GROUNDWAVES
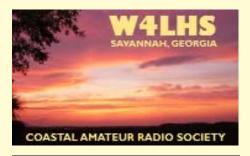
The Coastal Amateur Radio Society
P.O. Box 14042 • Savannah, GA 31416-1042
http://coastalamateurradiosociety.net

April 2014

W4LHS
SAVANNAH, GEORGIA
COASTAL AMATEUR RADIO SOCIETY

CARS General Meeting
Using the Antenna Analyzer
Monday, 7 pm, April 17, 2014 • Board meets at 6 pm
White Bluff Presbyterian Church

It's spring! This month John, KK4MTO, Ken, W4JKG and David, KK4VJY will present their program on using the **Antenna Analyzer.** Don't miss this one - this is a must have item for your shack not only for SWR measurements; but, also for coax velocity factor, capacitance and inductance. Upcoming evnets include the **Georgia QSO Party, Lighthouse event** and the **CARS Swap and Meet** at Daffin Park. I am pleased to announce that **Groundwaves** was just awarded the **Underground Pultizer** for small newsletters for the investigative story on **NSA**, see page 3.

cu Monday - Jere, KT4ZB.

Nets
Coastal Amateur Radio Society Net – Sundays at 9:00 PM, 147.330- (CTCSS 203.5)
Georgia State ARES Net – Sundays at 6:00 PM, 3.975 LSB
Statesboro Amateur Radio Society Net – Tuesdays at 8:00 PM, 147.105+
Chatham ARES Net - Thursdays at 8:00 PM, 146.970-
Simplex Net – Thursdays at 8:45 PM, 146.550
Hinesville Amateur Radio Emergency Society Net - 2nd & 4th Mondays 8 PM, 145.47

Repeaters
146.700- (CTCSS 100) CARS, Savannah   147.210+ (CTCSS 100) CARS, Savannah
147.330+ (CTCSS 203.5) CARS, Savannah   146.970- (CTCSS 123) CARS, Savannah
146.880- CARS, Savannah.   442.700+ CARS, Savannah
D-Star CARS Savannah - KK4SGC A: 1282.74 (-12.0)   KK4SGC B: 440.5875 (+5.0)
D-Star CARS Savannah - KK4SGC C: 144.940 (+2.5)

Amateur Radio Lighthouse Society & Spring Lites QSO Party – April 19

CARS to Activate Tybee Lite

It's spring and what is more fun than to play Ham Radio and enjoy the outdoors? CARS members will be on the air from Tybee Lite, Saturday April 19. This year the Amateur Radio Lighthouse Society (ARLHS) **Spring Lites QSO Party** runs from April 17 through the 22nd.

The purpose of the QSO Party is to promote public awareness of ham radio and lighthouses; to contribute to the recognition that lighthouses, lightships, and their keepers deserve; to foster camaraderie within the ham fraternity; and to provide fellowship amongst the members of the Amateur Radio Lighthouse Society.

Tybee Island Light ARLHS USA-864

CARS will operate with the club call, **W4LHS**, on two or three bands. **Paul, KC2NYU** is our event chair and **Bill, K4WP**, is working with **Ed, KI4DZD**, on building a 20m beam for the portable tower. **Steve, K4SDJ,** contacted the ARLHS and we have **ARLHS #1897 for W4LHS.** The club's goal is to publciize the Tybee Lighthouse and make contact with Hams around the world.

The **Amateur Radio Lighthouse Society (ARLHS)** was founded in 2000 by Jim Weidner, K2JXW, and is devoted to maritime communications, amateur radio, lighthouses, and lightships. Its members travel to lighthouses around the world where they operate amateur radio equipment at or near the light. Collecting lighthouse QSLs is popular for some amateur radio operators. ARLHS is a membership organization with over 1800 members worldwide.

The ARLHS maintains a catalog of lighthouses called **The World List of Lights (WLOL)**. Its main feature is a short, and easily transmitted identification number for each lighthouse. The WLOL lists any lighthouse that is or was an Aid to Navigation (ATN) and can reasonably accommodate an amateur radio operation. Lights that are no longer in existence, but were once an ATN, also show up on the list, designated as historical. With over 15,000 entries, the WLOL is one of the most complete lighthouse catalogs in existence.

Secret Documents - NSA Targets HAM Radio

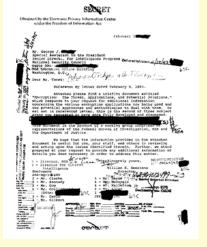April 1, 2014 - Exclusive to Groundwaves

Several months ago, the Savannah office of **Groundwaves,** received a package of documents detailing much of the NSA SIGINT Program. Foremost was new information about the ECHELON communications interceptions.

ECHELON became well known following the publication of various investigative reports. Since then, new evidence shows that ECHELON has existed since the 1970s, and was greatly enlarged between 1975 and 1995.

The ECHELON system is fairly simple in design - NSA positions intercept stations all over the world to capture global satellite, microwave, cellular and fiber-optic communications traffic, and then processes this information through its massive computer capabilities, including advanced voice recognition and optical character recognition (OCR) programs, and looks for code words or phrases (known as the ECHELON Dictionary) that will prompt the computers to flag the message for recording and transcribing for future analysis. ECHELON can actually be tracked all the way bcck to World War 2, where its origins lie in an agreement signed in 1948 by USA and the UK which permitted two allies to share signals intelligence in what became known as the UKUSA agreement (this was before the NSA was even founded in 1952).

