



**Publication of the
Northern California
Contest Club**



Issue 489

February 2013

Inside this issue:

VP/CC	3
Streamlining CQP	4
My Hometown Shack	7
The Marathoner's Contest	9
CQP Results	12

Guests are always welcome at the NCCC!
Please join us.

Monday, February 11, 2013

This meeting will be broadcast live via Webex.
Details on the [Webinars Page](#) at nccc.cc

Program

"2012 Membership Survey Results"
"CQP 2012 Results Update"
"Preparing For CQWW WPX SSB Next Month"

Time:

6:00pm Schmooz; 6:30pm dinner,
7:00pm program

This will our first meeting at the excellent Sneha Indian Restaurant, which is a buffet-style restaurant, similar to Harry's Hofbrau. You will be responsible for paying for your own bill either via cash or credit card.

Daily Dinner Buffet

Buffet Price \$12.95 + 9.25%CA Sales Tax = \$14.15
Drinks are not part of the buffet. With tea, coffee, or a soft drink + final tip, plan on a total price of \$20.00.

Location:

Sneha Indian Restaurant, 1214 Apollo Way 404 B, Sunnyvale, CA;

Phone : (408) 481-0700

Directions:

<http://www.grandindianbuffet.com/2722.html>

From the President

I'll keep this brief as we're butting up against the JUG deadline...

We're in the thick of the contest season and NCCC has had one heck of a January – I don't want to steal Dean N6DE's thunder so be sure to see the VP/CC piece this month. What a great team effort by so many members!

I'd especially like to thank all of those members from REDXA and MLDXCC that contributed their scores to NCCC! It's great to have your support and we are continually looking for ways to embrace ALL NCCC members in our activities. Planning is already underway for another tri-club meeting between MLDXCC / NCCC / REDXA – watch for upcoming details.

The February NCCC meeting will see (hopefully!) the beginning of regular webcasting of NCCC meetings. Thanks to K9YC for the audio guidance, N6DE for procurement and K2RD/K6TD for figuring out back up Internet access for those venues with poor (or no) WIFI coverage. The goal is to provide a way for those members who can't make the meeting in person to attend electronically – whether local or remote!

Don't miss the February meeting as this will be the presentation of the survey results – some of the feedback we received has already started action such as looking for ways to expand the content (with quality!) of the JUG. I like to thank all of those who have contributed to this issue and are lining up to help with future issues.



Northern California Contest Club

Excellence In Amateur Radio Contesting

Officers:

President	Stu Phillips	K6TU	stu@ridgelift.com
Vice President	Dean Wood	N6DE	cqden6de@gmail.com
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Director	John Miller	K6MM	k6mm@arrl.net
Director	Ira Stoler	K2RD	k2rd@arrl.net

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	Stu Phillips	K6TU	stu@ridgelift.com

Thursday Night Contesting:

NCCC—Sprint	Ken Keeler	N6RO	kenkeeler@jazznut.com
NS Ladder	Bill Haddon	N6ZFO	haddon.bill@gmail.com
Slow NS (SNS)	Chris Tate	N6WM	ctate@ewnetinc.com

NCCC Net

Thursday 8 PM

Freq: 3.610 +/-

NCCC

Monthly meetings take place on the second Monday of each month !

Details [here](#)

NCCC Membership Information

If you wish to join NCCC, you must fill out an [application for membership](#), which will be read and voted upon at the next monthly meeting. ([PDF application form](#))

To join, you must reside within [club territory](#) which is defined as the maximum of:

- Northern California, anything north of the Tehachapi's up to the Oregon border, and
- A part of north-western Nevada (anything within our ARRL 175-mile radius circle centered at 10 miles North of Auburn on Highway 49).

Finally, I'm delighted that this issue of the JUG publishes the results for CQP 2012! These will also be published on the CQP web site as soon as yours truly writes the summary article to go with them. In the meantime, check out the results later in this issue and also read the article on the efforts we made this year to get the results out in a timely manner.

KB and look forward to working you in the NCCC club focus contests!

Stu K6TU

VP/CC Report

Dean Wood, N6DE

The month of January was huge for NCCC!

ARRL RTTY Roundup: we had over 70 participants inside the NCCC circle, and over 4.1M claimed points for the club competition. It looks like we will break our own club competition record in this contest. The next closest club is PVRC, but it doesn't appear they will catch us. Thanks to Stu K6TU for leading the RTTY Roundup effort.

NAQP CW: NCCC had over 80 members active in this contest, and we fielded 9 teams. Team NCCC #1 appears to have won the NCJ team competition. Thanks to Fred K6DGW for organizing the teams.

NAQP SSB: We're still tabulating the numbers, but it looks like we had about 80 members active in this one as well. We submitted 11 teams. Team NCCC #1 also appears to have won the team competition for this contest. Thanks to Fred K6DGW for organizing the teams.

NAQP club challenge between NCCC, SMC, and PVRC: we are off to a great start and lead so far after NAQP CW, with SMC putting in a very nice score in second place.

If the claimed scores hold, we will have won 3 contests in January! NCCC also won the team competition for the NAQP CW contest last August and the CW Sprint contest last September.

Thanks and congratulations to all NCCC members who participated in these contests!

February Contests

NCJ CW Sprint – February 2, 4PM-8PM PST

<http://www.ncjweb.com/sprintrules.pdf>

CQ WPX RTTY – February 8 4PM PST – February 10 4PM PST

http://www.cqwxprtty.com/WPX_RTTY_Rules_2013.pdf

ARRL DX CW – February 15 4PM PST – February 17 4PM PST

<http://www.arrl.org/arrl-dx>

NAQP RTTY – February 23, 10AM-10PM PST

<http://www.ncjweb.com/naqprules.pdf>

Streamlining CQP

(a.k.a. Getting the results DONE)

Stu Phillips – K6TU

The California QSO Party is the largest state QSO party and now receives as many logs as some of the major ARRL contests. Although submitted logs were down this year (869 logs versus 985 in 2011) the average log size increased and activity was up!

Last year we found ourselves behind the power curve getting the results scored and compiled. Our post contest review showed we had lots of problems from log capture, log scrubbing, scoring... in short the whole end to end process was held together with chewing gum, bailing wire and too much human effort.

By August last year we realized we had a second and far more worrisome challenge – many of the stalwarts that had held the chewing gum and wire together were out of bandwidth due to personal and work commitments. Things were looking ugly.

A core team of Alan K6SRZ (CQP Chair), Alan AD6E, John K6MM, Dean N6DE, Kevin K6TD and Stu K6TU was quickly formed and a timeline drawn up. We broke down each stage of the contest and laid down milestones that needed to be completed. For each milestone we recruited an owner and set a weekly conference call to track progress.

