

NTMS Feedpoint

December 2015 / January 2016 Volume 29 Number 12

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

January 15th – 16th

Cowtown Hamfest

NTMS has 9AM Sat. Presentation

<http://www.cowtownhamfest.org/>

January 30th – February 1st

ARRL January VHF Contest

February 13th NTMS Meeting

St. Barnabas Presbyterian Church

Richardson, Texas 1 to 4 PM

2016 Meetings etc. Page 7

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

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From the 2015 President

Bob Gormley WA5YWC

Hello NTMS

2015 was a good year for NTMS. Our year started in Fort Worth with the annual Cowtown Hamfest where we made a presentation about operating 10 GHz along the Gulf coast. In February, I was out of commission for a few months and Al, W5LUA stepped in and ran the club until I returned in June. I am immensely grateful to AL for his friendship and dedication to NTMS.

Our May meeting was at Bob, N5BRG's ranch for a special day of equipment measurements, friendship, burgers and a presentation about radio astronomy. Bob was very gracious to open his beautiful home to our members and their spouses.

Typically, NTMS has a presence at Hamcom but this year, Hamcom relocated to the Irving Convention Center. Due to a conflict with meeting rooms, NTMS did not make a microwave presentation.

In July, I hosted a tune-up party at my QTH in Plano. We had a great turnout for burgers and 10 GHz equipment optimization prior to the August and September ARRL 10 GHz and Above contest. Members had the opportunity to measure noise figure and gain of their transverters. A big thanks to Al, W5LUA for providing the test equipment and expertise to test our rigs.

The August 10 GHz and Above contest was special this year because of the increased activity and new stations on the air. I started the contest by roving northwest towards Wichita Falls, a first for me in this direction and using for the first

time, a waveguide slot antenna on top of my car. I was very pleased with the operation of the slot antenna and being able to make quick contacts without getting out of the car. There was a couple of new stations on the air, Ross, K5ZSJ and Bob, N5BRG. Brad, N5WCO was also on the air from his home QTH with a new line-up of 10 GHz equipment.

The second half of the 10 GHz contest showed activity in the DFW area and the Gulf of Mexico from Grand Isle, LA to the Florida Keys. 2016 should be a great year for microwaving with the new stations on the air and the increased activity in Texas and the Gulf States.

NTMS meetings for the last three months of the year were awesome. We had a fantastic swap meet and give-away thanks to Kent, WA5VJB, test equipment and tune-up thanks to Al, W5LUA, presentations about offset dish antennas, software defined radios using cheap RTL dongles and a very well attended antenna measuring range hosted by Kent, just to mention a few activities.

Our December officer elections kept in place the current officers for another year. I personally want to thank the membership for all your support during 2015. Let's keep the momentum going into 2016.

73 and Happy New Year,

Bob Gormley WA5YWC

President NTMS

From the Vice President 2015

Al Ward W5LUA

Hello NTMS

The Cowtown hamfest is scheduled for January 15/16th. See: <http://www.cowtownhamfest.org/>
We have requested a 9AM slot on Saturday morning for the NTMS to give a presentation. Bob and I will do a tag team overview of the NTMS describing our organization and talking about the fun we have building and operating equipment. It would be nice if our members would be there to support our group. I plan to showcase some of the new stations that were able to get on during the ARRL 10 GHz and up contest. If you want to demo some equipment or do a short little presentation about some of your equipment, please let me know.

Hope to see you there on Saturday.

73

Al W5LUA

2016 NTMS Vice President

Secretary's Report

Eric Haskell KC4YO

Secretary's Report from the December 5th
Meeting

The December 5th NTMS Meeting was held at the St. Barnabas Presbyterian Church in Richardson. Meeting was called to order by President Bob Gormley WA5YWC. Attending the meeting were WA5YWC, W5LUA, NM5M, N5UI, WA5VJB, N5UUE, W5RLG, KF5IDY, N5BRG, NX5R, and N5WCO. The main presentation by guests George Perkins N5UI and Eric Silverthorn NM5M titled "Using an RTL Dongle as a Receiver Panadapter" was very informative. George showed how he used the Dongle to receive various signals in the

VHF and L band frequency range with emphasis on receiving the aircraft transponders and plotting the paths of aircraft. Eric showed how he used the Dongle as an inexpensive panadapter for the his Elecraft K3 by taking the 8.125 MHz IF signal out of the K3 and heterodyning it up to a frequency range covered by the Dongle. Both presentations were excellent. We had a short business meeting. First order of business was the election of NTMS officers for 2016. The team of officers from 2015 were willing to continue in 2016. There was no opposition. The team of officers for NTMS in 2016 are the following.