What was not known is that ECHELON is also designed to intercept and record all HF traffic including HAM Radio conversations. Included in this is the global collection of all AM, SSB, CW, RTTY, PSK31, etc. contacts. Originally, ECHELON was believed to be limited to the interception and content inspection of telephone calls, fax, e-mail and other data traffic through the interception of communication carriers including satellite transmission, public switched telephone networks (which once carried most Internet traffic) and microwave links. Few envisioned the possiblity that NSA or anyone could collect and inspect the content of millions of radio messages. However, an internal classified NSA/SILKWORTH memo provided to Groundwaves specificatly mentioned some UK updates about monitoring Amateur Radio traffic. An excerpt follows:

> "...also included are the recordings of all international contacts between members of the amateur radio community. ...Fiscal 2009 includes $33m for expansion of real time interception and analysis of specific HAM (sic) code words. Now available is the real time sequencing of voice code words and encrypted CW and other digital modes. All requests for information should be routed to 01365GAM and classified appropriately..."

So, once the cat was out of the box so-to-speak, what were the editor and staff of **Groundwaves** expected to do. Is this a hoax? Does it matter? Is it legal? Who else knows? The ITU, ARRL and CQ? Does Representative Kingston know?

We set off to find out...and did we ever!

NSA's Menwith Hill station In England

First we used a routine **Google search** with a variety of keywords and phrases. Initally there was a limited amount of interesting material as well as a few undocumented conspiracy theories about NSA and the Union for World Government. Then out of nowhere came flashes of **"401 Unauthorized, 503 Service Unavailable, 403 Forbidden/Access Denied, Unable to Locate Host, 404 File Not Found, 451 Unavailable For Legal Reasons and 523 Proxy Declined Request."** It was like we were blocked from the internet except for a Lindsay Lohan and Miley Cyrus site.

Even the ARRL home page was down...again.

In 15 minutes, the hard drive was toast and all data gone. Thank goodness the staff had mirrored the drive. The old drive was wiped, reformatted and reloaded. However, as soon as the computer was up, there was blue screen and the C:\ was lost. We all looked at each other and shared visions of "24", "Blacklist", "Person of Interest" and "Enemy of the State."

We tossed the old drive, installed a new drive, reloaded and we were back up; but, not on the net. Dumb we may be, but not that dumb. A quick check of local cell service showed all was gone...no service available. How could anyone react to a simple internet search that quickly? It was obvious that stealth was needed now.

It took almost 2 months before we could set up a secure HSMM-MESH 2.4 GHZ network in an urban area that had a D-STAR system with high speed data. An anonymous internet search was conducted using 36 different nodes and files were retrieaved from 16 different servers. We ended with a boatload of data including almost 68 Gb of Snowden files. Finally, we blew the club budget and traveled to privately contact several high level officials with ties to Ham Radio to determine their knowledge of NSA's work.

NSA has long been concerned about the use of Amateur radio:

```
Subject: NSA employee's security manual
Message-ID:
Organization: Moby lexical databases
X-Newsreader: TIN [version 1.2 PL1]
Date: Wed, 6 Apr 1994 18:02:04 GMT
Lines: 980
Xref: mb3.tu-chemnitz.de alt.politics.org.nsa:90
talk.politics.crypto:4219
```

NSA employee's security manual

"Amateur radio (ham radio) activities are known to be exploited by hostile intelligence services to identify individuals with access to classified information; therefore, all licensed operators are expected to be familiar with **NSA/CSS Regulation 100-1, "Operation of Amateur Radio Stations" (23 October 1986).** The specific limitations on contacts with operators from communist and designated countries are of particular importance. If you are an amateur radio operator you should advise the Security Awareness Division (M56) of your amateur radio activities so that detailed guidance may be furnished to you."

All toed the party line except for one lone Brit who worked with the OSS and stated he had intimate knowledge of the capture of Ham Radio signals from 1944 through 1988 throughout Europe. He has no doubt that the program continued and agreed with the information obtained by **Groundwaves**.

How the NSA collects your data

So the questions remain. Does NSA really collect and check all Ham Radio communications? Although your intrepid editor and staff left no stone unturned; we don't have an definitive answer. The closest we have come to a smoking gun is the chart on the left showing **ECHELON** is a primary source for the NSA. But, we cannot even verify this to be true.

A quick poll of Hams around the country showed that 68% could care less; although 73% dissaprove of the surveilance. **So what did the ARRL and CQ say?**

No comment - except the contest committees of both organizations want NSA to supply recordings for each contest to assist scoring. In fact, they believe that NSA has the resources to **score the contest in real time** so that contest logs would not even have to be submitted.

All fron **NSA - the only government agency that listens.**

Recent CARS Activities

ARES Corner

GA ARES website: http://glares.ore

The past month has been a busy one for ARES. In the space of 3 days, we have had the Annex EOC activation for the **St. Patrick's Day Parade** and the **Region J Hospital Full Scale Exercise**.