Our 2011 problems had begun right after the contest was over. Despite publishing a web form as the mechanism for log submission, some 40% of logs had still been emailed to the contest robot. Except there WAS NO ROBOT! Dean N6DE, who had personally reviewed each and every log he received for correct format or conversion, had staffed the CQP log email account. Not only was this a herculean task but Dean was swamped at work and literally was out of bandwidth.

But Contest log submission is a standard, right? Cabrillo is the standard and everyone sends in Cabrillo logs, right? That would be 2 x NO! Logs arrive mostly in Cabrillo. Cabrillo generated by 80+ logging programs some of which interpret the Cabrillo specification in unique (and wrong!) ways for CQP. We also get about 10% of logs in every format you can think of... ADIF, Excel spreadsheets and my personal all-time-favorite – a PDF of a Cabrillo log print out.

But the problem hadn't stopped there... data in the Cabrillo files wasn't always valid for CQP (or the Cabrillo spec for that matter). Here are some of the novelties we encounter every year:

- A mode of SSB/USB/LSB (Cabrillo spec says PH or CW)

- Country name instead of DX

- A sent QTH of "SANTA CLARA" or "CA" – not CQP valid exchanges

It goes on and on... Last year, a lot of this invalid data made it into the log checking process and caused endless runs of GREEN (the CQP log scoring program) and manual edits of literally hundreds of logs. This in turn has led to some logs being missed in the scoring and results compilation process which then needed multiple iterations of the final score table.

After much discussion with K6TD and AD6E, both past CQP-chairs themselves and with a wealth of war wounds from this process, we agreed we needed a new log collection process and a way to keep the data clean from the start. A database was the obvious choice but time was getting tight... To be confident that we had a workable solution, we needed to have something up, running and tested by the middle of September.

At the beginning of August, Stu K6TU laid down a proposal to implement a new contest robot that would feed a database. John K6MM put together a new web form on the CQP web site that fed all submitted logs plus those sent to the CQP LOG alias into a master email account with a backup archive in a separate account.

Stu started coding and reached out for help. Steve W1SRD and Tom NS6T both stepped forward – Steve designed the master schema for the database and Tom started work on the report generation driven from the database.

Stu implemented a new robot that was driven from a GMAIL account. We had had challenges in the past with email robots because there are so many different ways of specifying attachments. Fortunately Google had spent a lot of resources to get this right and provided a standard protocol (IMAP) to access email accounts programmatically.

Using Amazon Web Services, Stu spun up robot.cqp.org which hosted the newly crafted email robot and the MYSQL database that would hold all the incoming logs. We knew that there would still be logs in non-Cabrillo formats so once again George K6GT stepped up to handle all process of Cabrillofication.

The new robot provided a lot of upfront log validation – where possible, logs that were valid Cabrillo were automatically loaded into the database and an acknowledgement email sent. Non-standard logs were divided into different issues such as invalid Cabrillo, a non-Cabrillo format etc. These also generated a response and were flagged for human attention.

W1SRD had designed a database schema that would help clean up many of the systemic problems that we knew would occur. The process of cleaning up the logs occurred in parallel with the log submission process through a number of additional utilities written by Stu. The database also enabled rapid correction of any problems that crept through – fortunately there weren't many of these!

Because of Hurricane Sandy, we extended the log submission deadline by two weeks – there were a number of East Coast stations that couldn't retrieve their logs due to the ongoing power outages. This took us to the middle of November.

By the beginning of December, Stu had scrubbed all the logs and ran them through the GREEN scoring engine. We scheduled a training session for the 15 log checkers:

K6SRZ	K6TU	W4UAT	AD6E	W6OAT
N16T	KM6I	N6NUL	KE1B	K6DGW
W1RH	N6DE	N6GY	K6OK	K6XX

Dean N6DE did a webcast for the training and John K6MM arranged to record the session for reference by the log checkers as needed.

Thanks to all the log checkers, the log checking was completed before Christmas! We were almost two months ahead of the 2011 process.

Stu collected back all the logs and began the process of scoring the checked logs (again with GREEN), loading all the scores into the database and chasing down a handful or two of wayward logs that had gone AWOL in the log checking process.

By the beginning of January, Stu passed the baton to Tom NS6T to generate the PDFs of all the log reports. In the past, the work to generate the score report had involved a large Excel spreadsheet and a lot of manual manipulation – a process which itself had usually taken 4-6 weeks.

Within a week Tom had the draft reports generated! These were circulated to the same CQP core team listed above and the eagle eyes of Dean and Kevin applied to the results themselves.

The results were done before the end of January allowing Alan K6SRZ to start ordering plaques and printing wine bottle labels for the winners. The results for CQP 2012 were a wrap and you can find them later in this issue of the JUG.

BUT... it doesn't stop there. This year we are continuing the re-tooling process. Tom NS6T, Matt WX5S and Stu K6TU are working on further improvements to the process with the goal of having the results finished by the end of November. No, this isn't a typo... our goal is to get the results published 30 days after the log submission deadline. We don't know if we can do this – and we may not be able to reach the goal in 2013 but it's the objective.

No write up of CQP would be complete without acknowledging the work of Bob N6TV in stumping for the county activation plan, Matt WX5S for writing GREEN and his encyclopedic knowledge of the process & issues, or John K6MM for his PR work and web mastery of the CQP site.

Thanks to all and onward for CQP 2013!

Stu K6TU

My Townhome Shack

by Byron N6NUL

Well Grounded

In ham radio there are many things that cause confusion, but is anything more confusing than the concept of "ground"? It is such an overloaded term, the confusion was inevitable.



Lightning ground. Earth ground. Fault protection ground. Signal reference ground. Radio Frequency return. All different. Yet all connected at one point or another. This is a constant source of confusion to me: at the human scale, electronics turn into more ... gradients of potential, I suppose.

But, in all of the material I have read, a well-grounded shack is ringed by ground rods bonded together, no closer than one ground rod length apart and outside the drip line of the building. If a tower is present, that also has a ring of ground rods that are connected to the shack ground as well. Not that a tower is a luxury I have.

Here at my townhome shack, this came up a couple of years ago when I decided to move my shack from the second story of my townhome to a cubbyhole in the garage [image 1]. This was the beginning of my journey to try and implement the features of a big station in miniature, and the first step was a custom antenna entry panel [image 2], with lots of room for expansion, and proper earth grounding.



My complex is about an acre in size, the vast majority covered in reinforced concrete, so a ring of ground rods was out from the start. But, our house grounds are lengths of rebar bent up from the concrete and connected to the service entry panel (an UFER ground). Reasoning that if I added a rod near my new shack location, and additional rods to go around the corner and connect to the service panel, I would effectively circle my shack.



It would also be completely unnecessary, and a lot of work. A win-win! How could I resist?