President - Bob Gormley WA5YWC
Vice President - Al Ward W5LUA
Treasurer - Wes Atchison WA5TKU
Secretary – Eric Haskell KC4YOE

A motion was made by Al Ward W5LUA that the NTMS donate \$200 to the ARRL Spectrum Defense Fund. All present voted in favor. Wes will send the check to the ARRL. It was decided to begin migrating the NTMS reflector over to the NTMS Yahoo Group reflector which Brad N5WCO had started some time ago. This works very similar to our present reflector but it has some added benefits of being able to include pictures and other attachments with reflector postings. Also all posted emails would be archived for later reading. The NTMS would like to thank Harold Reasoner K5SXX for providing us many years of server space to run our existing reflector.

Submitted by Al Ward W5LUA January 11, 2016
for Eric Haskell

Letter from the Editor

By Ross K5ZSJ

Most of us are in recovery mode from the

holidays and the 10 GHz. Contest. So this issue of Feedpoint is smaller than the previous issue. I have material which I will write up for the next issue on roving that will be useful for the next contest. The Cowtown hamfest is at hand and this issue needs to go to press to get that information out now. So the next issue will have some more information on roving I am trying to compile for the next contest.

I am looking forward to the next 10 GHz contest because I have seen several rigs including my own 8 watt rig (a big step up from the current ¼ watt rig I now have) that are works in progress and portend to a big next 10 GHz. contest.

You might take a look at the NLRS web site and see what they are doing (see the article by Jim K0MHZ in the “Features and Articles” section for their web site. They have a nice listing of rover spots around the Twin Cities area that I would like to have for the NTMS.

Don't forget the January VHF contest and
73,

Ross

K5ZSJ

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

Sunday Net Notes

By Ross K5ZSJ

WA5VJB, N5PGH, W5RLG, W5LUA, K5ZSJ, and WB5KXA were present during the month on the Sunday net during the month. We usually discuss various issues with projects and other things of interest. I have been working on a tower base for my West Texas place. Roger informed me that a substance named Penetrox is good for aluminum - copper connections sealing connections from weather so I am using it for antenna connections. There are issues with drilling holes, band conditions, milling metal parts, and whatever ailments or other interests we might have.

Features and Articles

November Meeting Antenna Gain Measurements



Jim K0HMC

Jim WA5JAT



Kent WA5VJB Adjusting Ant. Jim WA5JAT



Kent WA5VJB Jim K0HMC

November Meeting Pictures



Bob N5BRG Brad N5WCO AL WB5LUA



Al W5LUA Eric KC4YOE



Kent WA5VJB



Jim K0MHC Al W5LUA

2016 NTMS Meeting & Contest/Operating Dates

(Contests in Green)

January 16th - **Cowtown Hamfest** Ft. Worth, NTMS presentation at 9AM

January 30/31st – ARRL January VHF Contest

February 13th – St. Barnabas Presbyterian Church, Richardson, TX Noon to 4PM

March 5th – St. Barnabas Presbyterian Church, Richardson, TX Noon to 4PM

April 2nd – St. Barnabas Presbyterian Church, Richardson, TX Noon to 4PM

May 7th – St. Barnabas Presbyterian Church, Richardson, TX Noon to 4PM

June 11th – **HamCom Irving, Texas** – NTMS Meeting at HamCom on Saturday

June 11/12th – ARRL June VHF Contest

July - **Tune-up, operating, social event** TBD

August – **Tune-up, operating, social event** TBD

September – **no meeting** due to Labor Day conflict

September 10/11th – ARRL September VHF Contest

September 17/18th – ARRL 10 GHz and Up Contest

September 30/October 1st – K5AND/W6JKV 6M **BBQ in Austin**

October 8th - St. Barnabas Presbyterian Church, Richardson, TX Noon to 4PM

October 13/14/15th – **Microwave Update** 2016 in St. Louis, MO.

November 5th - St. Barnabas Presbyterian Church, Richardson, TX Noon to 4PM

December 3rd – St. Barnabas Presbyterian Church, Richardson, TX Noon to 4PM

Email from Jim - K0MHC

Hi Ross.

I admire your intestinal fortitude for taking on this assignment. Now that I'm a member, let me add something to your pile of Feedpoint inserts:

As a winter Texan, we do much of our operating up north during the summer. We usually participate with the NLRS club "fixed pack" on top of Buck Hill, MN during the 2nd weekend of the 10 GHz & up event. This year two "rover packs" and several other mobile and fixed stations were available for contacts. However, our results were limited to 36 QSOs (up to 274 km.) with 19 uniques during 4 hours of operation due to a major dish feed issue. The moral to this story is: participate in a club sponsored tune-up session BEFORE the event. This year I'll be participating in the NTMS test session (Nov. 7th) AFTER the event. BTW, we're looking forward to roving in your neck-of-the-woods during the January VHF contest January 30-February 1, 2016 with the low bands and 5/10 GHz.