St. Patrick's Day was a rainy cool morning when we arrived at the EOC at 5:30 am. I was in early to do the HF and VHF/UHF radio checks prior to the activation of the EOC at 7 am. When the CEMA crew arrived, low and behold, they brought the wrong HF radio (the one that doesn't work), so I was unable to do the HF checks. We started about 7 am with a St. Patrick's Day Net on the 146.970 repeater about 7 am and it lasted until about 2 pm. The attendance at the parade was way down, possibly due to the weather and the fact it was on a Week Day/Work Day for most. That was the same for the net. After 7 hours of operation, I had only talked with 5 people, 4 were at home watching the parade and one was using his cell phone while he was in the parade. The parade ended without incident about 2:15 pm and we were released from duty.

Wednesday morning at 6 am I showed up at the hospital to reprogram the ID-880H and set up the rest of the equipment and check the antennas prior to the start of the Region J Hurricane Exercise. This was a full scale exercise which was to involve all of the hospitals, nursing homes, public safety, EMAs, and related health organizations in our 14 county-area. The activity started about 7:30 am with the decision to evacuate the facilities in Bryan, Camden, Chatham, Effingham, Glynn, Liberty, Long, and McIntosh Counties. With that decision, we had to establish radio contact with Waycross to coordinate the hand off of the Regional Coordinating Hospital Duties to the May Clinic, who is the Regional Coordinating Hospital in Region M. We were able to establish contact with Waycross on 3.975 MHz. Once that was done, we set up a D-STAR net on Reflector 30 B to coordinate and pass information to the Region J hospitals and public health organizations in the area. We were able to also make contact with the ADEC for Public Health in Atlanta on the net. That net was operational from 8 am until about 11:30 pm when the exercise started winding down. The net had several different public health units check in, 4 of the hospitals for region J, and 4 individuals who heard the net in operation. All in all, the exercise went well. I learned something about programing the D-STAR, because of the exercise, that I didn't know. I reprogrammed our HT's to Memorial's call sign (K4MUM) and then in the Note section I added (UT-#) instead of a name. We were all operating as K4MUM – Unit 1 through Unit 4. What I didn't know is if you us a (-) in the note section with your callsign, it will not let you on the internet system. It will allow you to use the repeater locally. It seems the (-) makes the call sign invalid. When the (-) was removed and a space put in its place then the number, the radios functioned properly. Live and Learn!!

In the upcoming months, we are going to be working on digital communications with the D-STAR radios and also with HF, and VHF/UHF radios.

Steve Jonas K4SDJ
EC Chatham Co.

The Best State QSO Party Ever!
April 12-13, 2014

Once again it's time for the **Georgia QSO Parrty** where folks from all over Georgia attempt to put all 159 counties on the air. the objective is:

For Amateurs **OUTSIDE** of the state of Georgia to make contact with as many Phone and/or CW Georgia stations in as many of the 159 Georgia counties as possible.

For Amateurs **INSIDE** the state of Georgia to work everyone.

This is a fun weekend of Ham radio where you can casually talk to folks from around the world and share your love for everything Georgia. The are many categories and certificates available. Logging can be done in N1MM or there is a GA QSO Party logging program that can be downloaded from the following website. Some of the basics follow below. But first, the rules can be found at: http://georgiaqsoparty.org/

SO Single Operator. (SO) One person performs all operating and logging functions.

MS Multi Operator Single Station. (MS) More than one person performs all operating and logging functions. Only 1 station operating at any given time.

MM Multi Operator Multi Station. (MM) Those obtaining assistance from another operator(s) or logger and more than 1 station operating at any given time.

RS Rover Single Operator. (RS) A single Georgia mobile or portable station that operates from at least two (2) different Georgia counties and making at least one (1) contact from each county.

RM Rover Multi Operator. (RM) A single Georgia mobile or portable station that operates from at least two (2) different Georgia counties and making at least one (1) contact from each county. Rovers with multiple operators

Catagories are:	**Modes are:**
QRP QRP: Five (5) watts CW & 10 watts SSB, maximum.	**MIXED** - Phone, CW, RTTY &PSK contacts
LP Low Power: 150 watts, maximum.	**CW** - Traditional Morse Code (and digital modes)
HP High Power: Greater than 150 watts.	**PH** - Voice contacts

Nets and Spotting Clusters are allowed for all categories without changing category.

Contact exchange:

Georgia stations. Send signal report and County abbreviation. Georgia stations should call "CQ GQP".

USA (Non Georgia) stations Send signal report and STATE (U.S.P.S. abbreviation).

Canadian stations Send signal report and Canadian PROVINCE (ARRL Zone abbreviation)**.**

DX stations Send signal report and DX (not country)

Savannah - Georgia Net Schedule

Steve, K4SDJ, has put together a handy schedule of the various nets in the Southeast. Take a look and check into those that are of interest. Remember the **CARS Sunday night net is now at 8:30 pm on 442.70 MHz.** Thanks goes to Anne for leading the Thursday **ARES** net, January 23.