As figure 1 shows, my back yard extends only around about 1/4 of my home. Much of the yard is also covered with brick. Fortunately, I had conduit put in before the brick was laid, so running wire under the brick was possible.

The trench for the ground rods can be seen in image 3, along with the length of French drain I had to replace after I dug a hole in the original. The antenna entry panel is under the stairs, across from the drain.

Figure 1 also shows the layout of my ground rods. The rods are 8 foot long 5/8" copper clad steel rods from Erico, except for one 1/2" rod from a previous (and incorrect) installation. I bonded them together with solid #4 copper using Erico One-Shots [watch my first One-Shot at <http://youtu.be/j3MwokpxSco>].

As near as I could, they are all buried 18 inches deep [MIL-STD-188-124B, 1992], except where the system runs through the conduit under the brick. Most of the rods have additional lengths of #4 to ground things like RX loops, my antenna entry panel, etc.. The entire system is connected to the ground bus at my service entry panel.

Do not skip this step! It is required by the National Electrical Code, and every reference I have found for grounding, including the ARRL Handbook, includes it. Anything else is unsafe, even if you only add 1 extra rod. Also, call Before-YouDig (dial 811) before you trench! They will mark where the danger spots are, especially around your service panel. Its easy and free.

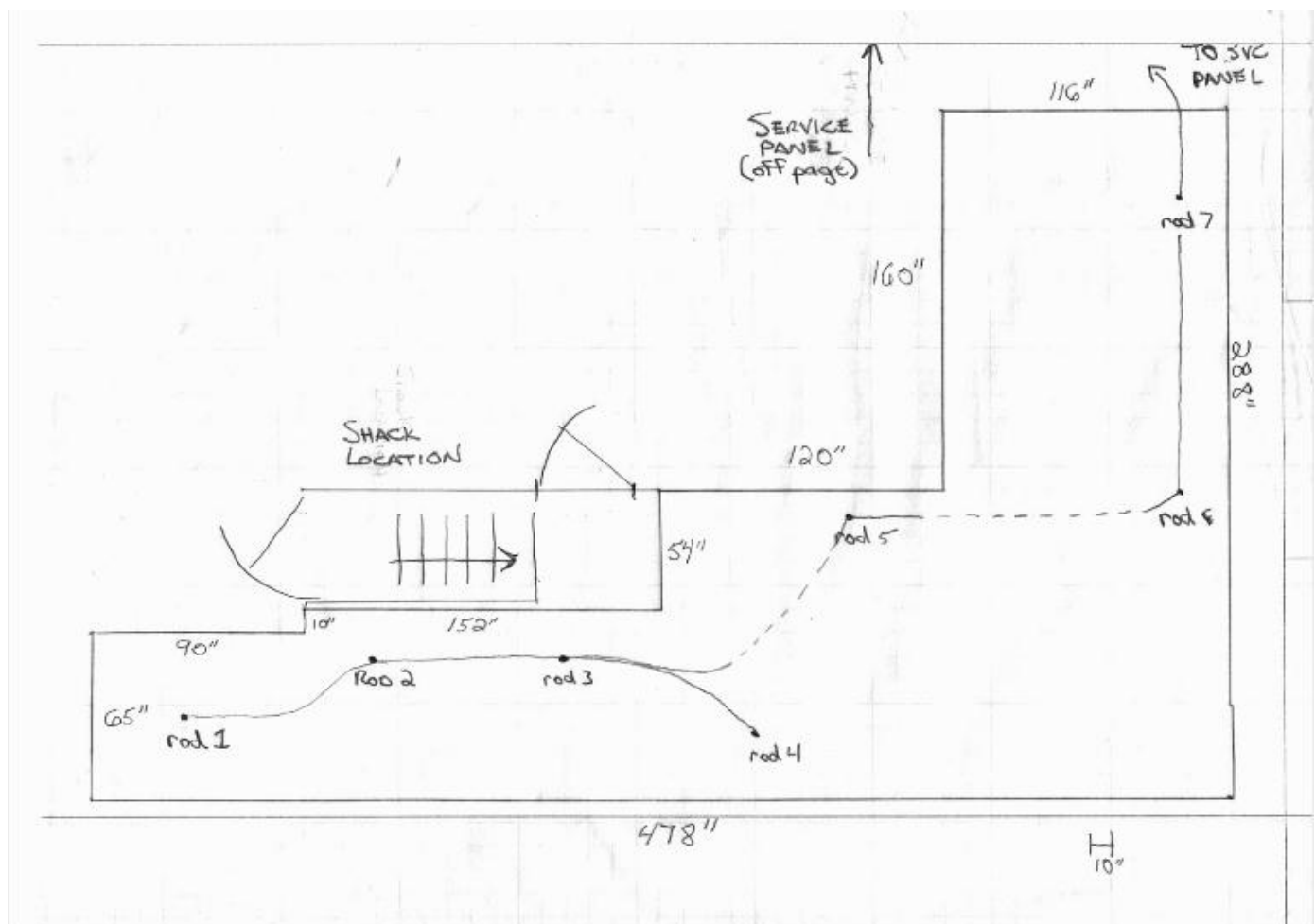
The rainy season is the perfect time for digging in Santa Cruz, by the way. The water loosens the "soil" (clay, really), so it is at least possible. Its still ridiculously hard, though, and after a trip to the emergency room to have a 1/4" splinter from the handle of a borrowed pickaxe removed from my hand, I called a gardener.

His crew took away about 6 inches of soil from the entire dirt portion of my yard in a couple of hours. This made finishing the trench easy, and after I installed the earth ground system, they filled it all back in with composted soil for my trees.

Yeah. I did it for the trees. That's my story and I'm sticking with it!

Ironically, all the digging has me interested in gardening for the first time in my life, and made the idea of adding a ground screen as recommended by Jim K9YC for 160m not so daunting.

73, Byron N6NUL



THE MARATHONER'S CONTEST

Ron Angle, K6KYJ

This article is about, and for, the Little Pistol guys (and gals), those amateur radio stations running a hundred watts into (maybe) a modest Yagi and a bunch of wire antennas. Search and Pounce is the only mantra they know. Running stations is an experience known only to the Other Guys, the Big Guns.

It is about a contest where YOU become the DX station for the rest of the world. It is a contest where you will hear many of those rare DX countries that only come on once in a while, and those countries need to work you to earn any points. While they are earning points, you are boosting your DXCC totals!

It is the 2013 ARRL International DX contest. The CW competition is February 16-17 and the SSB portion is March 2-3. Radio Sport—contesting—is a lot like competitive running. There are a lot of options: sprints, middle distance races, and all that long distance stuff.

