neighborhood.

Always Watch Their Hands

At approximately 5:45 PM, Officer Beatty spots a suspect ducking behind a stairway in one of the housing projects. "I never look at their faces, but watch their hands. You can always tell if they are trying to hide something by watching their hands," Beatty explains. Both Beatty and Cheney "jump out" of their vehicles and stop the individual by the stairs. Soon other units show up.

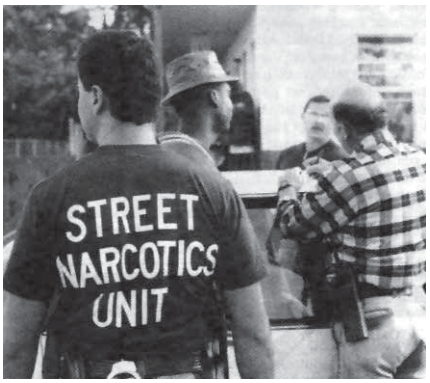


Street narcotics officer searches a suspec in Miami's Overtown area.

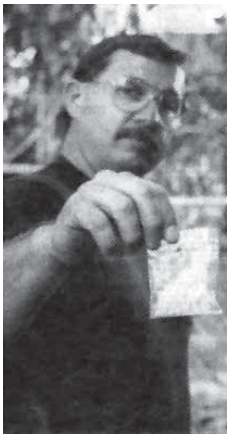
The man insists he did not have any drugs, but he did sport a fist-full of money. Beatty asks him what he threw over the fence, and the man responded that it was just apiece of paper. While Beatty and Cheney detain and question the man further, the other officers search the area, looking under stairways, in trash cans, anywhere someone might hide drugs. Within 5 minutes and officer found the drugs. What was found, just over the fence from where the man was standing was $200.00 in crack cocaine. An arrest is made and the prisoner placed in the vehicle.

In Tow

Beatty and Cheney do not go down to HQ to book this suspect, however. Instead, with their prisoner in tow, they head off to another location where officers have been watching a suspicious male on a second floor balcony of an apartment complex. Via their Motorola 800 MHz trunked radio system, the officers set up their move. Once everyone is set, they all hit the complex at the same time. This time the suspect starts to run. Cheney give chase and the man is spotted going into an apartment. Cheney is on the first level, but other officers have made it to the second level and Cheney shows them the



Officer Cheney books a suspected drug dealer.



Officer Robert Beatty shows crack tossed by one drug dealer who hoped to avoid arrest.

apartment into which the suspect fled. Officers enter and in a matter of minutes, have another suspect lying face down, being searched. Nothing is found on him, either. However, the female occupant of the apartment (who incidentally is the man's mother) is found with another bag containing approximately $200.00 in crack cocaine. Two more arrests are made and the search continues.

More stops are made. This time it is a group of males on a street corner, but nothing is found. It is now time to take the three offenders to the "lockup" and fill out reports

A Slow Night

This Friday night was a slow night with only three arrests, but officers say that it was due to the fact that they were "standing down" in case

Continued on page 26

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National Communications 20 Years Ago This Issue

Continued



Street corner pat down search.

they were needed at a riot taking place in another part of town and that several officers were either in training or off duty. Normally, arrests average between 10 and 15 per night.

The officers are quick to point out some of the drug dealer's tactics, including having a designated runner. When officers are seen approaching, on o the suspects takes off running. The drug dealers hope the officers will chase the one who is running, and sometimes they do. The runner, of course, will not have anything on him. The dealer with the goods will causally walk off. Since officers know this tactic, they do not always chase the runners.

The officers of the task force certainly do face many dangers. They are working in a high crime area where anyone with a gun can take pot shots at them, and do so with provocation or warning. Some officers, acting as drug buyers, have been robbed by other criminals before they were able to pull off the buy. Also, some officers have been stuck with HIV positive needles. So far, no one has come down with the virus.

Officer Beatty will be quick to point out that all officers who work the task force are apprehensive about going out to their duties. "There is not an officer on the team who has not been shot at, had to shoot back, or been shot", he says. Even with all that in mind, they still keep on trying to win what seems to be an endless battle against street drugs.

No Real Deterrence

It's easy to see what the dealers and those who buy drugs are not particularly deterred by the police. Officer Cheney says, "They are only deterred as long as we are there." However, the prisoner in the back of the squad car who was being driven all over the neighborhood and who watched his neighbors being stopped, searched and sometimes arrested, was not happy about the situation. "Hey, I've got to live in this neighborhood and you're taking me all over. They're going to think I am some kind of a snitch", he complains.