Emergency Nets	D-STAR Emergency Nets		Net Schedule	2M-70CM Nets	HF Nets
Day	Start	End	Operating Unit	Frequency	Note
1st Sunday	14:00		ARES - Hospital Net	5.330.50 MHz - USB	
Sunday	17:00 EST	18:00 EDST	ARES - GA Net	3.975.00 MHz - LSB	
Sunday	20:00		SC Hear Linked Repeater Net	146.715 (-) MHz	123.0 Hz Tone
Sunday	21:00 EST		Southeast Weather Net	Ref 002A	D-STAR
Daily	18:00		GA Side Band Net	3.975.00 MHz - LSB	
Monday	20:00		ARES - SC Net	3.993.50 MHz - LSB	
Tuesday	21:00		Lowcountry SkyWarn Net	146.715 (-) MHz	123.0 Hz Tone
Thursday	8:30	9:00	Health District Net	REF 030 B	D-STAR
Thursday	19:00		Beaufort Co. ARES Net	145.130 (-) MHz	88.5 Hz Tone
Thursday	18:30		Jasper Co. ARES Net	147.060 (-) MHz	123.0 Hz Tone
Thursday	20:00		Southeast GA. A.R.E.S. Net	146.970 (-) MHz	120.0 Hz Tone
Thursday	20:30		Southeast GA. A.R.E.S. Simplex Net	146.550 MHz	
Sunday	20:30		C.A.R.S. Net -- PRIMARY	442.700 (+) MHz	
			C.A.R.S. Net -- BACK-UP	147.330 (+) MHZ	203.5 Hz Tone
Monday	21:00		SE GA 6 Meter Rag Chew Net	50.13 MHz - USB	50.20 (Alt)
Monday 2nd-4th	20:00		HARES Net	145.470 (-) MHz	
Tuesday	20:00		S.T.A.R.S. Net	147.105 (+) MHz	
Wednesday	21:00		Jesup 2-Meter Net	146.865 (-) MHz	
Thursday	20:00		S.T.A.R.S. Net	147.105 (+) MHz	
Thursday	21:00		Jesup 2-Meter Simplex Net	147.530 MHz	
Sunday	8:00	10:00	GA Cracker Net	3.995.00 MHz - LSB	
Daily	7:00	9:00	GA Cracker Net	3.995.00 MHz - LSB	
M-F	13:00	14:00	GA Traffic Net	7.287.50 MHz - LSB	3.987.50 MHz Alt
Daily	18:30		GA SSB Net	3.975.00 MHz - LSB	
Daily	21:00		Country Cousins Net	3.970.00 MHz - LSB	
M-F	18:00	8:00	Grave Yard Net	3.967.00 MHz - LSB	
M-F	3:00		Breakfast Club	3.973.00 MHz - LSB	
Saturday	9:00		QCWA Net	3.857.50 MHz - LSB	
	7:00		22 Crew	7.238.00 MHz - LSB	
Daily	9:00	12:00	7272 Rag Chew	7.272.00 MHz - LSB	
Saturday	8:00	12:00	7272 Rag Chew	7.272.00 MHz - LSB	
Daily	9:00	11:00	South CARS Net	7.251.00 MHz - LSB	
Daily	15:00	17:00	South CARS Net	7.251.00 MHz - LSB	
Tu-Th	19:00	21:00	Night Watch	7.193.00 MHz - LSB	
Thursday	20:00		Jesup 10-Meter Net	28.400 MHz - USB	
Saturday	21:00		10 Meter Martini & Margarita Net	28.340 MHz - USB	
Monday	21:00		Southeast GA 6 Meter Rag Chew Net	50.130 MHz - USB	
M-F	20:00		Alabama 6-Meter Net	50.150 MHz - USB	

What's New

This month we take a look at three of the newer rigs available, or soon to be available.

COMING SOON! - ICOM MODEL: ID-5100

Icom UK has released some of the details of the new **ID-5100 dual band D-STAR mobile**. As with Icom's latest range of products, this new model has a new generation design and range of features including large, responsive touch screen LCD, Bluetooth connectivity and second station control through an Android device*.

* Optional Bluetooth unit UT-133 is required. Android software is available free.

Planned Features

These are preliminary details of the new ID-5100 and specifications may change. This unit has NOT been approved by the FCC and is not available for sale in the US at this time.

- High RF Power Output (50W)
- 1,000 Multifunction Memory Channels
- Dual Receive on Same Band (VxV, UxU)
- EchoLink® MEMORY (Automatic Dialer)
- EchoLink® Sysop Mode For Node Terminal Operation
- Multiple Scan
- Invertible Front Panel
- Choice of 2 Backlight Colors (AMBER/GREEN) For The LCD Panel
- 104-Code Digital Code Squelch
- "FIVE-IN-ONE" Programmable Memory
- . Wide reception:118-524MHz, 800-1300MHz*
- . MC-59 16-Key Hand Microphone with backlighting
- . Programmable memory capable of storing 5 independent operating profiles
- . DCS (Digital CodeSquelch) with 104 selectable codes
- . Separate VOL/SQL for A & B Bands
- . Packet Monitor
- . DX Cluster
- . Waypoint Data Output
- . Clock (date/time)
- . 6-pin Mini-DIN Socket for External TNC
- . 8-pin Mini-DIN Socket for PC Connection (optional programming cable PG-5G or PG-5H required for PC connection)
- . Programmable Function Keys

