

The Rochester VHF Group

The VHF



Journal

Volume 58, Issue 2

October 2006

News!

The next regular meeting of the Rochester VHF Group will be Friday, October 13, 2006 at 7:30pm

NOTE: This meeting will be held in Ogden, NY just off Rt. 531 at the Ogden Town Hall! MAPS are in the back of the journal.

Topic:
S-band downconverter project
Andy Flowers, K0SM

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The Chairman Speaks! Andy Flowers, K0SM

Fellow VHFers,

We have an exciting program schedule for this year as outlined below. Bill addresses much of it in his column, but I wanted to invite everyone to the October meeting where we will be building S-band downconverters out of surplus equipment. **This will be a chance to build something yourself and leave with something that works—no financial risk involved!** If you have been afraid of touching anything “microwave” this is your opportunity to see just how easy this stuff is. Better yet, you can actually use it for AO-51’s S-band downlink when it is active. In fact, I’ve asked for the downlink to be turned on during the week of the November meeting so that we have time to build some antennas to use with our converters—more on that at the meeting! Please have a look at the construction outline in this issue to get a preview of what we will be doing. I’ll be giving a short presentation on these things before we tear into them, so I hope that it is education for people at all technical levels.

I would like to point out that these downconverters are useful for much more than just 2401 MHz. These things will cover pretty much anything in the 2-3 GHz range with the right tweaking. Although a bit more involved, you can recrystal these things to move the LO around. I have done this, but it is very helpful to have a frequency counter or spectrum analyzer to be sure the PLL is locked. One very easy thing to do is to use a 9 MHz crystal to put a signal source on 2304 MHz for a weak-signal source. Also, they can put the 13cm band on an older MHz-range spectrum analyzer. I’ve even seen these things work for 1691 MHz GOES reception using low-side injection!

As far as antennas are concerned, you will want something with at least 10dBd gain at 2401 MHz (including feedline losses). I use both a soup-can and 16-turn helix for AO-51 reception, which can all be hand-held. I’m a big fan of the 24-oz tomato can, but cans of just about any size will work so long as their diameter is big enough to pass the wavelength. Here’s the website I used: <http://www.turnpoint.net/wireless/cantennahowto.html>

I look forward to seeing you all at the meeting!
-Andy Flowers, K0SM/2

RVHFG 2006-2007 Meeting Schedule

Date	Topic/Title	Details
Oct. 13 th	Build your own 13cm receive converter for satellite use.	Come join us for this meeting and you will walk away with a valuable piece of equipment to access the AO-51 S-band downlink. We will provide each attendee with an MMDS converter at the meeting. Club experts will be there to assist in modifying and verifying the receive converter.
Nov. 9 th	Propagation Modes for VHF DX	Here is your chance to learn about most of the propagation modes that make VHF operation beyond line of sight so challenging and rewarding. Learn from the experts how even modest stations can participate in VHF enhanced conditions including: Aurora, Meteor Scatter, Troposcatter, FAI, Rain Scatter, and even Moonbounce (EME). This is sure to be an exciting forum to exchange stories and experiences and to ask questions.
Dec. 15 th	Tune-up Clinic	This is a staple activity at RVHFG. Bring your transverters, preamps, etc. Let's find out what works and what needs some help. You may even get someone to help you bring your equipment to life. This is a great chance to learn your way around RF test equipment!
Jan. 12 th	January pre-Contest forum	This meeting is held in preparation for the January VHF QSO party brings out the best of the club's contesting spirit. Find out who's going to be on and where the rovers will be. This is club camaraderie at its finest. Let's win another gavel!
Feb. 9 th	Building low cost and repeatable VHF/UHF yagis with maximized gain/dollar.	For those beginning to discover the SSB and CW capabilities for their FT-100s, FT-8*7s, IC-706s, etc. and those wanting to build spare antennas for your applications: We will help you build a few of the renowned "cheap" yagis and supply build instructions for all bands from 50-2304 MHz. You will be amazed at how easy and inexpensive this technique is.
Mar. 9 th	Antenna range testing and how-to forum.	Bring your home brew yagis in or any other yagi, horn, dish. We will determine the gain of your system as well as return loss (SWR match). While you're waiting for your antennas to be tested we will have a panel of experts available to answer how-to questions and give advice. Let's bust those blocks together and enhance your station.
Apr. 14 th ?	RVHFG Awards Banquet	The results are in from the January Contest; let's congratulate the top operators and beginners! Let's also have a great meal and the best of company.
May 11 th	RVHFG Board Elections	This is your chance to vote for the club's leadership in the following year. Voice your choice!

