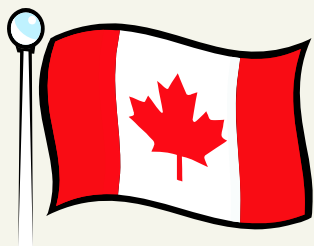


December 2013



## North Shore ARC



### UPCOMING DATES

December  
17th, 2013

Christmas  
Party White-  
Cliffe Terrace

1900hrs

**Merry Christmas! Joyeux Noel!**



Visit us on the web

[www.ve3osh.com](http://www.ve3osh.com)

North Shore ARC  
is a



Affiliated club

[www.rac.ca](http://www.rac.ca)



## Behind The Mike



Hi Everyone!!

Merry Christmas, Chag Orim Sameach (happy holiday of lights/ Happy Chanukah , Heri za Kwanzaa (Happy Kwanzaa), Felix Navidad (Merry Christmas in Spanish), Joyeux Noel (French), and all the best in 2014!!

Well the holiday season is upon us. I hope everyone is looking forward to this festive time and a brand new year full of many great things and hopefully some excellent QSO's and the exclusive DX contact or two too.

The December issue has some nice photos from the Remeberance Day service at Intrepid Park (aka Camp X), some interesting articles on many ham radio related topics, and the odd fun video link to Christmas related videos with a ham radio twist.

An update on the potluck party for December 17th. So far I have 25 confirmed guests and their spouses and we still have spaces open in the appetizer, salad, main dish, dessert, and miscellaneous categories if anyone still hasn't gotten back to me on whether they are coming or not. If you are one of the ones who I haven't heard from please email me the sooner the better with whether you are coming and how many people you are bringing as well as what you are bringing. We do not need any more beverages so please don't offer to bring pop or anything along that line we've got more than enough pop coffee, tea, and festive punch.

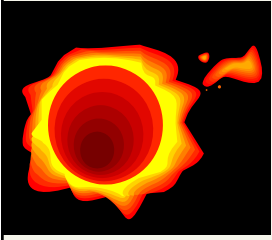
Email me at [va3sbd@teksavvy.com](mailto:va3sbd@teksavvy.com) if you are planning to come and what you are bringing if you haven't already.

Other than that I hope you all enjoy the Christmas edition of the bulletin and we'll see you at the Club Christmas party on December 17th at 1900 hrs.

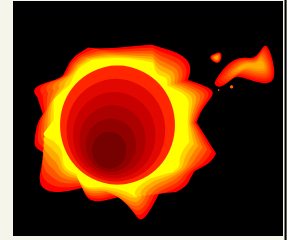
Until then  
73's & 88's

Martha  
**VA3SBD**





## Propagation Reports by Ray Zambonelli **VE3OUB**



<http://dx.qsl.net/propagation/propagation.html>

## Ham Stories on Twitter

### **Solar Plasma Filament Eruption on November 6th & 7th 2013 by amateurradio.com**

[http://www.amateurradio.com/solar-plasma-filament-eruption-the-sun-november-67-2013/?utm\\_source=feedburner&utm\\_medium=twitter&utm\\_campaign=Feed%3A+amateurradiocom+%28AmateurRadio.com%29](http://www.amateurradio.com/solar-plasma-filament-eruption-the-sun-november-67-2013/?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed%3A+amateurradiocom+%28AmateurRadio.com%29)

### **Amateur Radio Volunteers Ready as Strong Typhoon Hits Philippines by ARRL**

[http://www.arrl.org/news/view/amateur-radio-volunteers-ready-as-strong-typhoon-hits-philippines?utm\\_source=dlvr.it&utm\\_medium=twitter](http://www.arrl.org/news/view/amateur-radio-volunteers-ready-as-strong-typhoon-hits-philippines?utm_source=dlvr.it&utm_medium=twitter)

### **1st edition of FunCube Handbook now available by Southgate Amateur Radio News**

[http://www.southgatearc.org/news/november2013/1st\\_edition\\_of\\_funcube\\_handbook\\_now\\_available.htm#.UqNv9ic4F7U](http://www.southgatearc.org/news/november2013/1st_edition_of_funcube_handbook_now_available.htm#.UqNv9ic4F7U)

