

NTMS Feedpoint

October / November 2015 Volume 29 Number 11

NTMS Web site www.ntms.org

The NTMS website contains articles of interest to our members and a calendar of NTMS related events. Please refer to it for meeting details.

Send News, articles, etc. to: ross_p@verizon.net

NTMS OFFICERS

President	Bob Gormley WA5YWC	Secretary	Eric Haskell KC4YOE
Vice President	Al Ward W5LUA	Editor	Ross Ponders K5ZSJ
Treasurer	Wes Atchison WA5TKU	Webmaster	Bob Gormley WA5YWC

**NTMS Meetings and
Events**

November 7th NTMS Meeting
St. Barnabas Presbyterian Church
Richardson, Texas 1 to 4 PM

November 8^h Microwave Activity Day
Sunday 7:00 AM to 9:00 AM
10.368 GHz and 144.6 SSB

December 5nd NTMS Meeting
St. Barnabas Presbyterian Church
Richardson, Texas 1 to 4 PM

NTMS Sunday Night NET
Every Sunday at 8PM local on 144.260 MHz

East Side Lunch Every Tuesday 11:30 AM
The Texas Smokhouse BBQ, on the SE corner of
Bowser and Arapaho, about a mile or two east of
Central on Arapaho

West Side Lunch Wednesdays 11:30 AM
Soda Springs BBQ
8620 Clifford Street
White Settlement, Tx. 76108

IN THIS ISSUE

The Usual

From the President.....2
From the Vice President.....2
Secretary Report.....3
Meeting Activity.....4
Letter from the Editor5
Sunday Net Notes.....5
For Sale.....14

Features and Articles

10 GHz at Grand Isle.....6
10 GHz at Big D.....9
AA5AM 10 GHz Success.....9
California Visitor on 10 GHz.....10
Push Button Repair.....10
10 GHz Rover Station.....12

From the 2015 President

Bob Gormley WA5YWC

Hello NTMS,

Saturday, November 7 will be our NTMS meeting for this month. Since Kent is providing tune-up for all our 5.7 and 10 GHz antennas, this is a great opportunity to test them out during Sunday's microwave activity day. The event will take place Sunday morning beginning at 7AM. Sunrise is approximately 6:50AM. Try to get out and make a few contacts with your new antennas. I'm planning to be active as a rover on Sunday and hope to work you.

73,

Bob WA5YWC

(Ed. Note: Bob, Al Ward and I plan to be on 10 GHz so join us there at 7:00 AM to about 9:00 AM)

From the Vice President 2015

Al Ward W5LUA

Meeting Announcement

The next meeting of the North Texas Microwave Society will be this coming Saturday November 7th at the St. Barnabas Presbyterian Church at 1220 W. Belt Line Rd, in Richardson. We have a lot planned for the meeting and we may have to be ready for lingering rain on Saturday. However our weather optimistic schedule will be as follows.

Noon – Setup in Hanna Hall for

Freebie/Giveaway/Swapfest... Kent will have a plethora of stuff donated by Rick Fogle of Quorum Communications. I will have some old books, catalogs, ap notes and old Avantek/HP/Agilent/Avago semiconductors for give away. Kent and I would prefer not to bring any of this back home. I understand that Roger and others may also be doing some fall cleanup. If you have radio/microwave related things that need a new home, bring them along as well. We have plenty of tables available in Hannah Hall.

Noon to 2 PM. Kent will have the antenna range for 5760 and 10368 MHz setup out in the North Parking lot.

2PM – Technical Presentations & Business Meeting

Eric KC4YOE – Ettus Research USRP B200 50 MHz to 6 GHz transceiver with KB1VC's SoDaRadio Software

Bob WA5YWC – More fun with offset fed dish antennas

Business Meeting – Primary topic will be reinstating dues. Bob also promises to present a challenge to the NTMS members.

Should be a fun time. If the rain appears to be too much of a risk for Kent's setup, we will reschedule the antenna gain measuring for the December meeting but let's keep our fingers crossed.

I also plan to bring along my HP 8722D vector network analyzer that will cover through 40 GHz so we should be able to fine tune your 10 GHz antenna return loss with no problem.