- . Band Mask
- . Call Channel
- . S-meter Squelch & Hysteresis Timer
- . Monitor Function
- . Mute
- . 3-hour Auto Power Off
- . MHz Mode
- . Selectable Frequency Step
- . Shift Function
- . Repeater Offset (selectable)
- . Reverse
- . Auto Repeater Offset (ON/OFF, VHF only)
- . Automatic Simplex Checker
- . DTMF Memory (10 channels,16 digits)
- . DTMF Remote Control
- . Time Out Timer
- . Key Lock
- . Power-on Password
- . Memory Shift
- . Programmable VFO
- . Beep On/Off, Volume Control
- . Mic Program Function
- . Channel Display Mode
- . Power-on Message
- . LCD Brightness Control, Auto Brightness
- . Switch to External Speaker
- . Reset (VFO, PART, PM, FULL)

*Excluding cellular blocked + frequencies

APRS

- Model name indication : "FT-1D" newly supported.
- Decay Algorithm : Send beacon on movement once the initial interval has been past. (Same as TH-D72)
- Message Auto Reply : Apply new beep tone solely for auto reply.(Same as TH-D72)
- Two point distance : Show more precise distance info. Show distance per 10 meter when distance is below 1 kilo meter. (Same as TH-D72)

General New Firmware Functions

- Internal GPS on/off
- Add waypoint
- Waypoint List
- Adding "GPS" on menu (Same as TH-D72)

GPS menu

- PC output : selectable from 2.5 stereo GPS interface or mini DIN9 pin
- Datum : Selectable from WGS-84(US) or TOKYO (Same as TH-D72)
- Sentence : on/off per item ($GPGGA,$GPRMC,$GPGSV,$GPGSA,$ GPGLL, $GPVTG,$GPZDA) (Same as TH-D72)
- SBAS : on/off (Same as TH-D72)
- Log : Record Method, Interval, Distance, Clear All Data, Wrap when full (Same as TH-D72)

KENWOOD MODEL: TM-D710G

Kenwood is pleased to announce the much anticipated TM-D710G, with new firmware and now with built in GPS.

The control head is detached and comes with remote cable for easy installation.

The TM-D710GA is a true dual-band operation radio so VHF+VHF/VHF+UHF/UHF+UHF operation is possible.

• Large, responsive touch screen LCD

• Optional UT-133 Bluetooth unit enables audio accessory connection and Android terminal connection (CI-V via Bluetooth SPP profile).

• Optional VS-3 Bluetooth pendant earpiece microphone has volume adjust buttons, PTT and three programmable buttons. Third party Bluetooth audio accessories may also be compatible (not guaranteed).

• RS-MS1A Android application will be a free to use download. It controls the radio for DR mode operation, exchanging text messages/pictures and showing GPS location over Google Maps.

• Independent VHF and UHF band units (VV/UU capable) for 50W output

• Enhanced DR mode (also include analogue repeaters)

• Added "Nearby Repeater Scan" in DR scan function

• D-Plus reflector usability (can select "reflector" in TO field)

• DV Dual Watch for simultaneously waiting in two DV voice streams (decodes one only)

• Home button (same as ID-51 feature)

• D-PRS enhancements (details to be announced)

• 1,000 memory channels

• Built-in GPS engine (inside the controller, no EXT antenna possible)

• ESN (Electronic Serial Number) / SD Card slot (in the black box main unit).

• New HM-207 control microphone is supplied as standard.

Other Features

• Wideband receiving (receives 118-137MHz(AM), 137-174/375-550MHz only)

• Antenna RX diversity (second antenna connector)

• TNC/9600bps modem connectivity

• DTMF decode (and mini-repeater control)

The FT DX 3000 - Building on the YAESU FT DX Heritage

The FT DX 3000 is member of the long line of top performing YAESU FT DX Series of transceivers. It inherits the design concepts of the FT DX 9000 and FT DX 5000 transceivers that have received high praise from all over the world by those pursuing the highest ideal of Amateur HF communication equipment.

The FT DX 3000 exhibits phenomenal multi-signal characteristics first demonstrated in the top-rated FT DX 5000. Using the two signal dynamic range measuring method with 10 kHz signal separation, the FT DX 3000 performance is 108.5 dB, IP3 +37 dBm. With frequency separation of only 2 kHz between the desired signal and an interfering signal, the dynamic range measures 106 dB and IP3 +33 dBm.

With all its features and amazing performance, the FT DX 3000 is a terrific rig for home or for a DXpedition at a truly affordable price.

The FT DX 3000 - Specifications

160 through 6 Meters - SSB/CW/FM/AM/Digital

With efficient dimensions of 14.4" × 4.5" × 12.3" (W × H × D) and weighing in at only 22 pounds, the FT DX 3000 is a solidly packed transceiver ready to give very high performance on all Amateur Radio bands from 160 to 6 meters.

• General Coverage Reception from 30 kHz to 56 MHz

• FM & AM - Wide and Narrow modes included

RTTY/PSK31 Encode / Decode Included

Various easy connections available for RTTY, SSTV, PSK31, JT, and other Digital Modes

100 Watts of Solid Performance

The RF Final Amplifier produces a clean 100 watt (some modes less)transmit signal. A large heat sink is combined with the die cast aluminum chassis for efficient heat dissipation. A cooling fan located beside the final amplifier and the TX Low Pass Filter ventilates the heat away from inside of the transceiver cabinet. This large axial flow fan is mechanically isolated from the chassis to reduce vibration and noise. The speed of the fan is continuously controlled by the temperature of the PA amplifier; starting at 40 degree C.