In high school, I started out running the quarter mile. I never had the stuff for sprints. Gradually, I went to longer and longer distance races. Just before graduation, I actually completed a half marathon (fourteen miles) just a month after my eighteenth birthday.

In amateur radio contesting, my perspective is about the same. CW sprints are just not in my league. My code speed is still good at age 70 but my brain just does not process the sprint sequences very well. I am not very good at math, either. (Yes, there are people in amateur radio who are not engineers.)

I have always enjoyed Sweepstakes. It is like a quarter mile race where you come off the starting line at a brisk pace and then you just keep running until you collapse or finish the race. It is one speed all the way with the butt in the chair until the end.

I am a distance runner, however, and there is no contest more enjoyable for me than the ARRL DX contest. It is forty eight hours of radio spread across all the major bands. It is a race where only those that can pace themselves will survive and win. Strategy, knowledge of propagation, good ears, and a cast-iron butt are all essential.

Ask any winner of this contest in the low power unassisted class and you will hear stories of simply falling asleep and awakening when your head hits the keyboard. There are no time limits: you have forty eight hours...use them well!

The secret of this contest is simple: you are the DX. Everyone outside W/VE land must work you to score points. You won't hear JA's working Europe, ignoring everyone else. When the time is ripe, you will hear more JA's calling you than you might imagine.

Actually, the ARRL DX contest, whether CW or SSB, is geographically two very different contests. For those on the East Coast, it is an ongoing hog feed of working EU's on nearly every band. But, when Europe is gone, those same Easterners often struggle with JA and the rest of Asia.

Here on the West Coast, the Little Pistol can only hope for very favorable propagation in order to briefly wallow in EU-land during selective band openings. Being near the peak of a sunspot cycle certainly helps. Again, this is from the Lil' Pistol perspective, where Steppir refers to a quick sprint to the bathroom in the middle of a pileup.

Late in the afternoon when propagation moves to the west on the higher frequencies, a hundred watts and a dipole can bring up twenty JA's answering your "CQ contest" bleat. This is when you may actually start a brief run all of your own. And, when you answer that HL station calling "CQ USA", the chances are good that he will come back to you on the first call while the East Coast will just be background noise.

There is only one essential supporting tool: a global map of the gray line. Knowing when to change bands to make the most of gray line openings is the key to maintaining momentum.

In a forty eight hour contest, sooner or later one has to sleep for at least a while. As a search and pounce tester, I watch my per hour rate meter. When the rate reaches comatose level, I crash for a while.

The secret is to know when to wake up. The same station can be worked on every band—160 to 10 meters—so multipliers are easy to pile up. With even modest wire antennas, the low bands can be very productive late at night. Don't even think about sleeping between four a.m. and sunrise.

The ARRL DX contest, especially the CW competition, is a very level playing field for Lil' Pistols unlike contests such as the CQ WW. I earned my first CW section certificate in 1989. I had just purchased a very used SB-101 for \$125. There was no break-in keying; I rigged a push-button switch into the PTT wiring for semi-fast T/R. It didn't matter that much, though. I was using a straight key and logging on paper! What helped was that I was at the peak of a very good sunspot cycle with Europe coming in all over 10 meters. I only slept for about six of the forty eight hours of the contest.

In 1996, I had upgraded to a \$350 Kenwood TS-820S with the external VFO, a keyer and paddle, and TRLog for digital logging. Another section first was the happy result. My third win for Sacramento Valley came in 2005, with the same setup and the same six-band wire antenna farm. Shortly after that, a monster storm dropped a large walnut tree on my rooftop and brought down the entire antenna system.

I strongly recommend that all of my fellow Little Pistols out there update your international callsign database, catch up on sleep, and then head to the starting line for a marathon of DX contesting. You will enjoy the experience.

[The author was first licensed as KN6KYJ in 1955. You can read his account of some humorous CQP adventures at <http://www.withmy2hands.org/k6kyj/cqp/otherside/>]

CW Tuning Aid

Is your hearing shot like mine? Do you have trouble quickly zero beating a CW signal?

I love the CWT feature on my Elecraft K3. This visual aid helps me center a CW signal in the receive passband. But, maybe you don't have a K3 or maybe, like me, the computer screen is your main focus. Wouldn't it be nice to have a CW tuning aid on your computer monitor? 2Tone to the rescue.

2Tone is an RTTY decoder developed by G3YYD. Right now, 2Tones works only with N1MM Logger and the Italian-language program QARTest by IK3QAR http://www.ik3qar.it/software/qartest_ita/ . It will work with the next release of Logger32 <http://www.logger32.net/> . 2Tone will not work as a standalone program.

You can get 2Tone at <http://groups.yahoo.com/group/N1MMLogger-Digital/files/G3YYD?prop=eupdate> . Installation instructions are included in the zip file.

After install, bring up N1MM Logger and then 2Tone. For CW-tuning-aid use, move the Digital Interface print window out of the way. I stick it in the lower-right corner of my monitor with only a small bit showing.

Position the 2Tone DI RX window where you can see it easily. Click on Setup. Adjust both Mark and Space Frequencies to your transceiver sidetone frequency. Adjust Display Width to your receive bandwidth. Click OK. Note, the lowest space frequency that 2Tone will accept is 651 Hertz, so your sidetone must be 651 Hertz or higher.

CW Exuberantly,

Hank, W6SX

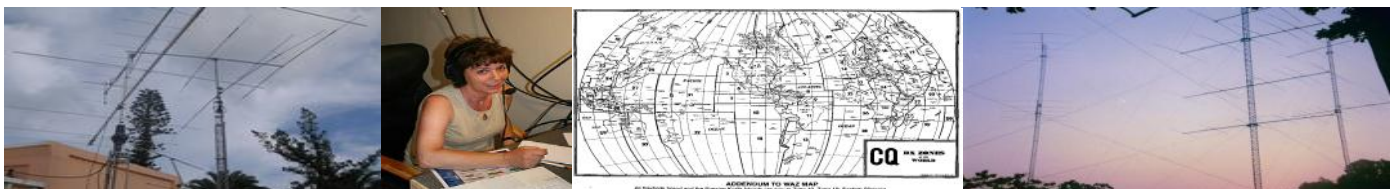


Please consider writing an article for JUG !

March 2013 Newsletter Deadline—February 28th

This is your newsletter so lets make it something we are proud of. I hope you will consider writing an article for the JUG! Whether its about your station, recent contest experience or a technical article we would appreciate hearing from you.