73

Al W5LUA

Secretary's Report

Eric Haskell KC4YOE

NTMS Meeting minutes Saturday October 3, 2015 at Saint Barnabas Church in Richardson

Most of the meeting was devoted to a summary of second half of the 10GHz contest. Bob Gormley, WA5YWC traveled to Grand Isle LA EL49xf. He planned to favor rovers but his only rover contact was with Tony Emanuele, WA8RJF who started in Mississippi. Sunday Bob moved to a deck at his motel overlooking the Gulf. There he contacted Ben Lowe, K4QF at 458 km. He also contacted Tony, WA8RJF 7 times as he roved the east Gulf coast over a contact range of 236 to 458 km from Bob's station. Tony was using a 2 foot dish with an 1W PA. Steve Kostro and Sandra Estevez using call sign K4SME were able to copy Bob at a range of 781 km near Venice, FL, just south of Sarasota. All Bob's contacts were greater than 130 km with 3 unique calls, 15 QSO's and 4,394 km total for his adventure. Bob commented that he benefited from good weather conditions and a high pressure area enhanced tropo. Next year he plans to add JT4 digital mode, incorporate a CW beacon into his rig. Rovers with 10 GHz slot antennas should have a great chance to work stations along the Gulf coast from Freeport to Port Arthur, TX. Bob does not see much value roving along the coast of Texas south of Freeport because of sparse operating locations below that point. Ross Ponders, K5ZSJ, operated that weekend from a location at Ball Knob Hill, Zion Cemetery close to Elm Hill and made a 70 mi contact. Greg McIntire, AA5C, worked 7 calls including Al Ward on 10 and 24 GHz. Bob Strickland, N5BRG, was using a Flex 1500 IF rig and W6PQL sequencer on 10GHz with a DEMI transverter and made contact with AL. Al Ward, W5LUA, was operating from his QTH in Allen was in contact with Tom Appel, K5TRA, on 10GHz. Tom was using a Hughes-net offset dish in his attic. Overall Al has 33 QSO's with 17 Stations on 10 GHz for the contest. Al had decided to stay home and operate the contest from home as he made a much needed contact on 1296 EME with the HV0A at the Vatican.

At the meeting, Al also discussed findings related to the eBay find 10 MHz Double Oven OCXO EPSON TOYOCOM TCO-6920N he had posted about on the

reflector. He said it has a fast 3 minute warm up time but requires a modification to get the expected +5dBm output level. 20MHz was down -36dBc and 30 MHz was down -54dBc. He also mentioned that the Apollo A32 requires a DC block on the 10 MHz input port to avoid spurious outputs when using a resistive attenuator on the 10 MHz port. Bob Strickland, N5BRG, mentioned the new DC-4GHz SDRPLAY from Europe. Brad Cobo, N5WCO, did a show and tell with his new 1296 MHz project which again demonstrated his high standard of workmanship.

At the business portion of the meeting, idea of reinstating dues was discussed. It was decided to describe the proposal in the upcoming Feedpoint and have a vote on the proposal at the November meeting.

The November 7 meeting at Saint Barnabas Church in Richardson will have Kent providing 10 GHz antenna range, Al and Kent will both be bringing parts for give away so bring some way to cut, package and label these. Eric Haskell, KC4YOE will be giving a presentation on the Ettus Research USRP B200 50 MHz to 6 GHz transceiver with KB1BC's SoDaRadio Software.

-Eric

November Meeting Activity

By Kent WA5VJB

Thanks to a donation from Rick, WA5TNY at Quorum Communications we will have a lot of components to give away at Saturday's meeting. Quorum is no longer using leaded parts in any products, so they cleaned out the warehouse. The idea is not to be too greedy, bring along some bags and take a dozen or two rather than the whole bag. Resistors, Caps, Inductors, IC's, jumpers, and a few filters. Also Mini-circuits TAMP-242GLN+ LNA modules for 2 GHz. (We'll let Al find out just how far they will still

work),

TCXO's, Project boxes, and an assortment of sheet Aluminum panels that should come in handy. And if I have room, spools of wire that should make good rotor cable or transverter controls.