These officers have arrested all types of people for buying drugs. Their list is extensive. It includes the big and small names of the community, tourists and political officials.

The city of Miami can be proud of these officers for fighting what seems to be a never ending battle. But at least there's job security. There's enough narcotics on the street to keep their "Jump Out" units in business for quite some time to come. ●

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Turn up the volume so you don't miss the action!

By Chuck Gysi, N2DUP



Even ham radio operators are experimenting with digital communications, such as P25 and MOTOTRBO. Here's a logo from a website telling about the W6TRW MOTOTRBO repeater in Redondo Beach, Calif., on 446.880 MHz.

In case you haven't seen, heard or noticed, there is a major change under way for two-way radio users that ultimately affects all scanner listeners. This is "somewhat" similar to the changeover that occurred in recent years that turned TV broadcasting from analog to digital transmission. While not a lot of two-way radio users will convert to digital in the process, they do have to employ new technologies so their radio signals don't take up as much spectrum as they have done in the past.

So what's the deal with narrowbanding and why should scanner listeners even care? Quite simply, it probably already has affected your monitoring and will continue to do so. Here are the changes that may affect your ability to monitor:

1. More frequencies used in less bandwidth by radio users, causing possible interference to signals you want to hear.
2. Lower audio levels, forcing you to turn up the volume.
3. Possible conversion of analog systems to unmonitorable digital signals.
4. Changes in frequencies used.
5. Use of frequencies that your scanner cannot tune in accurately.

So let's dissect this and figure out what's going on and how you can cope with these changes.

First of all, this initiative by the FCC is an effort to open up additional frequencies for more radio usage. This is similar to the migration of analog TV to digital signals. The TV switch allowed readjusting what channels are used, creating new frequencies for radio users and other communications services. Narrowbanding of two-way radio channels will do the same thing – allow more users to occupy the same bandwidth that is used now.

This narrowbanding initiative affects all radio users using channels in the 150-174 MHz VHF and 421-512 MHz UHF bands. The FCC started the process back in 1992 and the process involves all FCC Part 90 licensees in the public safety as well as business and industrial radio services. Those systems using formerly wideband 25-kHz voice and data channels must migrate to narrow technology that uses up only 12.5-kHz channel widths. By doubling up the number of radio users within current channels, many more frequencies will be available for systems down the road.

The FCC has set a Jan. 1, 2013, deadline for all radio users on these two bands to make the shift. For those users who have purchased radios in the past few years, they most likely will be able to get their radio shops to reprogram their radios to switch to the new narrower channels without difficulty, after modifying their licenses with the FCC. The FCC has said that they plan to enforce the rules and will expect compliance by Jan. 1 of next year. Users with older radios will need to purchase all new equipment to meet the mandate.

In the interim, we have radio users who are using both narrowband and wideband channels along side each other, as well as newer digital technologies. Most of the digital radios out there meet the narrowband requirements. While some radio users have switched to P25 digital technology used on many digital trunked and conventional systems, a new type of digital radio has emerged that cannot be monitored by scanners. For instance, these MOTOTRBO radios by Motorola and NEXEDGE by Kenwood offer both analog and digital capability, however, scanners cannot decode these digital radios. It will sound like a buzz saw on your scanner.

I have seen several Motorola two-way radio dealers – and the manufacturer – push MOTOTRBO radios to their customers and have seen not only factories and businesses convert to 'TRBO, but also casinos, shopping malls and even police, sheriff's and fire departments. It's unfortunate when public safety starts using these undecodable digital radios because you no longer can hear the agencies' calls.

The biggest thing most scanner users will notice with narrowbanding is reduced audio levels while they are listening. Narrowbanded radio users don't sound as loud on your scanner



This is Motorola's MOTOTRBO XPR 4500 mobile two-way radio that is capable of analog and MOTOTRBO digital. Many businesses and agencies are switching to MOTOTRBO because of the FCC's narrowbanding requirements. However, scanners are unable to decode MOTOTRBO signals.

because the audio on their signal doesn't take up as much bandwidth, resulting in less audio coming across on your receiver. If you're like me, you find yourself turning up the volume when these narrowband systems are on the air. If you have one of the GRE or RadioShack scanners made by GRE that offer audio boost on a channel-by-channel basis, you may want to program that option on narrowband channels so you don't find yourself reaching for the volume control all the time.