The Vice President Speaks! Bill Rogers, K2TER

Boy, this year got off to a great start! Events such as the Combined RARA/RVHFG meeting, the September VHF Contest, 10GHz+ Contest weekends, and VHF Sprints provided ample opportunity to enjoy this hobby.

Although local activity was low for the September VHF Contest, there were a few teams out there putting in great effort. I hope you all had the opportunity to work them.

The N2PA crew was ever present on the bands, as usual. Their stalwart efforts always provide a beacon that announces the presence of our club throughout the East Coast and Mid West. When stations scan the 6M phone band they are sure to find Jeff's (N2JQR) friendly voice.

Mark (K2QO) was determined to put his rover on the air and found a fill-in op for his effort when Paul (W2TAU) had to bow out; Dick (K2ZR), also from the Buffalo area, had his first experience in VHF contesting in Mark's well designed rover. I know Mark is planning on improvements for January already.

While I operated the bottom 4 bands from my modest QTH in Webster, I heard a few locals on as well like Howard (K2AN), Walter (N2QO) and Al (K2ERG). I was able to work stations in FM19, FN00, FN01, FN21, FN11, FN32 from 6M-432 with my attic-bound antenna system consisting of 4 yagis on two rotors. This keeps me active when I'm not out roving.

This year RARA hosted a combined September meeting with the RVHFG at their location in Henrietta. Every one of the nearly 100 attendees was treated to a wonderful trip down memory lane, "The History of VHF", by two of our most outstanding presenters, John Gilly (W3OAB) and Ed Gable (K2MP). This was a landmark event and true to it's billing. Be sure to check out the RARA website at <http://rochesterham.org>.

The excitement didn't end there. From curator Ed Gable (K2MP), we heard the news that after years of effort the Antique Wireless Museum (<http://www.antiquewireless.org>), is in the process of relocating to a much larger facility. We listened to Andy (K0SM) talk about the project meeting scheduled for October: AO-51 downconverters. We were informed by the trooper who was representing the pumpkin patrol that "Bucky" Philips was in custody, just as it happened.

During the meeting a few of our RVHFG members were recognized for outstanding accomplishments. Barry (N2EZS), Russ (W2DYY), Dave (K2DH), Freq (WO2P), and John (WB2BYP) each received a round of applause for achieving the VUCC award for 47GHz. Frank (K2OS) stole the show when it was announced that his cards, verified by Ed (K2MP) that night, earned him the elusive WAS award on 70cm (432 MHz). Congratulations to all! We even had a founding member of the Rochester VHF Group in attendance, Richard Fish (W2OWF), and I'm sure he was impressed with how his group has been true to its charter.

We have planned a series of RVHFG programs geared toward introducing the excitement of VHF-DX operation to those who are interested. We will show how VHF weak signal operation is possible and can be made practical even for modest "start up" stations.

I'm sure you have already heard about the upcoming October meeting. This is a great opportunity to take home a useful downconverter for the AO-51 satellite. After performing a few simple mods to the provided converter completed at the meeting, and adding a simple "coffee can" antenna, you'll be on your way. For those who can bring construction tools like soldering irons, etc. Please contact Andy (K0SM), aflowers@frontiernet.net, so we can get an accurate count.

The Vice President Speaks! (Continued)

Bill Rogers, K2TER

The November meeting will focus on a presentation of the VHF Weak signal propagation modes. This presentation should be enlightening to those unfamiliar with these types of atmospheric enhancements. We are currently asking for volunteers who can share experiences and provide some presentation content to this program. Please contact Andy at aflowers@frontiernet.net or me (Bill) at k2ter@rochester.rr.com to volunteer.