Send your articles to Ian W6TCP w6tcp@comcast.net and Stu K6TU stu@ridgelift.com



Alameda	CW	PH	Total	Mult	Score	Type
W6RGG	354	0	354	48	51,048	
KJ6MBW	315	0	315	46	43,470	L
K6JAT	0	311	311	45	27,990	L
K6YEK	0	181	181	32	10,304	L
KG6UEF	0	107	107	37	7,918	L
KI6OY	9	60	69	29	4,263	L
KJ6AMF	0	58	58	30	3,360	L
KJ6PVN	0	12	12	6	144	Q
K6G (N6WM, KG6C, NS6T, AG6KY)	671	815	1,486	58	211,294	M/S
Alpine	CW	PH	Total	Mult	Score	Type
N6A	1,257	918	2,175	57	319,684	M/M E
<i>N6A ops = W4UAT, K6DGW, W6OA, K3UG, N6DB, N6NV, NU6T, KQ6DI</i>						
Amador	CW	PH	Total	Mult	Score	Type
AE6Y ¹ (@K6TA/K6KO)	1,149	1,184	2,313	58	335,037	
ND6S	0	646	646	54	69,822	L
W6KAP	0	543	543	48	52,128	L
W6RKC	299	0	299	45	40,365	
AG6EL	0	261	261	50	26,150	
K6BEW	54	2	56	30	5,025	L
KJ6RKZ	0	27	27	20	1,080	L
KJ6SII	0	30	30	13	780	
N3CKF (+ KI6SEJ)	0	270	270	37	19,980	M/S L
Butte	CW	PH	Total	Mult	Score	Type
W6AF	0	239	239	31	14,849	L
W7XZ	101	13	114	31	10,245	L
K6AQL (K0DI op)	20	0	20	17	1,020	M
N6VV (+ K6XV, W7DR)	292	102	394	47	50,807	M/S E
Calaveras	CW	PH	Total	Mult	Score	Type
WC6H ²	988	1,463	2,449	58	341,359	
WA6ZTY	0	21	21	15	645	
N6IV (+ WB6QVI)	67	58	123	40	12,520	M/S L E
Colusa	CW	PH	Total	Mult	Score	Type
W6VNG	0	652	652	55	71,775	
K6AQL (K0DI op)	120	0	120	33	11,880	M
Contra Costa	CW	PH	Total	Mult	Score	Type
K6AAX	0	786	786	56	88,086	



2012 California QSO Party (CQP) – US Results (CA)

Contra Costa	CW	PH	Total	Mult	Score	Type
N8PN	497	0	497	47	70,077	L
K8JEB	134	34	168	36	16,974	
N8ORB	0	148	148	35	10,360	L
N8ENO	0	116	116	31	7,223	L
W8ONV	14	39	53	26	3,146	L
N8O (@N8RO)	1,903	2,926	4,829	58	670,625	M/M

N8O ops = JN3NFQ, K3EST, K6AW, N6BV, N6RO, W6NOW, W6ONV, WA6O, WX5S

El Dorado	CW	PH	Total	Mult	Score	Type
K8LRN	989	0	989	54	160,218	
AF8OP	0	463	463	52	48,204	L
W8VMT	0	373	373	39	29,094	L
K8OLY	0	115	115	34	7,854	L
W8HFM	0	109	109	27	5,913	L
N8MCM	0	100	100	29	5,829	L
KG8YST	0	49	49	23	2,254	L
KQ8X	11	30	41	17	1,581	L
K8C (W1RH, AA1ON)	1,098	1,062	2,160	58	314,244	M/S
W8S (KE8GLA, KG8PNP, KJ8NLD)	21	724	745	54	81,648	M/S
K8TKD (+ K8LRN)	0	470	470	51	47,991	M/S

Fresno	CW	PH	Total	Mult	Score	Type
N8F (AK7G op)	599	106	705	51	102,459	
W8YO (N2NS op)	352	31	383	46	51,474	
K8AQL (K0DI op)	33	0	33	17	1,708	M
W8DPD	0	31	31	17	1,071	L
KJ8HUP	0	20	20	12	492	L
K8AAB	325	0	325	43	41,925	M/S L

Glenn	CW	PH	Total	Mult	Score	Type
K8AQL (K0DI op)	15	0	15	4	180	M
N8EEB (N8DA, AE8YN, WT8K)	1,028	446	1,474	56	222,656	M/M E

Humboldt	CW	PH	Total	Mult	Score	Type
W8JTI	631	250	881	53	126,882	Q
AA8DX	147	122	269	40	27,500	
W8FCS	0	57	57	24	2,760	
K8FWT	0	27	27	12	648	L

Imperial	CW	PH	Total	Mult	Score	Type
K8QK	891	1,169	2,060	57	285,627	M/S E

K8QK ops = N7CW, K6ZH, NN6X, N6EEG, N6ERD

Imperial	CW	PH	Total	Mult	Score	Type
N7YDX/6	0	105	105	28	5,880	M/M L E
<i>N7YDX/6 ops = K7YMA, W7HG, KF7TEU</i>						
Inyo	CW	PH	Total	Mult	Score	Type
W8PH ³	857	1,076	1,933	57	269,353	
AD6NR	0	685	685	56	76,720	L
Kern	CW	PH	Total	Mult	Score	Type
KI6VC	580	572	1,152	56	161,644	
KJ6MQM	0	231	231	46	21,298	L YL
K6AQL (K0DI op)	54	0	54	24	3,888	M
KJ6HBY	0	16	16	9	297	Q
Kings	CW	PH	Total	Mult	Score	Type
K6AQL (K0DI op)	108	0	108	31	10,090	M
KI6QEL	0	52	52	24	2,520	L E
W0HJW (+ N6CVK)	0	869	869	57	99,066	M/S
Lake	CW	PH	Total	Mult	Score	Type
N6ZFO ⁴	873	714	1,587	57	230,679	L
Lassen	CW	PH	Total	Mult	Score	Type
KE6UAR	0	483	483	50	48,350	L E
N6WBL	0	8	8	5	80	L M
Los Angeles	CW	PH	Total	Mult	Score	Type
K6LA	1,271	977	2,248	58	334,631	
W8R (W1NN op @WA6URY)	1,023	524	1,547	57	234,669	L
N6AN (@W6UE)	523	481	1,004	57	144,352	
W6AFA	0	1,150	1,150	58	133,400	
KM6Z	741	138	879	49	122,451	L
NK6A	502	318	820	52	111,384	
N6NO	533	0	533	50	79,950	L
N6VOH	45	567	612	56	71,204	
W6AQ	370	123	493	48	65,160	Q
N6QQ	0	585	585	53	59,890	
W6JK	8	411	419	50	42,300	L
NC6Q	257	0	257	43	33,217	L
AE6XC	0	269	269	45	24,255	L
KA6AIL	3	93	96	35	6,825	Q
KD6SMC	0	100	100	31	6,200	L
K6AQL (K0DI op)	61	0	61	28	5,124	M