As some agencies and radio users take advantage of moving to narrowband radios, they may be adding frequencies that can be used for narrowband operations. For instance, let's say a fire department has been using radios on 154.310 MHz. With narrowband radios, they could use channels between the normal 154.295 – 154.310 – 154.325 regular wideband channels and get licensed on new frequencies such as 154.3025, 154.3175 or 154.3325. Or, perhaps, an agency could obtain a new license for a narrowband channel. That's all the FCC's intent on opening up new frequencies.

However, most scanners are made to monitor wideband signals and aren't as discreet in filtering out adjacent narrowband signals. A friend recently was monitoring 154.755 MHz for a local sheriff's department and reported hearing what he thought was a MOTOTRBO signal on the same channel. I passed along to him that a local police department was running a MOTOTRBO digital system on 154.7475, close enough to create "interference" to the channel he was monitoring on his scanner.

It also should be noted that only newer scanners can actually program these new interstitial narrowband frequencies such as 154.3025. Sure, you could program in 154.300 or 154.310 MHz, and you may hear the station you want, but it will sound a little off frequency and will be subject to interference from adjacent signals. Most of the newer scanners that GRE, Uniden and RadioShack market can tune in these newer channels, so check before you buy if you need that capability in your area.

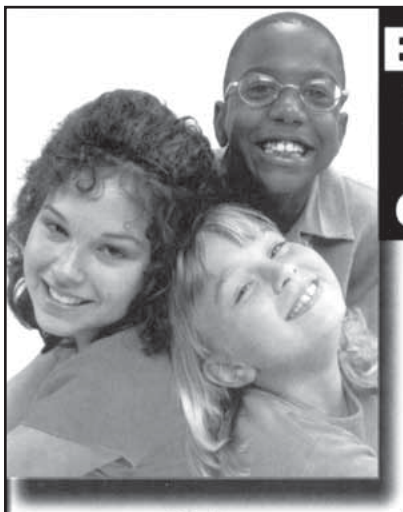
So, are you ready for the FCC's Jan. 1, 2013, narrowband mandate? Maybe you'll decide a new scanner is

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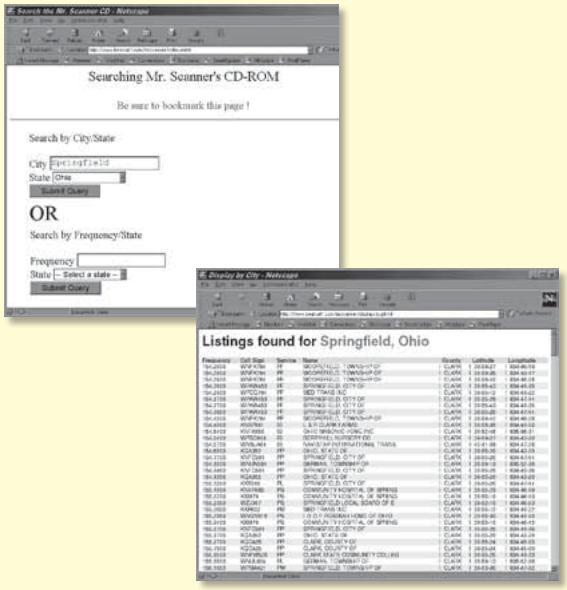
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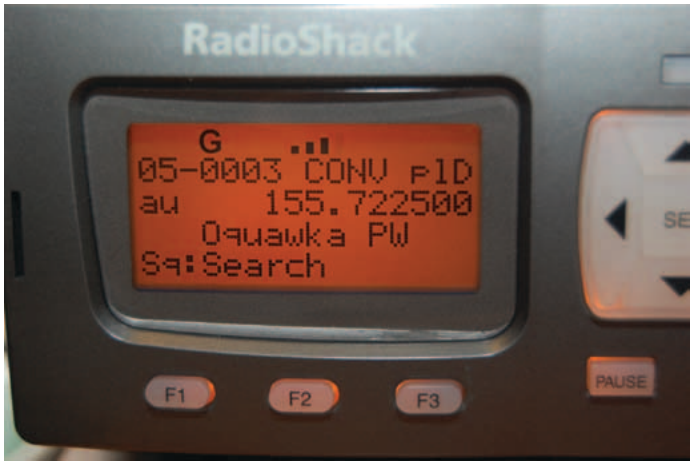
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This display on a RadioShack Pro-197 scanner shows a narrowband channel of 155.7225, which falls between wideband channels 155.715 and 155.730 MHz. Most scanners monitoring this frequency probably also will hear signals on the two adjacent frequencies as well. Photo by Lisa Stephens/scancomm.net



The Motorola MOTOTRBO XPR 6580 handheld radio also offers analog and MOTOTRBO digital for two-way radio users.