### **New DataSheet Available for Electronic Engineers by Datasheet Archive**

<http://www.datasheetarchive.com/>

### **Suns Pending Magnetic Flip has Physicists on Edge by CBC News**

<http://www.cbc.ca/news/technology/sun-s-pending-magnetic-flip-has-physicists-on-edge-1.2418621?cmp=rss>

### **Rare Brief 6 Meter F2 opening makes for Plentiful DX by ARRL**

[http://www.arrl.org/news/view/rare-brief-6-meter-f2-opening-makes-for-plentiful-dx?utm\\_medium=twitter&utm\\_source=twitterfeed](http://www.arrl.org/news/view/rare-brief-6-meter-f2-opening-makes-for-plentiful-dx?utm_medium=twitter&utm_source=twitterfeed)

### **Typhoon kills many thousands as disasters unfolds by Southgate Amateur Radio News**

[http://www.southgatearc.org/news/november2013/typhoon\\_kills\\_many\\_thousands\\_as\\_disaster\\_unfolds.htm#.UqNxOCc4F7U](http://www.southgatearc.org/news/november2013/typhoon_kills_many_thousands_as_disaster_unfolds.htm#.UqNxOCc4F7U)

### **The Very Particular World of Amateur Radio by BBC News**

[http://www.bbc.co.uk/news/magazine-24917880?ocid=socialflow\\_twitter\\_bbcnewsmagazine](http://www.bbc.co.uk/news/magazine-24917880?ocid=socialflow_twitter_bbcnewsmagazine)

### **Hams Still involved in Philippines Typhoon Disaster by Southgate Amateur Radio News**

[http://www.southgatearc.org/news/november2013/hams\\_still\\_involved\\_in\\_philippines\\_typhoon\\_disaster.htm#.UqNx9Cc4F7V](http://www.southgatearc.org/news/november2013/hams_still_involved_in_philippines_typhoon_disaster.htm#.UqNx9Cc4F7V)

### **Three Special Events to commemorate the Discovery of Puerto Rico by Southgate Amateur Radio News**

[http://www.southgatearc.org/news/november2013/discovery\\_of\\_puerto\\_rico.htm#.UqNyOCc4F7V](http://www.southgatearc.org/news/november2013/discovery_of_puerto_rico.htm#.UqNyOCc4F7V)

## Ham Stories on Twitter

### **Three Ham Radio satellite deployments in November by Southgate Amateur Radio News**

[http://www.southgatearc.org/news/november2013/three\\_ham\\_radio\\_satellite\\_deployments\\_in\\_november.htm#.UqNyeSc4F7V](http://www.southgatearc.org/news/november2013/three_ham_radio_satellite_deployments_in_november.htm#.UqNyeSc4F7V)

### **Teenage radio ham takes lead in ISS School Contact by Southgate Amateur Radio News**

[http://www.southgatearc.org/news/november2013/teenage\\_radio\\_ham\\_takes\\_lead\\_on\\_iss\\_school\\_contact.htm#.UqNzdSc4F7U](http://www.southgatearc.org/news/november2013/teenage_radio_ham_takes_lead_on_iss_school_contact.htm#.UqNzdSc4F7U)

### **Sun will flip upside down within weeks says NASA by KK0HF**

<http://www.independent.co.uk/news/science/sun-will-flip-upside-down-within-weeks-says-nasa-8942769.html>

### **Santa nets on Amateur Radio announced for 2013 by Voice of Ham Radio**

[http://ke5ggy.blogspot.ca/2013/11/santa-nets-on-amateur-radio-announced.html?](http://ke5ggy.blogspot.ca/2013/11/santa-nets-on-amateur-radio-announced.html?m=1&utm_content=buffer94431&utm_source=buffer&utm_medium=facebook&utm_campaign=Buffer)

[m=1&utm\\_content=buffer94431&utm\\_source=buffer&utm\\_medium=facebook&utm\\_campaign=Buffer](http://ke5ggy.blogspot.ca/2013/11/santa-nets-on-amateur-radio-announced.html?m=1&utm_content=buffer94431&utm_source=buffer&utm_medium=facebook&utm_campaign=Buffer)