Antenna Tuner Included

High Speed Automatic Antenna Tuner included. The antenna tuner uses LC switching. It has a large capacity 100 channel memory; the tuning data is automatically memorized to reduce tuning time when changing frequency.

Famous Yaesu Main Tuning Knob

A heavy weighted balanced brass core knob is used to give the famous Yaesu smooth flywheel operating feel to the FT DX 3000 Main Dial Knob. Each user may set his/her favorite torque feeling of the Main Dial rotation.

IF Output

1st IF 9MHz signal with wide bandwidth IF Output available on the Rear Panel for after-market band scopes, CW Skimmer, etc.

USB Capable

USB input included for firmware updates. This input can also facilitates CAT, USB AUDIO IN / OUT and USB TX Control (PTT, KEY and FSK)

Remote Control From A Distant Location

External control (CAT) is possible using USB or Serial Port; this feature means the FT DX 3000 can be remotely controlled from a distant location!

Big TFT Full-Color Display For Superior Operability and Visibility

The FT DX 3000 presents a wide view angle, high contrast LCD 4.3 inch TFT impressive full color display that provides a convenient view of the radio's working functions. Superior operability is realized with this convenient display. It permits excellent visibility from different viewpoints. Even with the many FT DX 3000 features and functions, the TFT display makes operation of the radio easy and comfortable.

• A Block Diagram Displays RX Signal Path

• Choose Analog Type or Bar Graph Meter

• Selectable analog type or bar graph type meter indication

• Separate Independent Frequency Display

• High Speed Spectrum Scope

• Bandwidth of the spectrum scope: 20kHz, 50kHz, 100kHz, 200kHz, 500kHz, or 1MHz

• TX and RX markers appear during "spit" operation

• Level Indicator

The function names and the setting levels of the following functions are shown in the TFT main display when a function knob is rotated: Clarifier, Microphone Gain, Speech Processor, SHIFT, WIDTH, KEYER SPEED and CONTOUR

• AF-FFT Scope

An AF-FFT (Audio Frequency Fast Fourier Transform) scope is built in. This AF-FFT function was first demonstrated in the FT DX 9000 series. With this Scope, the audio characteristics of the received signals; the effect of adjusting the RX IF filter performance; and utilizing the QRM rejection features, may be visually observed. It is also possible to observe the TX audio characteristics of your own signal while using the Monitor function. This is very effective for tuning the parametric equalizer for voice characteristics and the microphone audio.

• Spectrum Scope Memory

The Spectrum Scope screen can be stored or recalled with one touch. Simultaneously the time information is recorded in the memory, so that the difference in activity may be reviewed and compared, depending on the seasons and times.

• Cursor Keys

Six keys that are used frequently in normal operation are located at the left side of the TFT display. Other functions can be operated by pressing the "SCOPE" key which changes the "Spectrum Scope screen" to "Function Key Display screen". Even if the radio is turned off, the last operated Key Function is memorized and highlighted.

Top Performing Receiver RF Front End

The receiver RF Front End circuit is the most important element because it ultimately determines the HF Receiver performance. Our Yaesu Engineering team has concentrated superior RF Engineering knowledge into the design of the FT DX 3000 front end.

• Fifteen separate band pass filters (BPF) are used for front end protection. This effectively reduces the undesired and out of band signals.

• In the RF amplifier, the strong bipolar transistor (2SC3357) is used. This transistor shows a low NF, and provides superior intermodulation performance.

• The gain of each individual device is kept lower, and the best optimized working point, with the lowest NF, is selected.

• A custom-designed wide coverage transformer, with less magnetic saturation, is used for the I/O of the RF amplifier. This construction makes the device performance better and provides excellent multi signal performance.

Down Conversion Receiver and Powerful Narrow Bandwidth Crystal Roofing Filters

The powerful narrow bandwidth crystal roofing filter enhances the receiver multi-signal characteristics. The FT DX 3000 "Down Conversion" receiver construction is similar to the FT DX 5000. The first IF frequency is 9 MHz. This makes possible narrow bandwidth crystal roofing filters (300 Hz, 600 Hz or 3 kHz) with a sharp shape factor that creates amazing multi-signal receiving performance. The powerful narrow bandwidth crystal roofing filter enhances the receiver multi-signal characteristics.

• The 3 kHz roofing filter greatly improves SSB signal reception during close adjacent multi signal conditions.

• The 300 Hz* and 600 Hz roofing filters provide the best CW receiving environment when the adjacent signals may affect the desired signal reception.

*Note: 300 Hz filter optional

Effective QRM and QRN Rejection

Effective QRM rejection is achieved from the FT DX 3000 IF DSP. The 32-bit high speed floating decimal point DSP, TMS320C6727B (maximum 2800 MIPS/ 2100 MFLOPS) made by Texas Instruments, is used for the IF section of the FT DX 3000. The signal is processed with the high speed 300 MHz clock frequency.