73, Jim - K0MHC/rover
Kerrville, TX

(Ed. Note: Jim is from Minnesota and is a member of the Northern Lights Radio Society)

(NLRs). Check out their web site at:
<http://www.nlrs.org/>

Straight Key Night **By Eric NM5M**

Straight Key Night (with a VHF twist) was quite a success.

Al, W5LUA reported seeing quite a bit of 144 MHz activity on his band-scope during the new years eve event. Stations heard/worked included: WQ5S, K5MBA, W5LUA, NM5M, K5ND, W5RZ (Arkansas) and K5LLL (near Austin)

Thanks to those that were able to participate and mark your calendar so that we can have more more activity next year!

73,

Eric, NM5M

Fractals and Cell Phone Antennas **By Ross K5ZSJ**

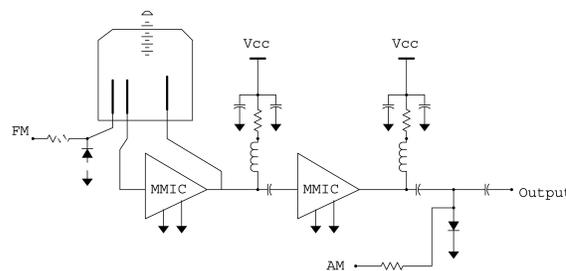
Nathan Cohen, a radio astronomer and ham (W1YW) was at a conference where Mandelbrot gave a lecture on fractals. He saw that he could use the idea of fractals to make a reduced size ham antenna at his home. He wanted to avoid the antenna restrictions there. The fractal shaped antenna worked for his ham radio and the idea was then applied to cell phone antennas. The PBS Nova documentary titled "Fractal's: Hunting the Hidden Dimension" available on YouTube at:

<https://www.youtube.com/watch?v=HvXbQb57IsE>

This video tells Nathan's story starts at 31:xx. The entire video is well spent time for an explanation of fractals and their relevance. Be sure and check this out.

New Oscillator PC Boards Available

By Kent WA5VJB



Oscillator Schematic

In the January issue of QST, Paul Wade W1GHZ showed the circuit for a microwave oscillator based on a MMIC and a pipe cap filter. This is certainly a low cost test source. I have gone ahead and had a batch of PCB's made for these oscillators.

There are two versions, one for a SMA connector on the output, and one designed to have coax soldered direct to the output. The boards also have provisions for optional parts to AM or FM modulate the oscillator. If someone is clever, the FM input could be used to phase lock the circuit. The AM modulation can be handy for antenna ranges.

Generic MMIC Boards are for sale 5 for \$10 .

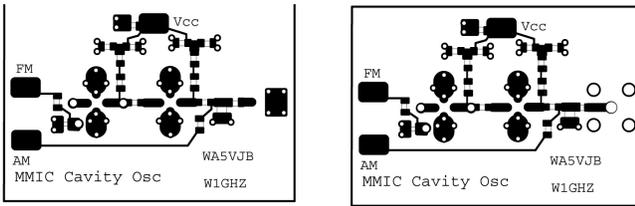


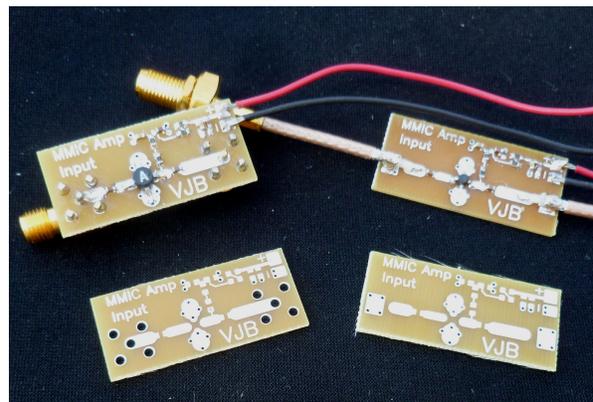
Illustration 1: MMIC OSC PCB-1

This board can accept 1/2", 3/4" or 1" pipe caps. With a common MMIC, a 1 inch pipe cap and the tuning screw all the way in, the low frequency should be about 1 GHz. Using 1/2" pipecaps an ERA, NNB-300, or NBB-400 MMIC, the upper frequency range will be about 12 GHz. This give us a 1 to 12 GHz range to work with.

Notes:

- Boards should be available at the Cowtown Hamfest.
- Best Q of the oscillator is with the shortest probes in the cavity that will still oscillate at the desired frequency.
- The AM and FM components, even the buffer amp components are optional depending on your application.