### **Ham Balloon Launch MultiMode on November 16th by RAC BC SectionManager VA7MPG**

<http://va7mpg.ca/?p=5076>

### **AMSAT-UK FUNCube-1 Satellite in Orbit by ARRL**

[http://www.arrl.org/news/view/amsat-uk-funcube-1-satellite-in-orbit?utm\\_medium=twitter&utm\\_source=twitterfeed](http://www.arrl.org/news/view/amsat-uk-funcube-1-satellite-in-orbit?utm_medium=twitter&utm_source=twitterfeed)

### **Using Raspberry Pi and GPredict software to track FUNCube-1 (or many other) satellites by AmateurRadio.com**

[http://www.amateurradio.com/using-the-raspberry-pi-and-gpredict-software-to-track-funcube-1-or-many-other-satellites/?utm\\_source=feedburner&utm\\_medium=twitter&utm\\_campaign=Feed%3A+amateurradiocom+%28AmateurRadio.com%29](http://www.amateurradio.com/using-the-raspberry-pi-and-gpredict-software-to-track-funcube-1-or-many-other-satellites/?utm_source=feedburner&utm_medium=twitter&utm_campaign=Feed%3A+amateurradiocom+%28AmateurRadio.com%29)

### **VE3PU and VE6NM Named to Canadian Amateur Radio Hall of Fame by ARRL**

[http://www.arrl.org/news/view/ve3pu-and-ve6nm-named-to-canadian-amateur-radio-hall-of-fame?](http://www.arrl.org/news/view/ve3pu-and-ve6nm-named-to-canadian-amateur-radio-hall-of-fame?utm_medium=twitter&utm_source=twitterfeed)

[utm\\_medium=twitter&utm\\_source=twitterfeed](http://www.arrl.org/news/view/ve3pu-and-ve6nm-named-to-canadian-amateur-radio-hall-of-fame?utm_medium=twitter&utm_source=twitterfeed)

### **RAYNET Marks 60 Years by ARRL**

[http://www.arrl.org/news/view/raynet-marks-60-years?utm\\_medium=twitter&utm\\_source=twitterfeed](http://www.arrl.org/news/view/raynet-marks-60-years?utm_medium=twitter&utm_source=twitterfeed)

### **Amateur Radio Remains a Communication Mainstay in Storm-Stricken Philippines By ARRL**

[http://www.arrl.org/news/view/amateur-radio-remains-a-communication-mainstay-in-storm-stricken-philippines?](http://www.arrl.org/news/view/amateur-radio-remains-a-communication-mainstay-in-storm-stricken-philippines?utm_medium=twitter&utm_source=twitterfeed)

[utm\\_medium=twitter&utm\\_source=twitterfeed](http://www.arrl.org/news/view/amateur-radio-remains-a-communication-mainstay-in-storm-stricken-philippines?utm_medium=twitter&utm_source=twitterfeed)

### **Amateur Radio Direction Finding Enthusiasts Enjoy National, Regional Competition by ARRL**

[http://www.arrl.org/news/view/amateur-radio-direction-finding-enthusiasts-enjoy-national-regional-competition?](http://www.arrl.org/news/view/amateur-radio-direction-finding-enthusiasts-enjoy-national-regional-competition?utm_source=dlvr.it&utm_medium=twitter)

[utm\\_source=dlvr.it&utm\\_medium=twitter](http://www.arrl.org/news/view/amateur-radio-direction-finding-enthusiasts-enjoy-national-regional-competition?utm_source=dlvr.it&utm_medium=twitter)

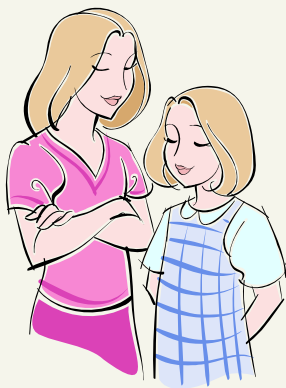
### **Amateur Radio Disaster Response in Philippines Winds Down by ARRL**

<http://www.arrl.org/news/view/amateur-radio-disaster-response-in-philippines-winds-down>