• Proven IF WIDTH and IF SHIFT functions provide great QRM rejection performance

IF SHIFT

With the normal bandwidth, the pass band area can be moved relatively, so that harmful signals are rejected from the pass band

IF WIDTH

By adjusting the band width, Interfering signals can be removed from both sides of the pass band, without changing the pass band position. The IF width function can make the pass band narrower with one-touch. This function is effective in a pile-up or contest, when the undesired signals are located just above and below the target signal. When the IF Width knob is centered (click point), the pass band width is 2.4 kHz in the SSB and CW modes. When "NAR" is turned on, the minimum pass band becomes 50 Hz (200 Hz in the SSB mode), making it possible to minimize the QRM with this sharp filter shape factor. When the IF Width is turned clockwise from the center click

point, the pass band width can be extended wider, up to 4000 Hz. This may provide a richer sounding and more comfortable QSO when in a local rag chew.

• CONTOUR

The CONTOUR function ideally tailors the received audio signal without changing the bandwidth. The CONTOUR function varies the outline of the IF DSP filter pass band characteristics, and the in-band signal construction can be partially altered. Different from the IF SHIFT or IF WIDTH, the special CONTOUR pass band, can reduce or peak the desired signal, partially and continuously across the pass band. This feature is effective especially when the undesired signal is close to the center frequency.

• Digital Noise Reduction (DNR) by DSP

The installed digital noise reduction circuit provides 15 separate parameters. The noise reduction constants may be set to the optimal working point by varying the 15 step parameters according to the actual noise within the HF band. The desired signal components are peaked and the random noise components are effectively cancelled.

• IF NOTCH

This high Q circuit has steep attenuation characteristics of 70dB or more. Effective removal of a strong beat signal is obtained. The damping characteristics can be switched to wide or narrow band width, and the attenuation level may be adjusted in the Setting Mode Menu. Interfering signals may be attenuated, while minimizing the impact on the received signal.

• Digital Notch Filter (DNF) (AUTO NOTCH)

The Digital Notch Filer (DNF) is a feature that automatically follows the interfering heterodyne signals, even if there are more than one, and even if the beat frequency changes with time. This is effective in removing jamming signals.

• CW APF (Audio Peak Filter)

In the CW mode, the APF (Audio Peak Filter) function has an audio peak at the signal frequency; this improves the S/N and increases the readability of the CW signal. The APF peak frequency can be finely aligned.

Very Low Noise Floor - Terrific Signal to Noise Ratio

The S/N ratio (signal-to-noise ratio) of the local signal that is injected into the 1st IF mixer is one of the most important factors for improving the receiver properties in the ultra-multi-signal environment.

In the FT DX 3000, the combination of it's high stability and high accuracy 40 MHz TCXO (± 0.5ppm, -10 °C ~ +60 °C), and it's DDS create the fundamental frequency of this radio, and is locked to the PLL-IC and VCO directly. This circuit construction and method creates the highest quality local signal, with superior S/N performance. This means the receiver noise floor is kept lower, and realizes the best blocking dynamic range at 2 kHz

IP3 performance.

Three IPO Settings - Best Signal Reception During Changing Band Conditions

3-step IPO settings permit the operator to select the most appropriate gain for best signal reception. This variety of selections provides superior receiver performance and the best possible communications with changing band conditions.

The IPO (Intercept Point Optimization) is selected by a control switch located on the front panel. The IPO selection determines the gain of the RF amplifier. The gain setting is very effective in optimizing the receiver performance, depending on the antenna and the communication propagation conditions. The IPO, the ATT and one stage of the RF amplifier are used to optimize the signal levels that are sent to the mixer. This is especially important for HF low-band operation. The "AMP 1" uses one RF amplifier stage, and maintains a better balance between the sensitivity and the receiver performance (the gain is around 10 dB). In addition, "AMP 2" uses two stages of the RF amplification and can obtain higher sensitivity (the gain is around 17 dB); something particularly important on the 6 and 10 meter bands.

High Quality Audio With Punch

The modulation circuit of the FT DX 3000 utilizes digital variation operational modulation, which creates ideal high quality transmission audio.

• Microphone Amplifier that includes Parametric Equalizer

The modulation circuit of the FT DX 3000 utilizes the digital variation operational modulation type, which creates ideal high quality transmission audio. This radio has a parametric equalizer that makes possible versatile adjustment of the TX audio quality by aligning the TX band audio spectrum. The parametric equalizer can alter the Low, Mid and High part of the audio separately. This three stage parametric equalizer can generate high quality TX audio sound because it can be tuned in detail…without sacrificing the audio dignity.

• IF DSP Speech Processor – DX'er and Contester Proven

The SSB Speech Processor uses IF digital signal processing to increase the intelligibility of the transmitted signal during weak signal crowded conditions. The DSP increases the average power of the important speech spectrum components and reduces the TX power of the less significant components. Adjust the compression level in the Menu Mode to adapt the transmitted SSB signal to best suite your voice characteristics, the situation, propagation conditions and pile-up demands.

Three Antenna Inputs

Three antenna connectors are available on the FT DX 3000 Rear Panel.

• Having multiple antenna selections is an especially effective feature for DX and Contest operating.

• Antenna connection selections memorized

and recalled when changing bands.