This is the display of a Kenwood NEXEDGE digital handheld radio. The NEXEDGE format cannot be decoded by scanners.

a good idea or perhaps you're discovering some users that have switched to unmonitorable digital systems need to be locked out of your memories on your receivers. Stay tuned because another narrowbanding is coming down the pike for even narrower 6.25 kHz channels, however, the FCC has not set the date for that yet. It may very well be a long way off, but time will tell when the FCC moves in that direction.

If you want to read more information about the narrowbanding of scanner frequencies, you can check these two websites:

http://www.fcc.gov/narrowbanding

http://www.narrowbanding.com

Write in

Have you been turning up the volume on your local public safety agencies because they switched to narrowband channels? Are you hearing digital signals that drive you crazy? You can write to me at nat-com@scanning1.com (be sure to put "Nat-Com" in the subject line or your e-mail may wind up in my spam bin). This e-mail address is only for the author of this column.

Equipment Flexibility is Survivability

By : Alan Dixon, N3HOE/
WPUC72Ø / KST8678



Be sure not to miss the Wouxun KG-UVD1P dual-band Business and Amateur handheld. Here it is seen with the 'Gotta Have it All' accessories plan package!

The keys to communications survival in a disaster situation are ***flexibility*** and ***redundancy***. We have seen time and again the numerous and repeated natural disasters that devastate not only entire communities, but also an increasingly complex and fragile communications infrastructure. When houses and buildings topple, so too do antennas and telephone poles. And when cars go flying through the air, local cell phone signals often do not. The whiz-bang processor-driven trunked and cellular comm's systems used by our Public Safety units (Police, Fire, EMS, etcetera) around the country are by multitudes more complex than the systems used by these same entities only two decades ago. And with this complexity comes a heightened vulnerability. Simply put, there are many more points of potential failure. And fail they do. Wind, waves and temblors have collectively come to be more-often-than-annual events in our nation. And we haven't even begun to consider destruction done by terrorists or the potential of enemy attack.

So, when Public Safety radio and telephone systems fail, the "last lines of defense" become hobbyist and citizen volunteer radio services: CB Radio, FRS and GMRS, MURS, and of course Amateur Radio. If you're a member of a CERT Team (Community Emergency Response Team) or a REACT group, you may look first at your strategic communications needs. Emergency teams and their individual members typically decide on one or two frequency bands for their operations. Then they make decisions on which frequencies or which repeater pairs they will operate. Contingency plans are then drawn up and reviewed.

So often though, we tend to become fixated on the one or two radio channels or modes that our local or regional EmComm group has specified in planning. Or, in the absence of pre-planning (it happens!), we may find ourselves with blinders on, likewise focused only on our usual, customary, everyday one or two channels or repeater pairs. If we are to be fully prepared though, we really need to expand our available communications options. We need to provide for ourselves a number of "workarounds" for any number of contingencies.

Again, the first key to EmComm survivability is **flexibility**. Be sure to have several different frequency **bands** and at least two different radio **services** available at your key *points of operation* (base station, mobile unit, or field-portable setup). Why do so many licensed hams lock themselves into the Amateur Service bands? We have so many other radio services available. Some require an additional license, some don't. These additional services would require additional radios, but as we will soon see, some judicious selection of radio equipment will give us the flexibility of operating more than one radio service with a single transceiver!