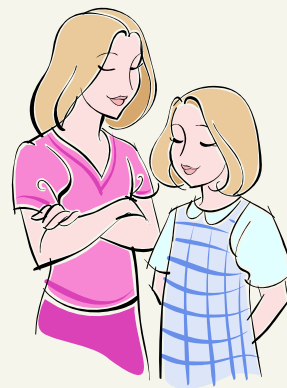
## Ham Stories on Twitter

### Canadian Club Experiments on 600m by RSGB (Radio Society of Great Britain)

[http://rsgb.org/main/blog/news/gb2rs/headlines/2013/12/06/canadian-club-experiments-600m/?utm\\_medium=twitter&utm\\_source=twitterfeed](http://rsgb.org/main/blog/news/gb2rs/headlines/2013/12/06/canadian-club-experiments-600m/?utm_medium=twitter&utm_source=twitterfeed)



### Words from our Sister Club SPARC



*I found this article in the October or November issue of the TCA that Ken VE3FIT from South Pickering ARC had submitted. I emailed Ken and asked him if he would mind me submitting it into our newsletter. I enjoyed the article and figured anyone in our club who is not a member of RAC may enjoy it as well. If you are a member of RAC and missed this article or if you did see it and read it well here ya go you can enjoy it again.*

*Thanks Ken for allowing me to put this article in our newsletter and excellent job*

**Martha**  
**VA3SBD**

**Building the VE3FIT JOTA Special****Ken Grant, VE3FIT**

When I was asked to run a 20 Metre station for this year's Scout JOTA (Jamboree on the Air), I had to put together an antenna in a hurry. An idea had crossed my mind whenever I had contemplated the bits and pieces (junk?) kept in my garage. Now, it was time to act.

This antenna was built from materials that were mostly already on hand. Thus, it satisfied requirement #1: it had to be cheap to build.

Requirement #2 was that it had to be easily transported, erected and disassembled.

Requirement #3 was that it had to offer at least the prospect of reasonable performance on 20 SSB.

It's basically an aluminium, tapered, telescoping painter's pole (donated) used as a  $\frac{1}{4}$  wave vertical with 16 quarter-wave radials as a ground plane, all held upright in a Black & Decker Workmate portable bench. See figure 1.

The pole is made by Mallory Industries, model 117-16. It's 16  $\frac{1}{2}$  feet long when fully extended. Perfect for 14.2 MHz. It telescopes in three sections, held rigid by a pair of compression locks. Because it's made of anodized aluminum (the surface of which is non-conductive), I had to extend the pole fully, lock the sections together and then drill a hole for a #6 self-tapping sheet-metal screw about  $\frac{1}{2}$ " below each lock. This gave me DC and RF continuity from one end of the pole to the other. See figure 2.

The pole is hollow and would be deformed or crushed if clamped directly by the jaws of the Workmate. I found an old shovel handle made of ash-wood which fit nicely into the open end of the pole and serves as a support. One end of the support rests on the ground and the other end holds the aluminum pole about 5" above the working surface of the bench. See figure 3.

I made an angle bracket from a piece of scrap aluminum and fitted an SO-239 coax socket to it. The bracket is bolted to the wooden support. The centre pin of the SO-239 is connected to the aluminum pole with a short piece of wire, a solder lug and a #6 screw. See figure 4.

Each radial is also 16  $\frac{1}{2}$  feet long and is made of #22 enamelled copper wire (donated long ago by an SK) soldered to a ring made from a piece of #12 bus wire. The ring is then joined to the chassis side of the SO-239 with two short pieces of wire. When the radials are unrolled and fanned out, they're anchored to the ground with cheap plastic tent pegs. I had to buy the tent pegs L, but Canadian Tire happened to have them on sale J.

The completed antenna, ready for the radials to be unrolled and the coax feed-line to be attached is shown in figure 5.

After the feed-line was attached, I used an SWR analyzer to check for resonance. Lo and behold; the SWR bottomed out right at 14.2 and was less than 1.5 to 1 right across the band. Life doesn't get much better than that.

I hooked up my Kenwood TS-680 xcvr and proceeded to work W4s, W7s and W0s with good signal reports.