2012 California QSO Party (CQP) – US Results (CA)

Location	CW	PH	Total	Mult	Score	Type
Los Angeles						
W6SMT	0	78	78	26	4,056	
KF6HI	0	35	35	23	1,610	L
K6ICS	0	43	43	17	1,462	L
KE6ZGP	0	25	25	20	1,020	Q
KJ6KGZ	0	27	27	15	825	L
AD6AF	0	27	27	11	594	L
K6HTN	60	0	60	2	363	L
N6YMK	0	9	9	6	108	L
KE6DII	0	1	1	1	2	Q
N6HD (+ K16FGV)	568	1,186	1,754	56	228,256	M/S
N6MDV (+ K6VHY)	0	249	249	44	21,912	M/S L
Madera						
KD6FW	0	799	799	57	91,086	
K6AQL (K0DI op)	43	0	43	23	3,001	M
Marin						
K6RIM	1,032	688	1,720	57	254,961	
W6UDS (+ N6VAW)	0	104	104	28	5,852	M/S L
Mariposa						
N6NZ	481	1,295	1,776	57	229,966	
AD6RF	0	23	23	19	874	L
Mendocino						
K3FIV/6 (K3FIV op)	443	285	728	52	98,748	L
KE6WC	0	455	455	51	46,461	L
K16ORO	0	190	190	34	12,920	L YL
Merced						
K6AQL (K0DI op)	31	0	31	23	2,173	M
K6MM (+ W6OAT, ND2T, N6DE)	1,046	648	1,694	56	248,360	M/S E
Modoc						
NU6C	0	410	410	52	42,640	L
N6FC	0	67	67	27	3,645	L E
N6M	1,352	1,354	2,706	58	392,457	M/M E
<i>N6M ops = NX1P, K2DI, K4XU, AA5TL, KA5ZLQ, AE7IK, KF7PLP, WN7K, KF7SXI, K7YLO, W7YOW</i>						
K6M (WQ6X, N6GEO)	537	254	791	50	106,000	M/M L E

Mono	CW	PH	Total	Mult	Score	Type
W8ML (W8KC op)	978	637	1,615	58	244,122	E
W8SX	545	289	814	55	119,652	
WA8MRK	0	20	20	9	389	L
Monterey	CW	PH	Total	Mult	Score	Type
N8MW	401	29	430	49	61,789	
K8AQL (K0DI op)	117	0	117	35	12,285	M
K8VVA/M (K8VVA op)	50	54	104	32	8,336	L E
KE8PPE	0	12	12	9	216	L
KQ6RE	0	502	502	53	53,212	M/S L
<i>KQ6RE ops = KQ6RE, KI6FKY, KI6RVW, KI8CX</i>						
N8IJ	5	48	53	26	2,912	M/M
<i>N8IJ ops = KG6UBG, K6GRL, AF6TP, KJ6SWL</i>						
Napa	CW	PH	Total	Mult	Score	Type
KE8ZSN	0	1,128	1,128	58	130,848	
KO8JF	0	206	206	39	16,107	L
W8OSP (+ WW8D)	1,308	0	1,308	56	219,744	M/S
Nevada	CW	PH	Total	Mult	Score	Type
WB8JJJ	128	729	857	58	106,981	
NC8RJ	393	0	393	47	55,413	L
K8NV	300	0	300	49	44,100	
NC8PT	0	30	30	13	780	L
W8FA (+ W8DR)	653	270	923	54	134,946	M/S
K8III	271	69	340	40	38,040	M/S
WB8CZG (+ K8ST)	16	299	315	47	30,432	M/S
W8DOJ (K8XN, K8YN)	578	653	1,231	57	173,422	M/M
Orange	CW	PH	Total	Mult	Score	Type
N8HC	680	950	1,630	57	224,637	
NN8CH	547	259	806	54	116,721	L
W8ZL	415	126	541	53	79,394	L
KB8A	193	18	211	46	28,290	L
KM8HB	2	214	216	39	17,023	
N8CHU	129	0	129	32	12,384	L
KF8I	116	0	116	34	11,832	
N8GP	113	4	117	28	9,716	
W8SJ	27	0	27	18	1,458	Q
KE8GFI	0	33	33	20	1,320	YL

Placer	CW	PH	Total	Mult	Score	Type
W6RFF	553	0	553	51	84,609	
WX6V	416	154	570	53	82,468	
K6MMU	0	102	102	27	5,508	L
K6ALF	0	17	17	8	272	L
KG6YHH	0	32	32	20	1,280	M/S
Plumas	CW	PH	Total	Mult	Score	Type
K6CQP (KH2TJ op)	320	136	456	47	57,974	L
K6JS (+ K6TTR, KU6F)	806	783	1,589	58	231,072	M/M L E
Riverside	CW	PH	Total	Mult	Score	Type
WA6KHK	710	556	1,266	56	181,692	L
N6MI	315	437	752	57	103,825	L E
NC6V	328	6	334	45	44,820	L
K16CDF	0	203	203	39	15,873	
NV6C (W6ELI, KJ6NO)	0	106	106	34	7,242	M/S L E
Sacramento	CW	PH	Total	Mult	Score	Type
WF6O	0	582	582	55	64,075	
N6JV	367	113	480	48	63,744	
N6ZS	107	323	430	55	53,185	
N6RK	126	187	313	49	36,970	
K6OK	88	192	280	47	30,526	L
KP4MD/6	48	86	134	35	11,060	L YL
K6AQL (K0DI op)	52	0	52	28	4,368	M
N6WBL	0	39	39	19	1,482	L M
N6EF	115	0	115	39	13,513	M/S L
NM3S	0	104	104	31	6,479	M/S L
San Benito	CW	PH	Total	Mult	Score	Type
K6VVA/6 (K6VVA op)	116	8	124	32	11,696	L E
KJ6BNO	0	100	100	26	5,200	E YL
K6AQL (K0DI op)	49	0	49	26	3,861	M
K0DTJ	49	0	49	21	3,087	Q
W6TST	0	23	23	9	414	L
AE6RF	0	0	0	1	1	E
N6LY (+ N6HKT, W6TST)	0	304	304	46	27,968	M/S L
K6WC	372	78	450	48	61,104	M/M E
<i>K6WC ops = AE6RF, N6NUL, KG6YPH, KJ6BNO, K3RRY, KE6AFE</i>						
San Bernardino	CW	PH	Total	Mult	Score	Type
N6WIN ⁵	857	1,283	2,140	57	292,866	

2012 California QSO Party (CQP) – US Results (CA)

San Bernardino	CW	PH	Total	Mult	Score	Type
KQ6ES	855	0	855	52	133,380	
WB6HYH	0	642	642	55	70,675	L
W6W (W6WW op)	0	234	234	43	20,124	L
N6OIL	0	62	62	23	2,852	L
AE6MO	0	62	62	21	2,604	L
K6VO	832	1,043	1,875	58	265,901	M/S
<i>K6VO ops = K6NR, NR7E, K6RBS, AG6GL, NJ6N</i>						