And there is one other major consideration for utilizing services outside of Amateur Radio: We then never have to worry about whether a given message or stream of communication contains any inappropriate business comm's. It

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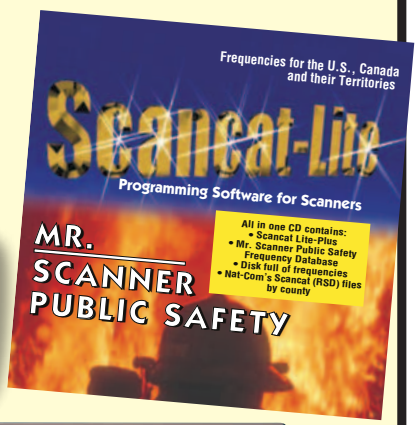
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Equipment Flexibility is Survivability cont.

does not then matter what any party's occupation happens to be, or by what means any goods or services are being procured over the air!

Frequency bands become important when a given band–your primary operational band –becomes compromised. This can likely occur due to specific interference from other electronic or even mechanical devices. And it can be either incidental (unintentional, basically) or it may be quite intentional, indeed. Still, any device interfering with a signal, say, at UHF frequencies is unlikely to be causing the same problem on Low-Band VHF. And it is less likely still to be heard at all on HF (shortwave).

Having transceivers for UHF, VHF, and Low Band alone would give substantial immunity (in terms of workarounds) in the above scenario. Having equipment for just two of these bands and for a single HF band, such as 10-Meters or 11-Meters, likewise provides for a similar workaround. Now, consider including a multi-band HF rig, even with only one other transceiver for a band outside of HF, such as VHF. Given the right antennas, we can now have long-distance (DX) communication channels to just about anywhere on Earth (and well into outer space, for that matter!) Even if several HF bands turn out to be compromised, likely some will still remain viable.

Be flexible. It's a simple matter of mathematical odds. The more channels accessible, and the farther apart they are spaced, the better the chances are of our messages getting to their intended destinations.

The other key to EmComm survivability is **redundancy**. It is perhaps even more essential to have various–even numerous–transceivers and receivers available for EmComm operations. Radios do malfunction occasionally. And students of "Murphy's Law" know it dictates that our most needed piece of equipment will fail right when the need for it is most critical. There are any number of reasons for equipment failure. A neglected battery can go dead. External leads and connectors can become loose or corroded. Internal components can simply fail too.



Here's a Maxon SM-6450 mobile transceiver for Business, Public Safety, GMRS, and Amateur use.



Check out this Alinco DX-70 series General HF mobile Amateur Service transceiver. It does 6-Meters, as well.

Therefore, the astute EmComm radio operator will want to have at least two pieces of equipment capable of operation on every radio band and service for which the operator is setting up. This of course can be an expensive proposition, obviously. But it may not be prohibitively expensive if the various pieces of radio equipment selected or purchased for use are capable of more that just a single frequency band or just one radio service.

Here then, are some choices of radio equipment to consider acquiring regarding survivability in terms of maximum flexibility and redundancy:

*** **A commercial mobile two-way UHF radio, FCC certificated (type accepted) for Part 90 and Part 95 use.** These radios typically run thirty to fifty watts RF transmit power. Older models were configured with a dashboard-mounted control head, with a trunk or under-seat-mounted transceiver box. This sort of unit can be pre-programmed for General Mobile Radio Service (GMRS) use as well as Amateur Radio (Part 97) frequencies in the 440 MHz band, in addition to Part 90 public safety and business/industrial/occupational (Land Mobile) frequencies.

Transmitters certificated in the Land Mobile services are naturally legal for licensed ham radio use, since certification of Amateur transmitters is not required. The one disadvantage of most Part 90 equipment is that it is almost

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The Midland 79-290 11-Meter Sideband radio makes an easy switch to 10-Meter Amateur Service (see text).

invariably not field-programmable. What this means is that all frequencies, channel pairs, channel names (if any) and all signaling parameters must be programmed into the radio in advance. Either you must own the programming software from the radio's manufacturer along with the requisite proprietary data cable, or you must pay a service shop to set things up just the way you want them.

One reason for this is that while Land Mobile radios are licensed by the FCC for their occupational use, they are not being used by licensed radio operator personnel. And as such, the operators of this equipment are not expected to have sufficient knowledge of band channel planning or frequency coordination. Another reason is that the typical Land Mobile license authorizes only a handful of frequencies or band segments. Accordingly, these radios are typically single-band instruments.

Regardless, these occupational Land Mobile radios are highly versatile inasmuch as a single transceiver can be programmed for and operated in several radio services. This is a huge "plus", even for a radio limited for one band of operation. In fact, a unit certificated for Parts 90 and 95 that can also be programmed at different TX power levels per channel, can be set to include the five Multi-Use Radio Service (MURS) channels as well. Now that's flexibility!