After you've deployed the antenna in the field, it's a good idea to surround the radials with yellow warning tape mounted atop wooden stakes.

The antenna performed very well on JOTA. We had many contacts in England and all over the U.S. And, the pole can still be used to paint very tall ceilings. 73.



### Biography

*Ken , VE3FIT, recently retired after a 45 year career as an electronics technologist in the healthcare field. He lives in Scarborough, Ontario with his wife of 43 years, Marlene. Together, they have raised three sons.*

*His non-ham interests include travelling, history, bicycling on his 1974 Raleigh ten-speed and a bit of gardening.*



Figure #1



Figure #2



Figure #3



Figure #4



Figure #5







## News From Stan VE3TW At RAC



*Stan Leschinsky and I had a chat at York Region Hamfest up in Newmarket this year and it came to light that I was North Shore's bulletin editor. After our discussion we decided that he is going to submit to me to include in our newsletter information he receives from RAC that isn't sent out to the general membership but strictly to the clubs itself. Included in this months newsletter I have added two reports he emailed me (one for Decembers RAC Directors Meeting minutes and the other is the Ontario South Directors Report for Decmeber). The link to the RAC bulletin is also included for your enjoyment. When Stan sends me info from RAC it will be put in the newsletter, I'm not sure if it will be monthly or how that will work yet but you will see it when I have it.*

*Martha  
va3sbd*

North East Ontario Regional Directors Report for December, 2013

Well the main event this month is the RAC Winter Contest on December 28.

This year we will be in VE6 land over the Christmas holidays "terrorising / traumatising" our children and grandchildren but I hope to spend some time in the RAC Winter Contest. So if you hear a very weak VE3XT/6 please give me a call. Apparently a certain fellow who wears Red thinks I have been somewhat good and showed up early at my QTH with a new KX3. So this will be a good break in test.

Last month I mentioned several things RAC does on behalf of all Canadian Amateurs not only members. I would like to give a concrete example of that. In RSS 244 Industry Canada is proposing the use of 413 to 457 MHz for very low power wireless communications between implanted human monitors and external data collectors. Here is a link to RAC's reply. Also notice we were the only one to respond on behalf of all Canadian Amateurs: <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10715.html>

I would also like to welcome several new members to the Executive of RAC. Dorothy Brown, VA7DBR has agreed to be our Treasurer and Glenn MacDonell, VE3XRA is our new First Vice President. Thanks. We are looking for a new chairman of the HF Band Planning Committee and if you're interested please contact George Gorsline, VE3YV at [ve3yv@rac.ca](mailto:ve3yv@rac.ca)

As promised last one month, one major benefit of being a RAC member is the outgoing QSL service. I realise many of you use LoTW or eQSL but nothing beats the feeling of sending out a bunch of QSL's. A QSL to the USA is \$1.10 and International is \$1.85 per QSL. At these prices it does not take long to realise a RAC membership suddenly looks really appealing.

On behalf of myself and my XYL Rita I want to wish you all the best of the Holiday Season. I hope it's safe, joyful and brings you all lots of great memories and some good DX for years to come. We wish you all a Merry Christmas and Happy New Year.

I am still hoping to receive any questions you have about how RAC is run or why we do what we do. Please email me at [ve3xt@rac.ca](mailto:ve3xt@rac.ca)

Bill VE3XT  
North East Ontario Regional Director  
Radio Amateurs of Canada



## Ontario South Director's Report – December 2013

Greetings from your RAC Southern Ontario Director. I trust everyone has done their fall antenna work and you're all ready for many hours of DX as we hunker down for the winter! As 2013 draws to a close and we prepare for the upcoming holiday season, we should pause and reflect on the year with its ups and downs. Hopefully there were more ups than downs!

### New Ontario South Director

As you should all be aware, my term as your RAC Director will be ending on December 31, 2013. I am pleased to welcome Rod Hardman, VE3RHF who will be your new Director starting January 1, 2014. Rod has a solid background as President of the Oakville Amateur Radio Club and has supported RAC in many endeavours. He brings that experience to the RAC table and I am sure he will do an excellent job. I want to thank everyone for their support during my tenure and it was a pleasure meeting many of you at the various hamfests and radio events. Since 2010, RAC has achieved an almost impossible turnaround and we will need your continuing support to keep the organization moving forward and succeeding.