San Diego	CW	PH	Total	Mult	Score	Type
W6YT ⁸ (N6MJ op)	1,298	1,772	3,070	58	431,549	
K6NA (N6ED op)	1,046	1,383	2,429	57	336,528	
K6AM	935	747	1,682	57	245,043	L
NC6K	848	312	1,160	57	180,718	
WN6K	625	451	1,076	54	150,093	L
W6/NN3V (NN3V op)	444	124	568	50	79,000	L
N6NC	537	0	537	49	78,939	
W6KY	330	101	431	42	50,106	L
N5ZO/6 (N5ZO op)	300	25	325	49	46,623	
K2RP	285	63	348	46	45,172	
AD6ZJ	0	376	376	51	38,352	L
KF6ILA	0	342	342	54	36,990	
A16O	244	0	244	42	30,744	
AK6R	113	112	225	42	23,709	L
KC6MIE	0	201	201	44	17,732	L
N6VH	53	49	102	24	6,204	L
W6ABE	0	90	90	34	6,154	L
WA3YTI	0	42	42	25	2,100	L
W6YOO	0	29	29	17	1,003	
W6MF	0	25	25	17	850	L
NX6T	954	1,158	2,112	57	295,203	M/S E
<i>NX6T ops = N6KI, N6CY, AF6WF, K6KAL, K6GO, NA6MB, WB6NBU, K4RB, W2PWS</i>						
KK6TV (+ KE6PY)	211	141	352	45	41,175	M/S L
AE6IC (+ KJ6JUS)	138	225	363	47	40,608	M/S
AF6WF	0	228	228	43	19,608	M/S YL

San Francisco	CW	PH	Total	Mult	Score	Type
NM6E	115	61	176	40	18,780	L E
N1GPT	0	223	223	32	14,272	L
W6PW	726	655	1,381	55	191,922	M/S L
<i>W6PW ops = KJ6OGE, KJ6PTX, KC9DPP, WN6WJN, K7GK</i>						

San Joaquin	CW	PH	Total	Mult	Score	Type
AA6K	0	615	615	57	70,167	L
KE5JTS	0	110	110	28	6,188	L
K8AQL (K0DI op)	46	0	46	28	3,906	M
W6SF	16	100	116	25	6,225	M/S L
<i>W6SF ops = WB6NVB, N6LHL, N6DCH, N6NSU, W6INP</i>						
NZ6Q (+ KB6UNC)	303	294	597	50	74,850	M/M L
San Luis Obispo	CW	PH	Total	Mult	Score	Type
W6TK	892	1,057	1,949	57	273,030	
KA3DRR (@W6SL)	736	177	913	52	133,302	
K6RQT	359	83	442	47	58,491	L
W6ROX	0	360	360	53	38,160	YL
K8AQL (K0DI op)	19	0	19	13	741	M
San Mateo	CW	PH	Total	Mult	Score	Type
NO6F⁷ (K2RD op)	1,016	1,011	2,027	58	294,205	
K6TU	404	231	635	53	88,854	
N6NF	182	246	428	48	49,944	
NQ6N	363	0	363	45	49,072	
K6ADG	0	105	105	26	5,460	Q
N6BCT	4	42	46	12	1,164	L
KJ6ANT	0	21	21	13	559	L E
KF6YCS	0	7	7	8	120	Q
Santa Barbara	CW	PH	Total	Mult	Score	Type
WA6FGV	697	696	1,393	57	198,588	
W6RFU (N6RA op)	390	338	728	57	105,279	
Santa Clara	CW	PH	Total	Mult	Score	Type
N6TV	1,696	0	1,696	56	284,928	
N6XI	1,009	0	1,009	53	160,431	
K6GT	579	239	818	54	119,745	
K6YT	529	0	529	52	82,602	
KM6I	438	68	506	47	68,197	L
K6ATZ	0	484	484	53	51,304	L
AC6YY	264	0	264	48	38,088	Q M
N6AJS	108	136	244	41	24,477	L
K6ZFG	0	226	226	45	20,340	L
K6KQV	146	0	146	41	17,958	L
W6CT	168	0	168	33	16,632	L
K6VVA	95	24	119	32	10,656	
W6FB	0	127	127	26	6,630	

2012 California QSO Party (CQP) – US Results (CA)

Santa Clara	CW	PH	Total	Mult	Score	Type
KE8TIM	0	108	108	27	5,859	L
KJ8LBA	0	79	79	22	3,498	L
K8AQL (K0DI op)	40	0	40	18	2,160	M
KG8OJV	0	45	45	17	1,530	L
KJ8VRJ	0	34	34	19	1,292	Q
N3FAW	0	6	6	4	52	L
K8WV	0	121	121	29	7,047	M/S
W6YX	1,548	2,279	3,827	58	533,774	M/M
<i>W6YX ops = ND2T, K2YY, N7MH, KZ2V, W6RK, KG6O, KB0VVT, K6SF, KG0US, KG6NUB</i>						
Santa Cruz	CW	PH	Total	Mult	Score	Type
K8XX	1,236	1,095	2,331	56	330,428	
W8NN ^B	697	946	1,643	58	231,072	YL
K8RB	591	127	718	56	113,652	
K8GHA	0	735	735	58	85,318	L
N8CK	31	417	448	49	45,423	
AC8SL	209	0	209	45	28,282	L
KA8MAL	22	265	287	47	28,012	L
N8TH	209	0	209	43	27,025	L
AF8GQ	10	131	141	32	9,344	L
K2ACK	0	45	45	18	1,620	L
Shasta	CW	PH	Total	Mult	Score	Type
K8PVA	0	243	243	32	15,552	L
K8KS	0	98	98	28	5,516	L
K8LJC	11	78	89	27	5,130	
AF8P	0	98	98	22	4,312	
Sierra	CW	PH	Total	Mult	Score	Type
K1NV	6	88	94	33	6,484	L
WM7Y/6	0	80	80	27	4,347	L E
N8WBL	0	24	24	9	432	L M
WU8X (+ AE8LR)	149	328	477	53	58,512	M/S L E
Siskiyou	CW	PH	Total	Mult	Score	Type
WA8ST	0	806	806	57	91,884	
KJ8RA	0	322	322	50	32,250	
K8GPB	53	0	53	19	3,021	L
Solano	CW	PH	Total	Mult	Score	Type
N8AJR	0	400	400	52	41,600	
KE8QR	141	135	276	50	34,650	L