More stuff at future meetings as I sort thru over a ton of boxes and reels. The photo is only about half of the stuff and the van had not yet been unloaded. WA5VJB

Letter from the Editor

By Ross K5ZSJ

This is my second time to edit the NTMS newsletter. There are interesting new things to learn both from the interaction with others and interaction with the word processor. Everyone has been very good about getting me their reports and I thank them all for this. There are compatibility problems with simply copying the text and picture files sent to me. Hopefully, I will get the hang of this in a bit to smooth things out. I should be able to write some articles about things the NTMS members find interesting. Two topics of interest are the beacons and the use of smart cell phone programs for roving. I just got an Android Galaxy 5 a week ago and Bob Gormley helped me download two applications for direction finding and finding the grid squares. I attempted to compile at least some information just before the September contest but had some problems with the software and ran out of time to really do the job as it should be done. I have received information from NTMS members about good rover locations and plan to put out a new revision (the old rev was rev D). Hopefully by the next contest, a listing of good sites and software for determining direction and distance

will be in place to aid in increasing the number of contacts for everyone. I expect this to be an ongoing effort with new revisions as the information accumulates.

The last two issues have been dominated by news of the contest. I have not done anything more on the beacons than the listings in the last newsletter. I plan to follow up on this topic later. Al Ward is planning an upgrade to improve the frequency stability so better things are expected for the 10 GHz beacon.

73,

Ross

K5ZSJ

PS. Send your stuff for the newsletter to:
ross_p@verizon.net

Sunday Net Notes

By Ross K5ZSJ

Net activity has picked up a bit lately to about 5 or 6 per net.. It is handy to have the quick response of conversation rather than wait for email responses. You can bring your questions to the net and might even get an answer.

Features and Articles

10 GHz and Above Contest Second Weekend in Grand Isle, LA

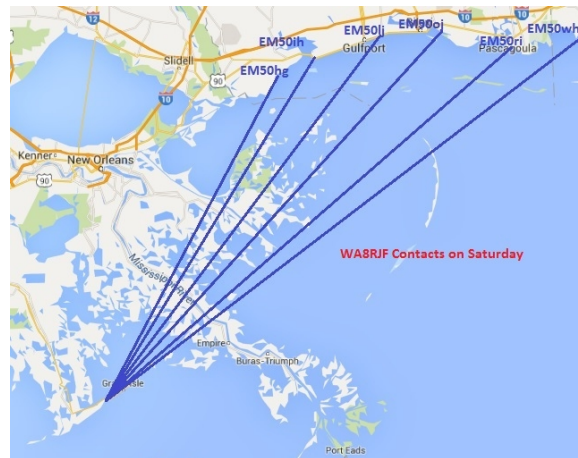
By Bob Gormley WA5YWC



The second weekend of the 10 GHz contest was good from my standpoint. I traveled from Plano, TX to Grand Isle, LA. Grand Isle is an interesting place; it's as far south as you can go as a tourist in Louisiana. The island is nothing like the tourist hot spots along the Gulf coast. It doesn't have ten story hotels or casinos. It's a fishing camp to describe it best. The island is 7 miles long and has a population of 1,500 people. At 8 PM the place is deserted.

I arrived on the island about 8 PM Friday night. I found my motel and checked in and then did a quick explore to find a place to set up on in the morning. Having already explored the island with Google maps, I found a good spot next to the bridge connecting the

island to the mainland. This location gave me a clear path to the Louisiana and Mississippi coast where Tony, WA8RJF was beginning his travels. Saturday morning I found Tony in EM50hg near Lakeshore, MS in EM50hg and quickly made contact with him on cw and ssb with signals at 59 from my location in EL49xf. Prior to working Tony, I spoke with Ben, K4QF in Mexico Beach, FL in EL79hw on the phone and we tried but nothing was heard. Distance to Tony was 132km/82mi and to Ben was 458km/285mi.

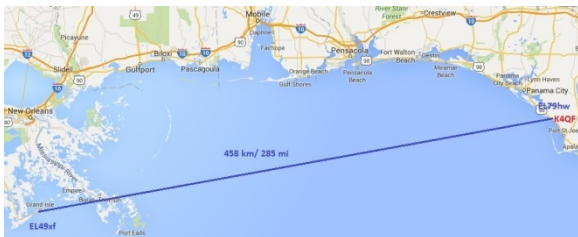


Later in the day I worked Terry, AA2LY who was sharing a balcony with Ben in Mexico Beach. Just before noon, we completed a contact with cw. The rest of the day I followed Tony along the Gulf coast working him six times.