### New RAC Executive

I would like to welcome some new individuals to the RAC Executive. Dorothy Brown, VA7DBR has accepted the position of RAC Treasurer and Glenn MacDonnell, VE3XRA has moved up from Ontario Northeast Deputy Director to First Vice-President. Many thanks to Dorothy and Glenn for stepping up and supporting OUR national ham radio organization.

### 2013 RAC Winter Contest

Just a reminder that the RAC Winter Contest will take place on December 28, 2013 from 0000 UTC to 2359 UTC. Be sure to snag the RAC stations for bonus points and work as many VE/VA hams as you can!

### Hamfests and Fleamarkets

Back in November I attended the York ARC hamfest in Newmarket with an Assistant Director Stan Leschinsky, VE3TW. RAC was well-received by the attendees and RAC thanks the York club for the invitation and their continuing support of RAC. The next event will be the Niagara Peninsula ARC "Big Event" on Saturday, February 1, 2014 at the Meritton Lions Community Centre in St. Catharines. Hope you will consider attending and helping out the Niagara club.

In closing, once again thank you for supporting me as your RAC Director since 2011 and please give your support to Rod as he takes over the helm next month.

73,

Jeff VA3WXM  
RAC Ontario South Director



## RAC Bulletin 2013-040E

Industry Canada posts RAC letter of response to Medical Devices operating in 70 cm band

<https://www.rac.ca/en/news/bulletins/2013/40/>



### Dates To Remember



**December 17th 1900hrs WhiteCliffe Terrace Retirement Residence  
Christmas Potluck Party email [va3sbd@teksavvy.com](mailto:va3sbd@teksavvy.com) to let her know if  
you're coming and what you're bringing**

**December 25th Christmas HOHOHO!!**

**December 26th Boxing Day**

**December 31st New Years Eve please don't drink & drive!!!**

**January 1st 2014 New Years Day!!!**



# Christmas Fun

Enjoy these cute videos and poems I found on the internet. It's the Christmas fun I was talking about. Merry Christmas and HOHOHO!!!

<http://www.eham.net/articles/1620>

<http://herrons.com/a-technical-twas-the-night-before-christmas/>

<http://www.youtube.com/watch?v=xxJpunNf5WI>

## Twas The Night Before Christmas Ham Radio Style

### "The Night Before Christmas", Ham Radio-style

'Twas the night before Christmas, when all through the town,  
The snowstorm was raging, the phone lines were down;  
The wind it did howl, the tree limbs did crack,  
I hope that St. Nick isn't forced to turn back.  
The wife making cookies, the kids making noise,  
While away in the shack, by my rig I was poised.  
The finals were glowing, the mike gain was set,  
I was chasing DX to see what I could get.  
The bands were all empty, the frequencies clear,  
Except one lone station that sounded quite near.  
He was calling CQ and my interest did pique,  
When he ended transmission with the words,  
"Old St. Nick".  
I answered back quickly, I used great dispatch,  
If this were St. Nicholas, good God, what a catch!  
We exchanged information, it was really quite graphic,  
Then he came back and said,  
"I've emergency traffic!"  
His reindeer were tired, his elves in a grump,  
If he didn't land soon, then his sleigh he would dump.  
I thought very carefully, I thought very hard,  
Then I gave him directions to my snow covered yard.  
As he flew past my window, his hair like a mane,  
He reined in his chargers and called them by name:  
"Whoa, Anode! Whoa, Cathode! Whoa, Zener! Whoa, Diode!  
Stop, Heater! Stop, Grid leak! Stop, Bias! Stop, Triode!  
You're flying too low! you're flying too fast!  
Look out, you dumb reindeer, his antenna mast!"  
So into the backyard the reindeer did drop,  
St. Nick, the elves, and the sleigh went kerplop!  
Then at the back door, I heard this loud knocking,  
"Open up in there, or I won't fill your stocking!"