The December meeting will be a tune up clinic and an "Ask the Experts" session. Come with your equipment and your questions; there will be a number of experienced groupers to help you out. Andy has told me that the AO51 satellite may be turned on that week so we can test the modules we built in October.

This is sure to be an exciting year for us at RVHFG; please find the balance of the schedule elsewhere in this issue. If you have a friend that may be interested, please invite him/her along. They are always welcome and you can be sure they will have a great time.

Bill Rogers, K2TER

Secretary Report

Judy Stonehill, N2KXS

Rochester VHF Group Meeting Minutes for September 8, 2006

The September meeting was held jointly with the Rochester Amateur Radio Association at the Henrietta Fire Hall. The meeting was convened at 1945 local by the RARA Chairman, Bill Kasperkoski, WB2SXY.

No Rochester VHF Group business was conducted at the meeting.

RVHFG members attending the joint meeting were: W2OWF, K0SM, K2TER, K2MP, W2JSG, N2VSZ, WB2QCJ, KC2IQV, W2DYY, WO2P, N2JQR, N2OPW, WB2BYP, K2OS, K2DH, NQ2O, N2RD, W3OAB, K2SQI, K2AN, WA2ZNC, AF2K, N2KXS.

Note: W2OWF, Richard Fish, who was at the meeting with other RVHFG members, is a Charter Member of the Rochester VHF Group and a signatory of the Group's original charter. It was great to see him at the meeting.

PROGRAM

John Gilly, W3OAB/2 and Ed Gable, K2MP, curator of the A.W.A. Electronic Communication Museum, gave an excellent, very entertaining presentation on the history of VHF. John and Ed showed dozens of photos of amateur radio VHF gear that had been developed over decades. They also filled us in on little-known facts behind some of the equipment ("The Rest of the Story")

The meeting was adjourned at 2230.

An easy way to receive S-band

Andy Flowers, K0SM

This is a project that has evolved over the last year. So far I have managed to use these surplus MMDS converters as RX-converters to receive both 2304 and 2401 MHz. The modification is truly “no tune” and requires no test sophisticated test equipment—not even a VOM for the basic modification! We’ll be doing this modification as a group at the October meeting, so please bring the following materials if you have them. If not, please come anyway as we will have extras and we’ll be able to share the test equipment.

Required materials:

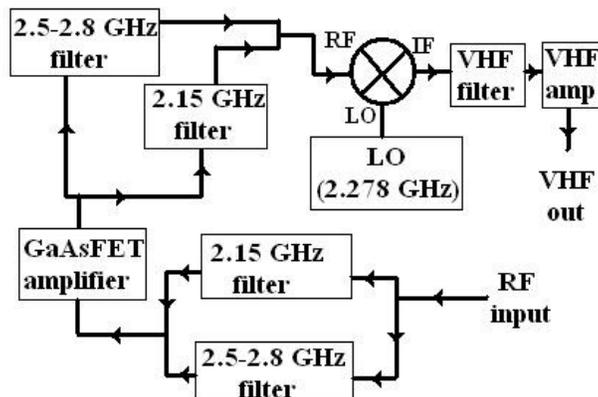
- 1) Hobby knife to cut traces
- 2) Philips screwdriver to remove case and filter
- 3) Packing tape
- 4) Small wire cutters
- 5) Tweezers/needle-nose pliers
- 6) Scissors