After my last contact with Tony on Saturday evening, I had about 45 minutes of daylight before the sun went down. I needed to find a new location on the island if I wanted to work east of Pensacola, FL. The island has a sand dune barrier between the beach and the road for

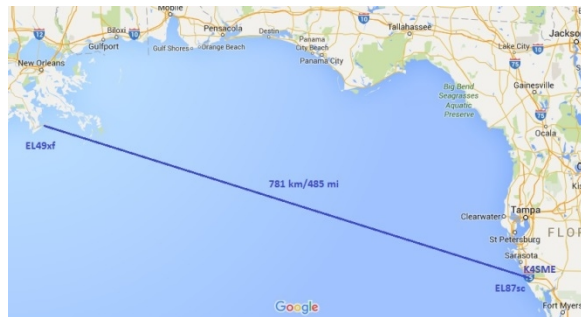
the whole length of the island. I was hoping I could go to the end of the island and set up in the state park parking lot. Not good, the sand dunes are 10-12 feet high from one end of the island to the other. I stopped by my motel office and asked the manager if I could set up my radio on the deck overlooking the Gulf and he said go for it. Nobody was occupying the two rooms on the back deck. He said there were no power outlets on the deck but if I had an extension cord I could plug in under the structure. By the way, every building on the island is on stilts ranging from 10-12 feet high. The sand dunes are all approximately the same height. I didn't have an extension cord with me so I headed to the only grocery store on the island. It happened to be a food store, fishing supplies, tourist supplies and a small hardware section. So I purchased a 50 foot extension cord.

Sunday morning I started early and set up on the back deck of the motel. I brought with me a 12 volt power supply just in case I might have this opportunity. My TWTA requires 24 volts and I use a 24 volt switching power supply powered from another switching supply in the car. I was able to power the 12 volt supply and the 24 volt supply from the mains at the motel. My rig is a homebrew transverter with an Icom 706 I/F and a 40 watt twta to a one meter dish. Ben called from Mexico Beach and said he was listening for me. I hit the key and he came back with a huge signal. The time is 30 minutes past sunrise. I heard his 2 watts at 59+ and we worked the contact on cw. Switching to ssb, we were able to make the contact even though Ben's ssb signal had distortion issues. The early morning enhancement was great. Too bad there weren't other people active along the northwest coast of Florida. It would have been a slam dunk for low power stations. My location was still in grid EL49xf.



The morning was fabulous. Clear sky and temperatures rising to the mid 80's. No wind and the Gulf was like a mirror. The deck began to heat up and I resorted to hanging an umbrella over my transverter to keep it as cool as possible. By 1 PM I was able to get some natural shade. The rest of the day I followed Tony along the coast making seven more contacts with him. Tony is a warrior! What a great rover! We easily made 59+ contacts all day long on cw and ssb.

About 2:30 PM, Steve and Sandra, K4SME were near Venice, FL in EL87sc. We tried for the contact but it was one way. Steve was hearing my signal but I could not hear his. This was a 781km/485mi contact. We had a huge high pressure system over the Gulf and conditions were very good for the contact. But, no two way contact was logged.



We decided to try again late in the day. Steve and Sandra traveled to a high spot inland and we tried again at sunset. Their location was EL97ft and the distance was 846km/526mi to Grand Isle. Nothing heard, unfortunately. I was sure we could pull it off. I waited for Tony to set up in Mexico Beach in EL79hw and we made our last contact 30 minutes after sunset. By light of flashlight, we knocked out a cw and ssb contact at 59+ signal at 458km/285mi to end our day.

What did I learn about this year's contest? Grand Isle was a new location for me as a rover. It's a great location to work east along the Gulf coast. It is not suited to work west towards Texas. If you don't have a deck to work from on the beach side, you're out of

luck. There is no beach access for cars along the island. On the north side of the bridge to the island, you have a great view east to Mobile, AL with no obstruction. The horizon to the island is about one mile looking south towards Florida. It would probably work but being elevated above the sand dunes is a real plus. My original plan was to start out in EL49fn at Burns Point Park west of Morgan City, LA to work the Texas coast but nobody was operating during the weekend along the Texas coast. Maybe next year! A big thanks to Tony, Ben, Terry, Steve and Sandra for making this a great second weekend of 10 GHz contesting. See you next year.....