As I turned off the light and was leaving the shack,  
Into the house Saint Nicholas came from the back--  
His two-meter rig held to his hip with a strap,  
"Hams do it in the shack" on the front of his cap.  
The sack that he carried made his aged brow furrow,  
And he handed me a card that read,  
"QSL Via Bureau".  
His clothes were all sooty, from his shoes to his vest;  
I felt like a novice taking his test.  
His fingers were calloused and from what I could tell,  
This came from a straight key that I'll bet he used well.  
I offered him coffee, I offered him smokes,  
I tried easing the tension by telling ham jokes.  
Then he nodded his head and raised up his thumb,  
He smiled like an Elmer, did I ever feel dumb.  
He grabbed up his sack and went straight for the tree,  
And placed in it a large present for me.  
When he finished his work, he stood up, took a bow,  
Then out the back door to his team he did plow.  
But I heard him exclaim as he flew o'er the land,  
"Beware the FCC, friend, we were both out of band!"

Merry Christmas from my house to yours!

Found on the internet at [http://myplace.frontier.com/~longrj2/humor/nb\\_hams.html](http://myplace.frontier.com/~longrj2/humor/nb_hams.html)



# COMMUNICATE WITH KENWOOD

## TS-590S HF + 6 Metre Transceiver



*Reveals signals that would be hidden to lesser rigs.*

DSP technology has been taken to the next level with the TS-590S. A 32-bit DSP is deployed from the IF stage forward, the TS-590S marks a bold new chapter in Kenwood's proud history of making compact, high-performance transceivers. The heavy-duty TX design is capable of withstanding long hours of operation under grueling conditions.

## TH-F6A Tri-Band HT with Wide RX



- 5W on ALL THREE BANDS! (3 power levels)
- Up to 8 groups of 50 channels per memory bank
- Wide RX from 0.01~ 1300 MHz\* AM/FM/CW/SSB
- Built-in CTCSS encode/decode/DCS
- Time out timer and auto power off
- MIL-STD 810 for vibration, shock and light rain
- 7.4 Volt 2000 mAh Lithium Ion battery
- Built-in battery charging system

## TM-D710A Dual Band Mobile with TNC

"APRS" data communication system capable of exchanging position information, messages and operating frequency.

- 1000 memory channels
- 50W on VHF and UHF
- NOAA weather alert
- Amber or green display
- Built-in AX.25 compliant TNC
- NMEA 0183 GPS I/O port
- Sound card interface built-in
- Dual receive even on the same band



## TM-281A 2 Metre Mobile

- 200 memory channels
- 65W output
- Alphanumeric display
- Weather alert feature
- Front firing speaker
- Illuminated keys
- Multiple scan functions
- Rugged mil-spec construction
- CTCSS/DCS encode/decode



## TS-990S HF + 6M and Dual RX!



*Nothing else like it on the market today!*

Dual TFT displays and dual receivers along with ethernet, USB and optical ports set Kenwood's new flagship top-of-the-line model apart from anything else on the market. 200W output. Built-in power supply and auto tuner. More info on our web site.

## TH-D72 Dual Band HT with Internal GPS

- 1000 alpha memory channels
- Dual frequency receive
- Built-in GPS, TNC and APRS firmware
- EchoLink ready
- Autodial
- Stand-alone digipeater
- Mini-USB connector for enhanced computer connectivity
- CTCSS/DCS
- MIL-STD810 and IP54 weatherproofing



## TH-K20A 2 Metre 5.5W HT



- Compact and simple to use
- Weighs just 7.4 oz (210g)
- 200 memories with 6 digit memory names
- Full 5.5W output
- Rugged waterproof MIL Spec design
- Backlit display and keypad
- CTCSS encode/decode + tone burst
- Includes li-ion battery & drop in charger

## TM-V71A Dual Band Mobile

Compatible with EchoLink® radio VoIP system.

- 1000 memories
- 5/10/50W VHF/UHF
- Invertible front panel
- Cross band repeat
- Weather alert feature
- Multiple scan modes
- RX 118 - 524 MHz & 800 - 1300 MHz (less cell)
- Dual receive even on the same band VxV, UxU
- CTCSS encode/decode & 1750 Hz tone burst
- Detachable face with optional separation kit



May - Aug M-F 9-5 Sat 9-2 Sept - Apr M-F 9-5 Sat 9-3  
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