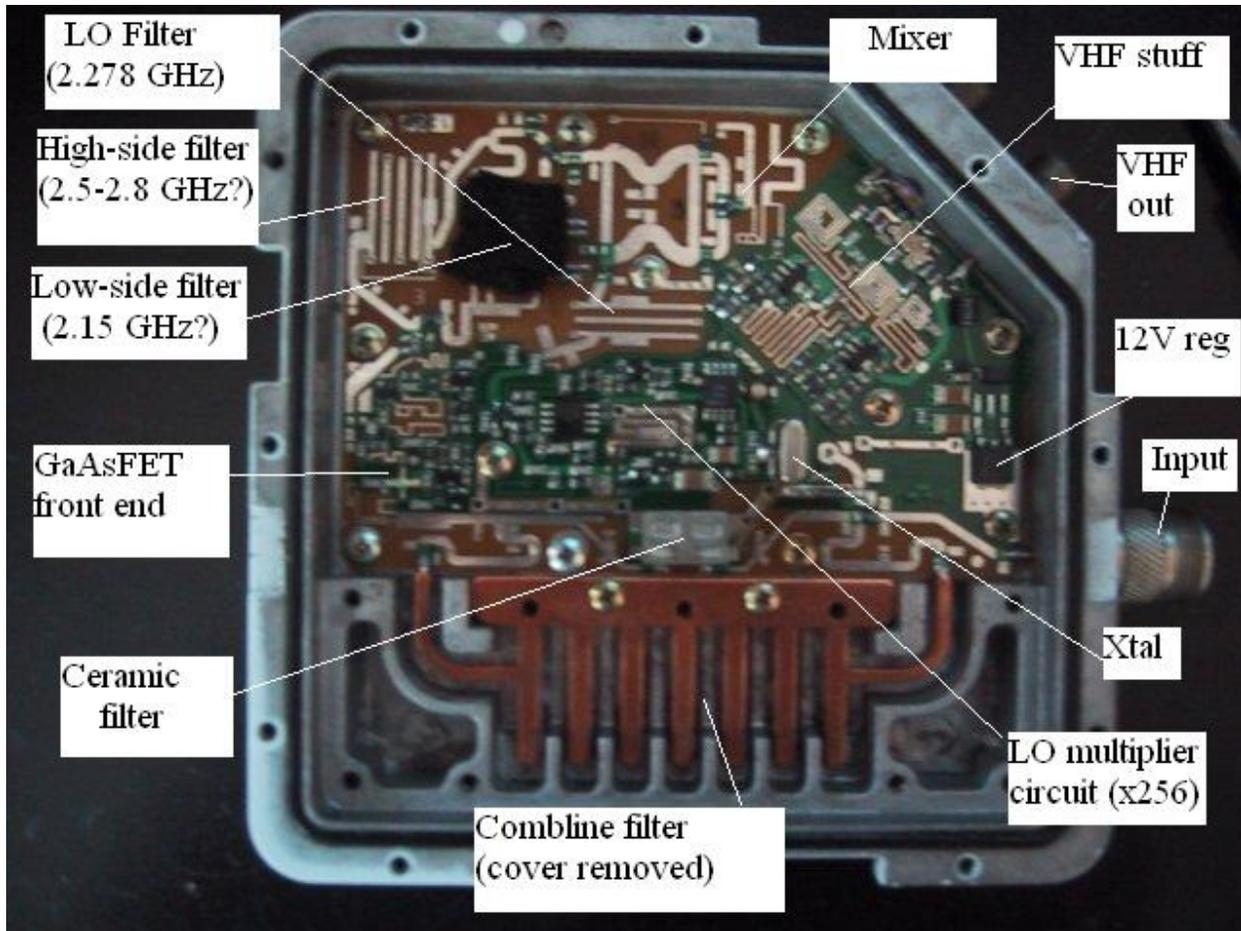
Bring if you have them, but we can share:

- 1) fine-tip soldering iron and solder (.015 or .022) for optional modifications
- 2) Radio that will receive 123MHz (in FM for AO-51 satellite)
- 3) Coaxial cable with F-connector on one end and connector for radio on other
- 4) Coaxial cable with F-connector and stripped wire/alligator clips on other
- 5) DC-power inserter/block with F-connectors (e.g., for satellite TV)
- 6) DC supply capable of 15-30VDC at 250ma