Stats:

15 QSO's

3 unique call signs

All contacts over 130 km's

4,694 total points from Grand Isle

1,200 miles round trip from Plano, TX

10 GHz and Above Contest Second Weekend in Big D

By AI W5LUA

The second half of the 10 GHz and above ARRL 10 GHz and above contest was a lot of fun. My day started out with a 10 GHz CW contact with Tom K5TRA down in the Austin area in EM10bf at 340 km. Tom is running an offset fed dish in the attic of his home! Signals were weak but we made it. The next treat was in working Scott AA5AM at 24 km. Scott was running a bare mixer to an 8 inch offset fed dish perched on a tripod. This just shows what can be done with a very simple setup. Bob N5BRG made his debut

on the 3 cm band with his rover setup with a DEMI transverter and offset fed dish. We also had a visitor from California, Tony Long KC6QHP who operated from a high rise building in Dallas and then proceeded to lug his portable setup up to the rotating Reunion Tower to make several contacts. Another station in the DFW area that became operational was Brad WQ5S with his DEMI transverter and amplifier. And then we had AI W5RLG and Ross K5ZSJ with their great signals roving a bit more. I also managed to work Greg AA5C on 24 GHz. My total count of the stations operational from the DFW area is at 14 including W5LUA, WA5YWC, WA5VJB, AA5C, K5ZSJ, KA5BOU, N5WCO, N5QGH, K5GW, W5RLG, AA5AM, KC6QHP, N5BRG and WQ5S. All in all, it was a fun weekend and I am overjoyed that we were able to get several new stations on the air. I think we now have the critical mass to keep the enthusiasm high on 10 GHz in the DFW area. Congrats to all.

73

AI W5LUA

10 GHz Success at AA5AM

By Scott AA5AM

On September 19th, I had my #1 10G QSO with AI W5LUA on CW and LSB at 13.3 miles. AI's signal was a solid 599+20 on CW and 59 on LSB. Thanks to AI for the encouragement and helping me get on the band with the micro-LO and loaner antenna and to Brad WQ5S for the loan of the FT757GX. Also heard were N5CWO @ 55.67 miles. Attempted QSO but Brad could not hear

me. W5RLG/K5ZSJ EM13EJ ~ 67.95mi Didn't get a chance to try. Had to pull the plug due to rain.

Equipment on this end was setup in the driveway on the tailgate of the truck. 2m liaison radio Icom IC251a ~10w to 5/8 wl vert. 10G - IF radio Yaesu FT757GX DEMI

144-28 transverter and micro LO osc/multiplier chain driving a bare bones TRW MX18545 mixer, Antenna is a small (8inch involved manually moving the cable between the TX and RX port on the DEMI transverter.



Oscillator and mixer are located in the shoebox to block the wind

Don't know what the limits are of the system but would like to try a QSO with a few more. AA5C, K5GW and KA5BOU should be doable based on the success with Al.

73,

Scott AA5AM

EM13SG42ST

(ED. Several have used vertical antennas for 2 meters. It helps (20 DB.) to go horizontal and this is especially true between rovers since horizontal is the standard for 2M USB.)

A Visit from California

By Tony Long KC6QHP

(Ed. Note: Tony was here from his home in California and brought his portable 10 GHz rig with him for the contest.)

Twenty years ago I participated in my first 10 GHz and Up Contest. I was 17 years old and used a borrowed Gunnplexer-based radio from Kerry, N6IZW of the San Diego Microwave Group. I've spent the intervening years participating in the contest exclusively in Southern California.

This weekend my girlfriend wanted to come visit friends in Dallas, and I decided it was a great opportunity to work the contest from a new area. I used my old Qualcomm based transverter (upgraded with one of my LO sources to save power and reduce phase noise) and FT-817, and this past week machined a waveguide transition and mount for a 20 dB standard gain horn antenna.

I am pleased to report that TSA did in fact note the unusual objects in my carry-on and swabbed them down to test for explosives. That was the extent of it though and I got through just fine.

First location was the roof of the apartment building we are staying in. Four floors up, between a bunch of high rise buildings, I had a view towards the north but not much else. I had one QSO with Al, W5LUA (36km) and tried without success with Kent WA5VJB and Ross K5ZSJ.

I decided to change locations and went to Reunion Tower on the south side of downtown (EM12OS). My girlfriend called ahead and worked some magic with the manager of the tower who alerted security that I would be doing

something I managed to work Kent at about 25 km, but no luck with Ross from this location either.