*** **A high-power (100 watts and up) High Frequency (HF or Shortwave) general coverage transceiver.** Such a unit is indispensible for those of us who are licensed Radio Amateurs, General class or higher. There are quite a number of different makes and models on the market from which to choose. Many are remarkably–and conveniently–small. Others are more moderate sized–easier on which to get your fingers. Or we can go for the boat-anchor sized behemoths. The choices are nearly endless. Shop new or used. But for EmComm operators, be sure to get one that can (like most) be easily modified to transmit outside the ham bands. The logic here is that in an *emergency* licensed Amateur operators may transmit on whatever frequencies necessary to make contact toward resolving the situation. (See FCC Rules, §§97.403, 97.405, et al. Know the rules and the situation well. Never simply presume the law is on your side!) It's a simple matter of logistics–and probability–that any given emergency will originate outside the ham bands. Stuff happens! The Maritime Mobile bands alone are ripe with potential, as we may well imagine.

With nine such different Amateur Service bands on which to operate phone (voice) transmissions alone, flexibility is a *given*. And we have full reign to monitor outside of the ham bands any time at all. No emergent situation is required for legal listening, of course.

*** **A low-power "Business Band" Land Mobile transceiver–mobile or portable configuration–for MURS and the Color-Dot Itinerant Business frequencies.** Typically, these are hand portable radios. If you can get your hands on one of the rare mobile type low-power units, then buy it. Be sure yours is certificated for both Part 90 and Part 95 services. Or have one that is certificated for Part 90 and grandfathered in to MURS use (See both of these FCC rules Parts). The five MURS channels are licensed-by-rule, so we are good to go right out of the box with our new radios. For use on most itinerant Color-Dot channels, you will need a Part 90 "Business" license. Not everyone will qualify as eligible to acquire such a license and there is a substantial fee involved. Visit the FCC Web site <www.fcc.gov> for information. In any case, having the flexibility of potential operation on both Services is an asset in emergency operations.

Again, these are low-power channels. MURS is limited to just two watts transmit output power. And some of the Color-Dot channels are restricted to one watt. But at VHF frequencies, range is god for the sparse power levels allowed. Note that some Color-Dot channels are at UHF. MURS is of course VHF only. Select your radio equipment accordingly.

*** **10 and 11-Meter Transceivers. These are single-band units.** Or, can we have both bands from a single radio? For Technician and Novice class licensed Amateurs, a dedicated 10-Meter transceiver makes a good economical purchase choice, since that

Equipment Flexibility is Survivability cont.

is the only HF ham band on which these hams can operate phone (voice) mode. Certainly however, the 11-Meter Citizens Band is not to be overlooked. Many have wished they could have both bands together in one "box", that is, in a single radio. Problem is, the FCC rules don't appear to allow any other radio service to share the same box an 11-Meter transceiver. Okay. How about conversions? FCC rules say that converting anything else into a CB Radio is a big no-no. But, converting a CB Radio into a 10-Meter ham radio is permissible–with a bit of a catch. Once the conversion is complete, it may not legally be used to transmit on the 11-Meter CB channels any more. That is, with the possible exception of emergencies (see above). And it does remain legal to receive the CB channels. (Be sure to research the FCC rules carefully, for yourself. As a fact I have often pointed out, *"I am NOT a lawyer, nor do I play one on TV!"*)

It is rumored that a few of the Sideband CB radios–the ones with digital frequency readout–may have a "magic" sequence of button-presses that turns the transceiver into a dual-band set. In spite of the certification rules, holding down one or two specified buttons while powering on the set could cause the radio to switch from 11-Meters into 10-Meters, or vice-versa. The "secret" sequence won't be found in user manuals. Rather, it would be an "undocumented feature" so as not to be caught in the certification process. Is it true? Do such radios exist? Buyer beware. Be very aware.

*** **Trunked Business Band two-way radio with telephone autopatch service, no user license required.** Is this too good to be true, or what? Let's get this straight. We can have a Business Band transceiver on a trunked



Here is a Nextel Motorola i415 portable in its mobile mount. Note the accessory speaker-mic hanging on the right-hand side.