- You're right, there are no component values on the schematic. These will depend on the MMIC's you use and the frequency range. The QST article is a good starting point, look for more specific circuits as we work with these.
- Take notes and let us know what new applications you have come up with.
- Also for your other projects Generic MMIC Boards are available



Generic MMIC Boards

Microwave EME Activity in the US 5th Call Area

EME on the microwave bands world wide has been very popular recently but fairly modest in the US 5th call area over the past few years. The following table lists the stations in the US 5th call area that have been active in the last several years.

Call	State	Grid	MW Bands Active (cm)
W5LUA	TX	EM13	33, 23, 13, 9, 6, 3, 1.25 plus
K5GW	TX	EM13	23, 13, 9, 6, 3 cm
WB5AFY	TX	EM04	23, 13 cm
WD5AGO	OK	EM26	23, 13, 9, 6 cm
WA5YWC/P	TX	EM10	3 cm
K5DOG	TX	EM00	23 cm
K5JL	OK	EM15	33, 23 cm
K5SO	NM	DM65	23 cm
NR5M	TX	EM10	23 cm

5th call area stations that have been active in the past include WA5VJB in EM12 on 3 cm, W5ZN in EM45 on 6 cm, WW2R in EM13 on 33, 23, 13, 9 and 6 cm, WA5WCP in EM12 on 23 and 13cm, KD5FZX in EM12 on 23 cm, W5UKQ LA on 23 cm, K5AZU LA on 23 cm, W7CNK in EM15 on 9 and 6 cm, WA5ETV in EM15 on 33 cm, WA5ICW in EM26 on 6 cm, KD5RO in EM12 on 9 and 6 cm, and K5PJR in EM26 on 23 and 13 cm, WA5TNY and KA5JPD on 9 and 6 cm. My apologies to anyone that I may have missed.

In the EME world, we have chosen to designate our microwave bands in terms of wavelength instead of frequency. The reason being that our chosen weak signal frequencies vary from country to country depending on the band. Starting with the most popular microwave EME band of 23 cm, we operate EME between 1296.0 and 1296.1 MHz which coincides with the terrestrial weak signal band world wide. Venturing up to the 13 cm band, we find conflicts due to various frequency restrictions within IARU regions and countries. Although we in the US can transmit on 2304.1 MHz plus or minus, only Canada, South America, and some countries in Europe and Africa can transmit on 2304 MHz. Numerous countries in Europe can only transmit down as low as 2320 MHz. Australians can only transmit between 2300 and 2302 MHz and Japanese stations can only transmit in the 2400 and 2424 MHz frequency ranges. These restrictions require that 13 cm operators do a bit of cross band operation like we had to do in the days before various countries had 6 m privileges where we made numerous 6m/10m crossband QSOs. In the US, we have 2300 to 2310 MHz and 2390 to 2450 MHz. We lost 2310 to 2390 MHz several years ago to the Sirius radio service. We can therefore work VKs at 2301 MHz simplex and JAs on 2450 MHz simplex. Moving up to the 9 cm band, the EME operation was centered at 3456 MHz for several years. Once 9 cm became more popular, it was decided to move EME operation at 3400.1 MHz which is an international allocation. The beauty is that no cross-band operation is required. The down side is that we in the US must set up to operate at 3400 MHz for EME. This is usually a simple matter of adjusting our LO. The Steve Hickes, N5AC, ApoiLO A-32 board provides convenient options for all amateur frequencies. At present the 6 cm band EME operation takes place between 5760.0 and 5760.1 MHz so no cross band is necessary. I have in the past set up to listen for RW3BP in Russia at 5670 MHz to make a 6 cm QSO. I am not sure what the present day restrictions are in 6 cm band in Russia. The 3 cm band can also provide some challenges. Most of the world operates in the 10368.0 to 10368.1 MHz range which corresponds to our weak signal segment in the US. Japanese stations operate at 10450.1 MHz. Since the US allocation is between 10000 and 10500 MHz, we have 2 options. We can operate cross band 10368/10450 MHz or work the JAs simplex on 10450 MHz. The next band up is the 1.25 cm band. Initial EME operation was done at 24192.1 MHz but in the last several years we have migrated to the internationally recognized frequency of 24048.1 MHz for EME operation. Interesting enough is that 24048.1 MHz is also the international satellite band. Next up is the 0.6 cm band. Terrestrial weak signal work in the US and Europe has typically taken place at 47088.1 MHz and was also used for the first and only contacts via the moon back in 2005. Next up is the .38 cm band which has most terrestrial operational taking place at 78192.1 MHz. When RW3BP became operational on the .38 cm band, he was receiving his echoes on 77184 MHz. I was fortunate it enough to be able to set up receiving equipment to see Sergei's signal via the moon on 77184 MHz. To date, no EME QSO has been achieved on 77 GHz. Good DX to all via the moon..73 de W5LUA January 13, 2016