I've gotten used to the topography of California, with its many easily accessible mountaintops and Cactus Intertie repeater network. It's a different story out here in Texas and I'm really interested to hear from others what it takes to get lots of QSOs out here.

In fact I'm thinking that it would be fun to operate from a different area net year as well. Maybe somewhere on the east coast!

Thanks to all the NTMS folks who welcomed me to the area!

Pictures here:

<https://www.flickr.com/photos/kc6qhp/albums/72157656512849144>

Tony KC6QHP

HP Push Button repair on Old Equipment

by BobN5BR

Recently I have been purchasing equipment to use in testing radios. I purchased an HP8350A Sweep Oscillator shown in Figure 1. This instrument had an issue with the push buttons on the front panel. When the power was applied to the HP8350A it would come up in a strange state and I had no ability to change any

of the functions. After taking the unit apart I found the issue was with the push buttons used on the front panel display.



Figure 1

HP products are very well engineered and the documentation for almost every thing is available on the web. Replacement parts are not available in most cases but you can find parts on eBay, which have been salvaged from the same test equipment.

This push button system is used in the HP8350A is also used in other instruments. So the same failure mode will likely exist. I wanted to document what I found and pass it along so you may be able to bring a good piece of equipment back to life.

If you remove the front face of the instrument you can see a cover plate, Figure 2, which provides support the cover plate and protects the buttons. When you remove the cover plate small rectangular pieces of flat



Figure 2

metal pieces like the one shown in Figure 3 may fall out. Save these because these pieces of metal act as a spring in the push buttons. I believe they are beryllium copper pieces stamped or etched from a sheet that has been properly tempered to act as a spring.



Illustration 1: Figure 3

After you remove the front panel and reveal the front faces of the push buttons they will look like the photograph shown in Figure 4. You can see each push button has a rectangular base, which should have one

of the metal springs in place. Some of these are missing in the photograph of Figure 4. The metal pieces present will be wedged in place and have a little bow shape to them. When you push the button you will see the spring action of the metal operate.

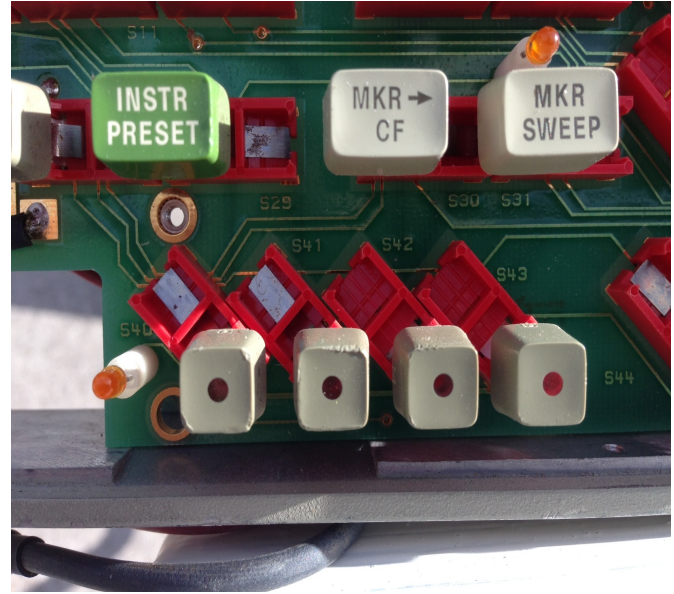


Figure 4

I found some of the metal pieces in place but one end of the metal had slipped out of the catches that are on the ends of the red plastic housing. To make the spring operate all I needed to do was push the metal back in place and catch the metal ends properly. Some tweezers worked well for this. After fixing the ones in place I slipped in the pieces I found floating around in the frame by placing the metal springs in position in each button and making them spring.

After re-assembling everything was working like new!

So when inspecting equipment in a flea market you can push the buttons. IF they spring then the equipment has a chance of working. If you find equipment which has buttons that are soft and go down but do not pop back up then you may be able to repair the equipment.