This long since discontinued RadioShack 19-1210 low power Business Band mobile radio is great for MURS use.

radio system, no license required on our (the users') part? That's never been particularly unusual. Any end-user could simply pay a monthly subscription fee to a local trunked system or repeater system for the privilege of operating a two-way mobile radio on that system. And these systems have usually included phone patch (Public Switched Telephone Network interconnect) privileges as well. Users did have to either purchase or rent the actual radio equipment they needed.

The disadvantages had historically been (1) the high cost of equipment purchase. A new mobile radio could cost anywhere from about $1500 on up to $5000, easily. Or the alternative, monthly rentals, were hefty too. As expensive as it was, the user had better have had insurance on his equipment, as well. Then there were (2) the monthly subscription fees. Some operators charged lump-sum, while others clocked your actual airtime. It all added up quickly. And service was usually limited to your local geographic area or city, since that was almost invariably the scope of the licenses issued. In a few cases, system operators had roaming agreements with adjacent, bordering systems. This however, required the user to have the additional frequencies programmed into his radio, if at all possible.

Then came Fleet Call™ service. Among other things, they had the idea of accumulating contiguous license areas to build up a large regional trunking system. They switched very early on to digital voice transmission using the Motorola iDEN technology. A name change was soon in order, so Fleet Call morphed into Nextel® and gained essentially nationwide coverage. And all this occurred while cellular telephone technology was still in the AMPS analog car phone stage!

Point is, you can today have a Nextel handheld two-way trunked business

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band radio with a very nicely transparent telephone interconnect, in your hand, for the same prices as today's cell phones and PCS phones. In fact, Nextel appears to be marketed just like cell phones, and making telephone calls is no different at all to the user than dialing a cell phone. It's not surprising at all then, that most folks think Nextel is a cellular phone system. But actually, it is a Part 90 Common Carrier two-way radio service with a very excellent (and slick!) telephone service feature.

The flexibility here is the ability to have a commercial two-way radio service and essentially, a wireless telephone in one device. Also, when using the two-way service you can call any other user's unit on the network that chooses not to lock out units other than their own. This is done by dialing in that user unit's two-way number (essentially a tactical call sign, but directly dialed). Police Departments in various parts of the country use Nextel units as backup for their own dispatch systems. This is especially useful for surveillance and the more longwinded discussions detectives sometimes engage in. The EmComm advantage here is for some, the ability to connect directly to local police units when volunteer or auxiliary assistance is required. This would only be within the framework of a pre-existing Memorandum of Understanding and formal standardized operating procedures for such comm's. Evaluate your group's needs carefully before making any purchase decisions.

*** **The ultimate in single-unit flexibility: The Wouxun VHF/UHF Dual-Band handheld portable radios.** Want your local volunteer Fire/EMS and auxiliary Police channels; Amateur repeater and simplex frequencies; your own licensed Business Band freq's and possibly much more in single radio? This group of products is amazing. Until very recent times, it was impossible to find a Part 90 Business or Public Safety radio alone that is dual-band VHF and UHF. It's difficult to believe, but true. To complicate matters further, the FCC has mandated "narrowbanding" of most Part 90 frequencies in the VHF and UHF bands, necessitating all such users to purchase all new, compliant radio equipment by next year. Because of this, most such Part 90 radio equipment offered for sale in the US for the last several years has had to be narrowband capable.

Yet Chinese manufacturer Wouxun has done the seemingly impossible. Okay then–they have certainly done what has proven to be *improbable*, at least! They have produced a very nice dual-band VHF/UHF handheld portable (the KG-UV model series) that is narrowband-capable and got it certificated under Part 90 with the FCC. Additionally, they have made it field programmable, which can be locked-in, in software, as required for actual Part 90 users. Because of all this, Amateur Radio operators may use it for their 2-Meter and 440 MHz bands, as is, field programmable. And since it is also compliant with standard channel bandwidth, it is physically capable of being programmed for the GMRS channels and (at the reduced power level) MURS channels (although legal obstacles remain). Further, its Part 90 certification along with its frequency agility may well make it legal by NTIA (Federal user) rules for MARS and CAP operation (Check diligently with your MARS/CAP officials to verify, first). These radios also receive the contiguous FM-80 and FM-100 (US) Broadcast bands. This is handy for EmComm field use, as well!