	CW	PH	Total	Mult	Score	Type
Solano						
N8UUU (+ N6JS)	0	1,337	1,337	58	155,092	M/S
K8MP (+ KJ6INR)	0	721	721	57	82,194	M/S L E
Sonoma						
N8IE	684	1,204	1,888	57	254,277	
W6XU	924	640	1,564	57	230,964	
KG8N	532	535	1,067	58	154,686	
WX8B	0	602	602	56	67,424	
N8YEU	257	188	445	50	57,350	
N8GY	0	153	153	40	12,240	L
W8IYS	107	0	107	36	11,556	L
AE8YB	0	112	112	36	8,100	L
W8GMP	0	35	35	23	1,633	L
KI8ZON	0	44	44	17	1,513	L
WE4MOO	0	2	2	2	10	L
WB8FRZ (+ KJ8YFD)	25	50	75	28	4,900	M/S L
Stanislaus						
W6XK	451	133	584	55	89,045	
K8CSL	281	0	281	45	38,002	L
K8AQL (K0DI op)	24	0	24	17	1,224	M
Sutter						
N8BOB	0	374	374	52	38,896	
W6BO	39	137	176	33	12,985	
K8AQL (K0DI op)	120	0	120	36	12,960	M
Tehama						
K8AQL (K0DI op)	35	0	35	9	945	M
NI6T	1,276	1,219	2,495	58	363,426	M/M E
<i>NI6T ops = NI6T, K9YC, N3ZZ, W6GJB, WB6HYD, K6MI, K6VLF</i>						
Trinity						
W6T	1,316	1,491	2,807	58	402,027	M/M E
<i>W6T ops = K6YL, N6DQ, K6WX, AA6XV, N6NU, K6RHO</i>						
Tulare						
N8LL	172	134	306	46	36,179	L E
K8AQL (K0DI op)	92	0	92	31	8,602	M
Tuolumne						
K8T (KJ8NRO op)	0	402	402	56	45,080	

Ventura	CW	PH	Total	Mult	Score	Type
WB6L	497	1,246	1,743	58	231,101	
KI6LZ	533	876	1,409	55	184,387	L
W6AYC	945	0	945	53	150,255	L
W6CWM	677	17	694	52	107,380	
AG6AY	0	298	298	50	29,850	L
W6JWP	0	97	97	30	5,850	L
KJ6TTR	0	89	89	30	5,340	L
K6NK	0	20	20	15	615	L
W6DAS	89	1,069	1,158	58	139,548	M/S

W6DAS ops = W6DAS, KG6TBR, K0BGL, W6DAW

Yolo	CW	PH	Total	Mult	Score	Type
K6Y	240	133	373	48	47,448	L E
K6AQL (K0DI op)	43	0	43	21	2,740	M
W6EO	34	0	34	24	2,448	L

Yuba	CW	PH	Total	Mult	Score	Type
W6XB	298	397	695	55	92,840	
KJ6RGX	0	62	62	29	3,596	L
K6AQL (K0DI op)	34	0	34	22	2,244	M
K6RC (+ K6NO, W6ZO, WE6Z)	883	603	1,486	58	215,936	M/S E
K6DW (+ KF6LOP)	387	181	568	53	80,719	M/S L E

L = Low Power
 Q = QRP
 M/M = Multi-Multi
 M/S = Multi-Single
 YL = YL Operator
 M = Mobile

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ATLANTA, GA

5271 Buford Hwy., 30542
(770) 552-0700

(888) 444-7927

Mark, 614VQ, Mgr.
Doraville, 1 mi. so. of I-285
at the left in small s.c.c.

WOODBRIDGE, VA

(Near Washington D.C.)
14825 Bald America Dr.
22191
(703) 543-0303

(888) 444-4799

Steve, W4CAG, Mgr.
Get 181, I-26 So. to US 1
right at the end of the road

SALEM, NH

(Near Boston)
224 N. Broadway, 03072
(603) 894-2750

(888) 444-0047

Pat, K1IK, Mgr.
Get 1, I-93
2.8 mi. No. of Boston
at the blue side of the road



FT-960 HF + 5M Transceiver

• 100W HYPER • Auto tuner built-in • 2 roofing filters
built-in • DMU-2002 compatible

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FT-897D VHF/UHF Transceiver

• HYPER/DMU700M • DSP Built-in • HF 100W (50W
battery) • Optional P.S. • Tuner • TDD Built-in

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FTM-3500R 2M/40 Dual band

• 50W 2m/40 - 1 watt 200MHz • TMC built-in, Blue-
tooth capable • Band scope built-in • 500 Memories



FTDX6000MP 200W HF + 5M Transceiver

• Status Monitor SM-5000 (power) • 0.05ppm 5000
(power) • 200Hz, 600Hz & 2KHz Roofing filters (power)



FT-857B Ultra Compact HF/VHF/UHF

• 100w HYPER, 50W 2M, 20W UHF • DSP included
• 32 color display • 200 memos • Detachable front
panel (power saving)

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FTDX-3000 100W HF + 5M Transceiver

• 100 Watt HF 5M Meter • Large and wide color LCD
display • High Speed Spectrum Scope built-in • 32 bit
high speed DSP (Down Conversion 1st IF)

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FT-7900R 2M/40 Mobile

• 50W 2M, 45W on 40MHz • Weather Alert • 1000+
Memories • WRES capability • Wideband receiver
(cell blocked)

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FT-450D 100W HF + 5M Transceiver

• 100W HYPER • Auto tuner built-in • DSP built-in
• 500 memories • DNR, IF Notch, IF Shift

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FT-8800R 2M/40 Mobile

• V/U/V/U/U operation • V-U full duplex • Cross
Band repeater function • 50W 2M 35W UHF • 1000+
memory channels • WRES ready

Call Now For Low Pricing!



VX-7R/VX-7R Black

500M/220/440 HT
• Wideband RX - 500 Memories
• 5W TX (200mw 220MHz) • L-Han
Battery • Fully Submersible to 3'
• Built-in STC551025 • Internet
WRES compatible

Now Available in Black!



VX-6R 2M/20/440 HT

• Wideband RX - 500 memories
• 5W 2M/40, 1.5W 200 MHz TX •
Li-ION Battery • SW system • Fully
submersible to 3 ft. • CW trainer
built-in

Now Low Price!



VX-8DR/VX-8GR

50/144/210/440 (VX-8DR)
2M/40 w/built-in GPS (VX-8GR)
• 5W (1W 220 MHz VX-8DR only)
• Bluetooth optional (VX-8DR only)
• Waterproof/submersible pressure
• GPS/WRES operation optional • Li-
ion Hi-capacity battery • Wide band Rx



FT-608 2M/40 5W HT

• Wide receiver coverage • AM
air band receive • 1000 memory
channels w/alpha labels • Huge LCD
display • Rugged die-cast, water
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