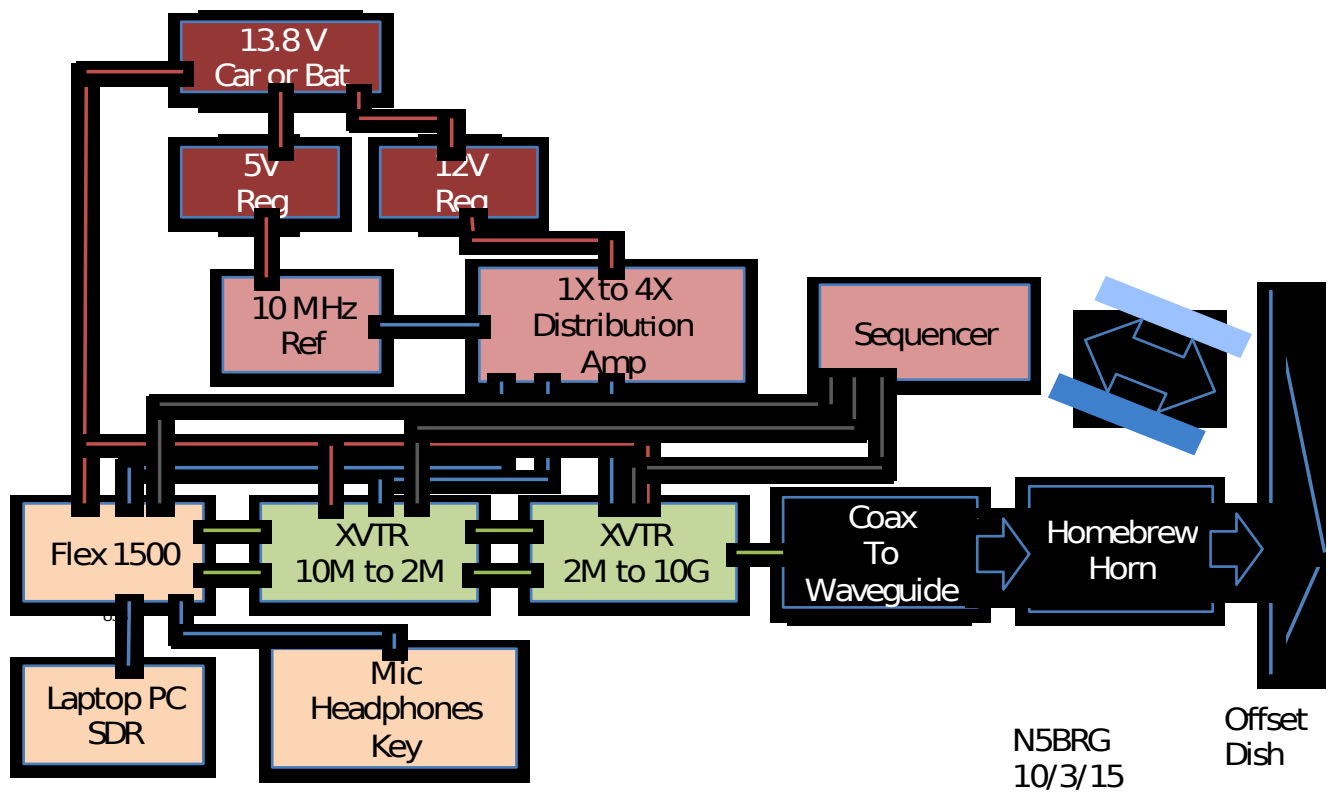


Figure 1

10 GHz Rover Station

By Bob N5BRG

For many years I dreamed about working the microwave bands but never seemed to get focused enough to get on the air. I attended many microwave updates and collected parts. Also picked up parts in flea markets and at Dayton each year. At the microwave update in Morehead Kentucky I purchased

the DEMI 10 meter to 2 meter transverter and the 2 meter to 10 GHz transverter as kits. Then I spent about a year putting these kits together as time permitted.

The next thing I knew another ARRL 10GHz contest weekend was baring down on me and I still did not have everything ready. So I started really working hard to make everything work and to put things

together in a rack so the station would be stable enough to operate as a rover. I realized I was not going to get it all working so I sent the two transverters back to Steve at DEMI to review and get them working. The list of issues he found were embarrassing so I will not list the problems found. When I got the transverters back things were working at that point.