Because this excellent handheld radio from Wouxun is capable of such different radio services, I heartily recommend it for just about every licensed Amateur involved in EmComm. And for REACT members, who often hold or have privileges to several licensed radio services, it is indispensible. And it is just about the least expensive dual-band handheld on the market, possibly even so with a nearly complete line of accessories purchased together with it.

To make my point, I personally ordered my own Part 90-unlocked Wouxun KG-UVD1P from Ed Greany's Radio Resource Center in California. I specified the "Gotta Have it All Plan" accessories package that included just about every accessory Wouxun offers for this radio. And they make quite a few pieces. That's no fewer that 17 items in addition to the transceiver itself! I paid only $184 plus $11 shipping for Priority Mail (no tax outside of California). I received my order in Florida just two days later–on a weekend!! Included with my Wouxun I now have such goodies as a headset, AA battery box, speaker-mic, various charger/adaptors, programming software and data cable, etcetera. Just try beating that deal with this or any comparable product (is there one?) anywhere else! Wow!

So again now, how does this all square with *redundancy*? Remember that for survivability we will want to have at least two transceivers capable of operation on each radio band and service for which we are setting up operation. This need not be redundant in terms of *expense* however, if the radio equipment selected and purchased for use are operational on more that just a single frequency band or a single radio service. So keep this all in mind for future radio acquisition as an EmComm operator for yourself, or for your EmComm group. Then when disaster strikes and other communications teams begin to falter, you and your group will remain in service assisting those in need. ***

CLOSING COMMENTS



By: Norm Schrein, KA8PGJ

There is a new area in the radio hobby, and for once, I don't find myself overexcited about it. With the advent of the internet and cell phones with internet access, it was only a matter of time before someone would marry a radio to the internet and stream the audio to the world.

First to do this were the commercial broadcasters, but they were followed closely by a whole host of amateurs. Not amateur radio operators (although there are many streams of ham repeaters) but amateur broadcasters. Since there is a limited amount of radio spectrum, it seems likely that there would be more potential radio stations than there was room on the airways to carry them.

So, one can search through sites like Shout cast and look up just about any type of radio station (or television station for that matter). Maybe you are an Elvis fan. There are dozens of stations that carry nothing but music by Elvis. There are literally thousands of radio stations on Shout cast.

If you do a search for scanners or scanner radios, you will come up with many audio streams from people's scanners. One fellow in Las Vegas, even broadcasts in stereo, with one channel on one scanner and the other on another scanner. That way you get two for one.

Here is my issue. If I am not in Las Vegas, why would I want to listen to the police and fire transmissions from there? I would find that it had nothing to do with me. First of all, for the most part, I probably would not recognize most of the street or neighborhood names. I don't have a way to stop the scanner on a channel even if I found something that really interested me. So, at the best, I get a sampling of what is happening in Las Vegas, and none of it really has any effect on what I am doing in Ohio.

I might find it usefult if I were from Las Vegas and found myself in Ohio. I could check what is happening in my home town. But, if I am not there, why would I even care?

Today, you don't even need to have a computer to listen to a scanner over the internet. Many of today's phones have "apps" that can send you to a scanner feed from Anchorage, or Amsterdam or Mayberry.

Even today's ham radio operators use the internet, using such services as Echo link. Here they can talk to another ham radio operator anywhere in the world just with a few clicks of the mouse. Gone are the days of antenna construction or creating transceivers from scratch.

Now don't get me wrong. I think that the internet has many advantages. Truly there is something for everyone. So, if you like to listen to someone's scanner from hundreds or thousands of miles away, you can certainly do it on line. If you want to listen to the BBC on your computer rather than using a short wave receiver, you can do so and the quality will be much better, but somehow the thrill of receiving that signal directly on your receiver from an antenna transmitting thousands of miles away, is gone.

Now for the youngest of our readers, you may find the following hard to believe. I can remember when personal computers first came out that I felt that they were a fancy typewriter. For the most part they were just that. But, with technology constantly changing, today's computers are much more and those in the future will offer much more as well.

I hope to see the computer technology advance in the future where I will be able to be "beamed" over to Las Vegas directly through my PC. Then I could listen to my scanner there directly. It would also save me a lot of airline time and, hopefully expensive airline tickets. ●



LAST PAGE OUT



Thank You

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Product is not to scale. *Some services not available in all areas. Operation is covered by patents including 5,784,388, 5,956,648, 6,192,223, 6,519,472, 6,941,120. © 2010 Uniden. All rights reserved.

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