• The "ANT 3" input can be set for the "RX Only" antenna.

CW Features Galore

• CW APF (Receiver Audio Peak Filter) with 3 bandwidth steps

• CW Decode included

• CW SPOT

• CW Auto Zero-in

• CW Zero-in Display

• CW Full Break-in

• CW Mode reversal (USB or LSB)

• CW Keying available during SSB operation

• CW "VOX" Delay is adjustable

• Electronic Keyer with Weight control

• Keyer paddle Dot-Dash reversal

• IAMBIC A/B selection

• "Bug" Keying emulation

• Four Message Memory (50 characters each); five w/FH-2 Keypad

• Automatic Insertion of incrementing contest number

• Automatic "Beacon" keyer mode

• Dial step setting (for the CW mode only)

• Separate KEY Jacks on the front and rear panels

5 Digital Voice Messages

Each memory channel is capable of storing up to 20 seconds of audio using the optional DVS-6.

RX Output

The "RX Output" connector on the FT DX 3000 Rear Panel accesses the signal from the receiver RF amplifier. The signal can then be output to an external receiver for in-band simultaneous receiving.

Optional Fully-Automatic μ-Tuning Kit

The u-Tuning Kit that was developed for the FT DX 9000, is optionally available for use with the FT DX 3000. No other Amateur Radio transceiver manufacturer offers a comparable device that may improve your DXing performance in some challenging operating situations.

A large diameter 28 mm inductor, with an adjustable ferrite magnetic material (Ni-Zn ferrite) core, is combined, with a high resolution and high torque stepping motor to automatically find the resonance point. By inserting these tuning units prior to the RF front end of the receiver, the IP3 points are improved by around 4 dB. Three individual tuning units are available covering frequencies from 1.8 MHz through 14 MHz. Many FT 950, FT 2000/D, FT DX 5000 and FT DX 9000 Yaesu customers have used them and found them especially effective for use on the Lower Bands.

Amateur Radio Prefix Maps

Thanks to Paul, KC2NYU, for finding this fine website. If you are looking for **Amateur Radio Prefix Maps**, you have come to the right place! **Tim Makin's, EI8IC, website** lists 38 of the most comprehensive Ham Prefix Maps anywhere on the internet. And here's the best part: They are all absolutely free!! Help yourself to which ever ones you need. These prefix maps are extracted from the Global Overlay Mapper suite so if you like what you see, take a look at the Global Overlay Mapper demonstration, which includes Amateur Radio Prefixes plus much, much more.

•Africa	•Eastern Russia	•Scandinavia	•Western Caribbean	•Southern South America
•West Africa	•Central Russia	•Eastern Europe	•Oceania	•Chinese Prefixes
•East Africa	•Western Russia	•Western Europe	•Eastern Oceania	•Chinese Prefixes (Interactive Map)
•Southern Africa	•South Asia	•North America	•Northen Oceania	•Russian Prefixes
•Antarctica	•South East Asia	•Eastern Canada	•Southern Oceania	•Russian Prefixes (Interactive Map)
•Asia	•Europe	•Western Canada	•South America	
•Asia Prefix/CQ Zone	•Eastern Mediterranean	•Eastern USA	•Eastern South America	
•East Asia	•Western Mediterranean	•Western USA	•Western South America	
•Middle East		•Eastern Caribbean		

Tim also has **The EI8IC World APRS Viewer** displays the latest positions of all stations currently transmitting APRS data, anywhere on the planet, as received on the www.FindU.com servers. With 6 levels of zoom available, 3 different map sizes, and 7 different types of map, this is one of the most comprehensive APRS display-systems on the internet.

My Favorite Link

Here is where to find Tim Makin's, EI8IC, website filled with great maps and ham radio material

http://www.mapability.com/ei8ic/maps/prefix/index.php

Mac McCormick III, KF4LMT Radio Shack Blog

Ham Calendar

Mac has added a handy Ham Radio Calendar to his blog. We will include it in Groundwaves and you can check the following link to catch up with Mac and keep up to date with the events around the world. The oneline calendar is really cool as each of the events will open and give you the information. Note the GA QSO Party, Spring Lighthouse QSO Party, and other state QSO parties.

http://kf4lmt.wordpress.com/2014/01/03/ham-radio-calendar/

Amateur Radio, Holidays in United States — Apr 2014 (Eastern Time)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30 CQ WPX Contest	**31**	**1**	**2** 2014 Preparedness Summit	**3**	**4**	**5** MS QSO Party
6 MS QSO Party / **CARS MEETING**	**7**	**8**	**9**	**10**	**11**	**12** Georgia QSO Party
13 Georgia QSO Party / Thomas Jefferson's	**14**	**15**	**16**	**17** ARLHS Spring Lites Contest	**18**	**19** CARS Activates / MI QSO Party / ON QSO Party / **CARS EVENT**
20 ARLHS Spring Lites Contest / MI QSO Party / ON QSO Party / ARRL Rookie / Easter Sunday	**21**	**22**	**23**	**24**	**25**	**26** FL QSO Party
27 FL QSO Party	**28**	**29**	**30**	**1**	**2**	**3** 7th Call Area QSO / CARS Special Event - / IN QSO Party @ QSO / New England QSO / **CARS EVENT**