Here is a list of the equipment I used:

Flex Radio 1500 SDR transiver

Flex Microphone

Radio Shack Headphones

Simple Key for CW operation

DEMI [L144-28CK](#)

DEMI [10368-144](#) 10368MHz Transverter using A32 synthesizer

DEMI [3-3PA](#) 10368 MHz 3W power amplifier [Kit Manual](#)

DEMI ApolLO-32 Frequency Synthizer

W6PQL Sequencer

10 MHz ovenized crystal

G4HUP 10 MHz distribution amplifier

Power Pole power distribution block

Coax to Waveguide converter from flea markets

Homebrew Horn

Offset satellite TV receiver dish from WA5VJB

Hoffman 19 inch rack cabinet

Figure 1 is a block diagram showing how the station is configured. Initially I had some issues with drive levels from the 10 MHz distribution amplifier. W5LUA helped me work this out and the reference driven by the ovenized crystal I purchased at Microwave update in 1999 worked well. The frequency was off about 15 KHz but after I released this it was easy to just adjust the Flex 1500 to deal with the offset. The crystal has some adjustment but I

did not want to dittle with this right before the contest. Using a SDR radio to interface with the transverters also means you will have a pan adapter to find any signals on the 10 GHz band. With this ability you can have a little offset in frequency and not be challenged. I did notice other stations were drifting while operating and since my frequency reference was stable I could easily follow there drift.



Figure 2

Figure 2 is a photograph of the equipment placed in the Hoffman rack cabinet. I did manage to blow a fuse in a car lighter plug while trying to operate. So I had to leave my hilltop and go look for an inline fuse on Sunday morning. About 30 minutes later I was back on the hilltop and operating.

Figure 3 is a photograph of the equipment setup and ready for operation. I placed the 2M to 10 GHz transverter on the frame holding the dish using blue

construction tape. This allowed me to use a short rigid line with SMA connectors to connect the feed. I used RG8 to connect between the transverters and a simple two wire line to operate the PTT on the transverter.



Figure 3

The dish feed was not optimized but it did work. I am working now to improve the feed system and hope to have more antenna gain or ERP and therefore better signals. This will come at the expense of having to spend more time aiming the dish but it should mean more QSOs. I also want to try operating over a longer path. So far I have operated about 20 miles.

In a future write up I hope to provide some information on signal levels and data on the performance of this system.

Stuff For Sale:

(Send items to ross_p@verizon.net)

For Sale: – ICOM IC 765PROIII (HF+6M) very good condition. Includes manual, hand mic and power cord. Asking \$1850. Would rather sell local, delivered or pick-up rather than ship.

For Sale: – DEMI 902 – 144, MDS runs in the -140's (set for S-9 = -73 dBm or 50 uV. Set 5 W input to produce 10 W output, PEP. Set for common I.F. input and is supplied with a SMA relay for common antenna port I/O. \$450.

For Sale: – A pair of 4-1000A tubes with cast aluminum, airflow sockets and radiator plate caps. Would like to get \$500 for all or equivalent in trade. Prefer not to ship out of the Denver Metro Area. Is there anybody that still builds amplifiers or has the acumen to do same?

For Sale: – Home Brew 10 Giga Hertz CW, SSB, 300 milliwatt Transverter 10368 MHz to 144 MHz, with 22 dB gain Horn Antenna. 115 V.A.C. operated. Tripod mountable. Supply your own 2 meter 1 watt Transceiver. \$500

For Sale: – Home Brew 10 Giga Hertz CW, SSB, 3 watt Station, with 17 dB gain Horn Antenna, Plus an FT-290R-2 2 meter Exciter I.F., 115 V.A.C. operated & a 12 V.D.C. to 115 V.A.C. converter (Nice mountain topping station) Tripod mountable. \$1,000

Dave – W6OAL, Parker, CO (DM79)

email: w6oal@aol.com

.....

K3TUF Band Decoder for FLEX-1500. Connects

to serial port and provides (16) open collector outputs. New. \$30

G4DDK Anglian 8W 2m Power Amplifier Kit WITH Mitsubishi RA08H1317M module. New / Unbuilt Kit. Includes LPF on output. \$40

New 3-legged roof tripod, taller than most. \$40

Polyphaser IS-RCT Rotor Surge Protector. New. \$100

Parts can be picked up at meeting, or shipping can be arranged. Contact Brad N5WCO at bradcobo@gmail.com for details.

Thanks Ross!

-Brad N5WCO

Stuff for Free:

(Send items to ross_p@verizon.net)

Stuff Wanted:

(Send items to ross_p@verizon.net)

Stuff for Elmer

(Send questions for Elmer to ross_p@verizon.net)