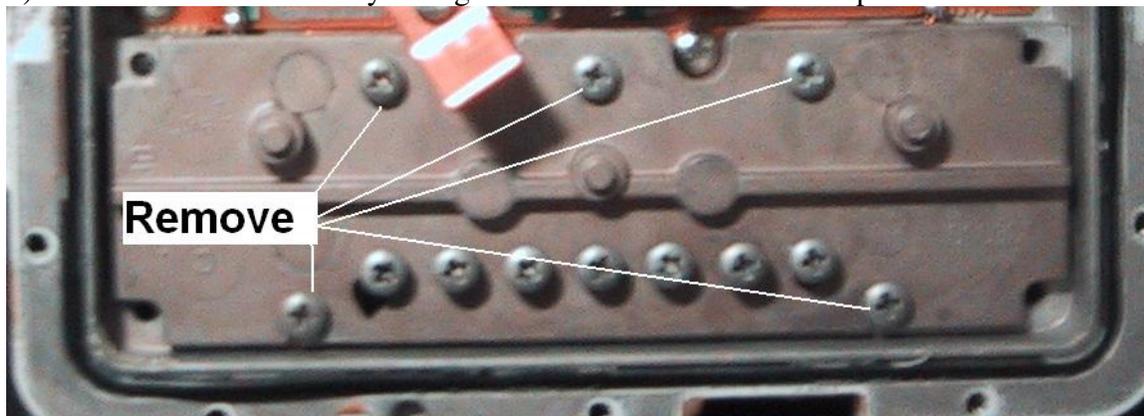
Instructions:

1) Open the case by removing all the screws. You may need a flat screwdriver to pry the case apart. You can slip the screwdriver between the plates underneath the N connector and the area directly opposite of it. The following picture can be used as a reference for what all of these parts are. If this stuff looks unfamiliar to you, fear not! At the meeting we’ll have an opportunity to discuss how this all works!





2) Remove the filter cover by taking the five screws that hold it in place:

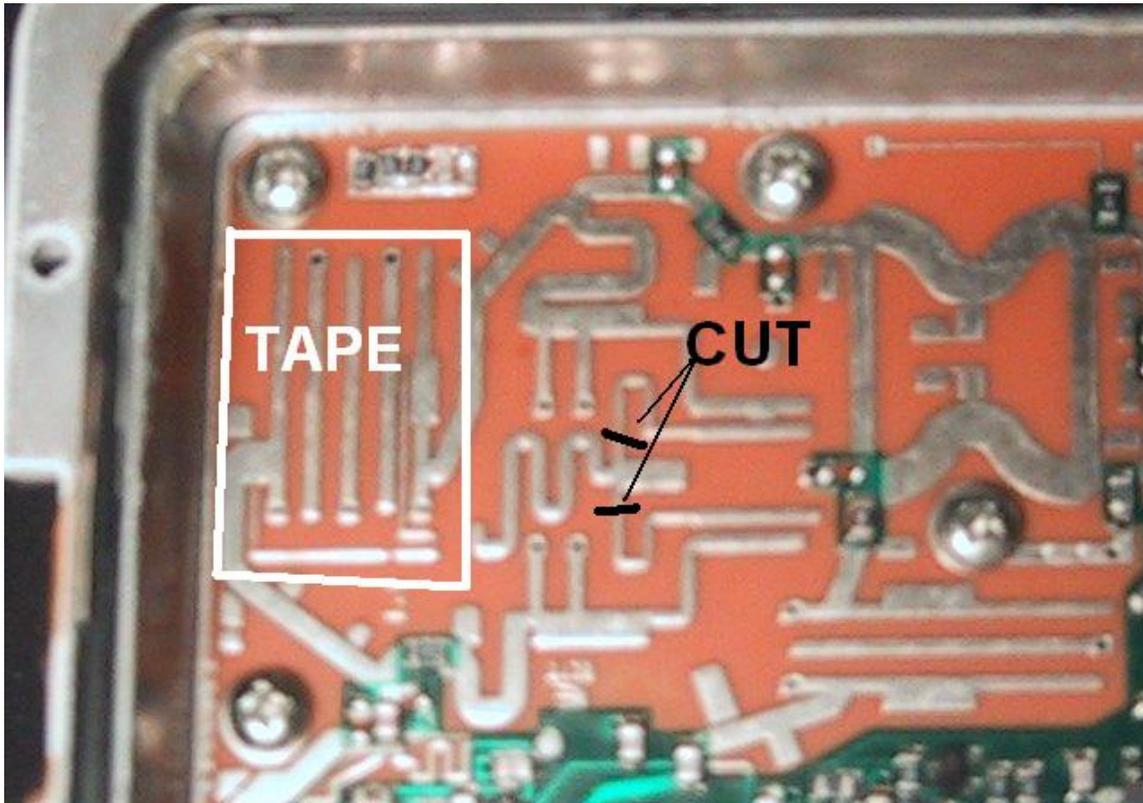


3) Take out the two stainless screws holding down the copper filter element.

4) Remove the filter element. It should pull up easily with a small screwdriver as leverage. Be careful not to lift the board traces to which it is attached.

5) Bypass the ceramic filter with a short piece of wire about 1/2" long. You may find it helpful to scrape away some of the green silk-screen on the traces to give you more room. Also, you will want to tin the wire first. Tweezers will come in handy here.

6) Using a hobby knife, cut the 2.15 GHz filter traces as shown in black below:



7) Place 4 layers of packing tape over the 2.5 GHz filter as indicated in white above. Be sure to press the layers down firmly.

That's it! We'll be testing each one at the meeting with a signal source and a radio. We can also do further modifications for 12VDC operation, and separate DC/RF, and 2304 MHz RX, but we can cover those at the meeting on an as-needed basis. We'll also talk about some cheap antennas that we can use for AO-51's S-band downlink.

10GHZ+ contest report, weekend #2

-John Stevens, WB2BYP

Gloria and I went to FN04xa, Loughlin Rd in Ontario Canada. We arrived at 1300L and set up, and quickly worked Charlie K2LDU in FN12ev Cleary Rd on 10GHz. and followed by the group of ops on FN02xu Transit Road consisting of Mark K2AXX, Dave K2DH, Scott AA2WV, Russ W2DYY and Walter NQ2O. Shortly thereafter we worked the group of Canadians in FN04ba made up of Steve VE3SMA, Murray VE3NPB, and Roger VE3RKS and Graham VE3FHM with good signals, somewhat by scattering off local terrain. Conditions on 10GHz were average. We tried 24 GHz with Steve but were not able to link up though it was likely our path was blocked by the farmhouse.

We then tried 24 GHz without success to Charlie. We were able to work Dave and Russ on 24 though signals were down from ideal or previously observed at that location. Our collective experience has been that 24 GHz has to be very strong to support propagation at 47 GHz. 47 GHz was tried with no reliable signals detected.



The conditions over the Lake were hazy indicating considerable water vapor in the air (not a good thing on 24 GHz and part of the problem on 47 GHz). Discussions ensued as to the potential for better weather on Sunday so we set up camp for the night. I looked out at about midnight and it had cleared to the extent that stars could be seen and the lights of towns due south of us across the lake could be seen. I think the lights were a composite of the lights of Albion, and Batavia based on looking at the maps. The Rochester skyline was obscured by trees. About 0400L the clear air had changed to fog and obscured the view beyond 100 ft.

Sunday morning we set up and worked Charlie K2LDU in FN02vu Werner Rd on 10 and 24 GHz but copied no signal on 47 GHz. We tried several other times hoping conditions improved with the hours. We have previously noticed a strong variability over the day, but 47 GHz was not to be had while we were there Sunday.

We heard K2AXX, W2DYY and AA2WV over at FN12hr Gannet Hill and attempted to run on 10 GHz but found that path obstructed by trees on both ends.

We ran with some of the Canadians in western FN04 over the day but had non-ideal look angles into trees and farmland.

We drove back by way of Alexandria Bay and arrived at FN23av 100 Cows in the late afternoon and gave some calls on 144.260 but heard no takers.

Equipment was as follows:

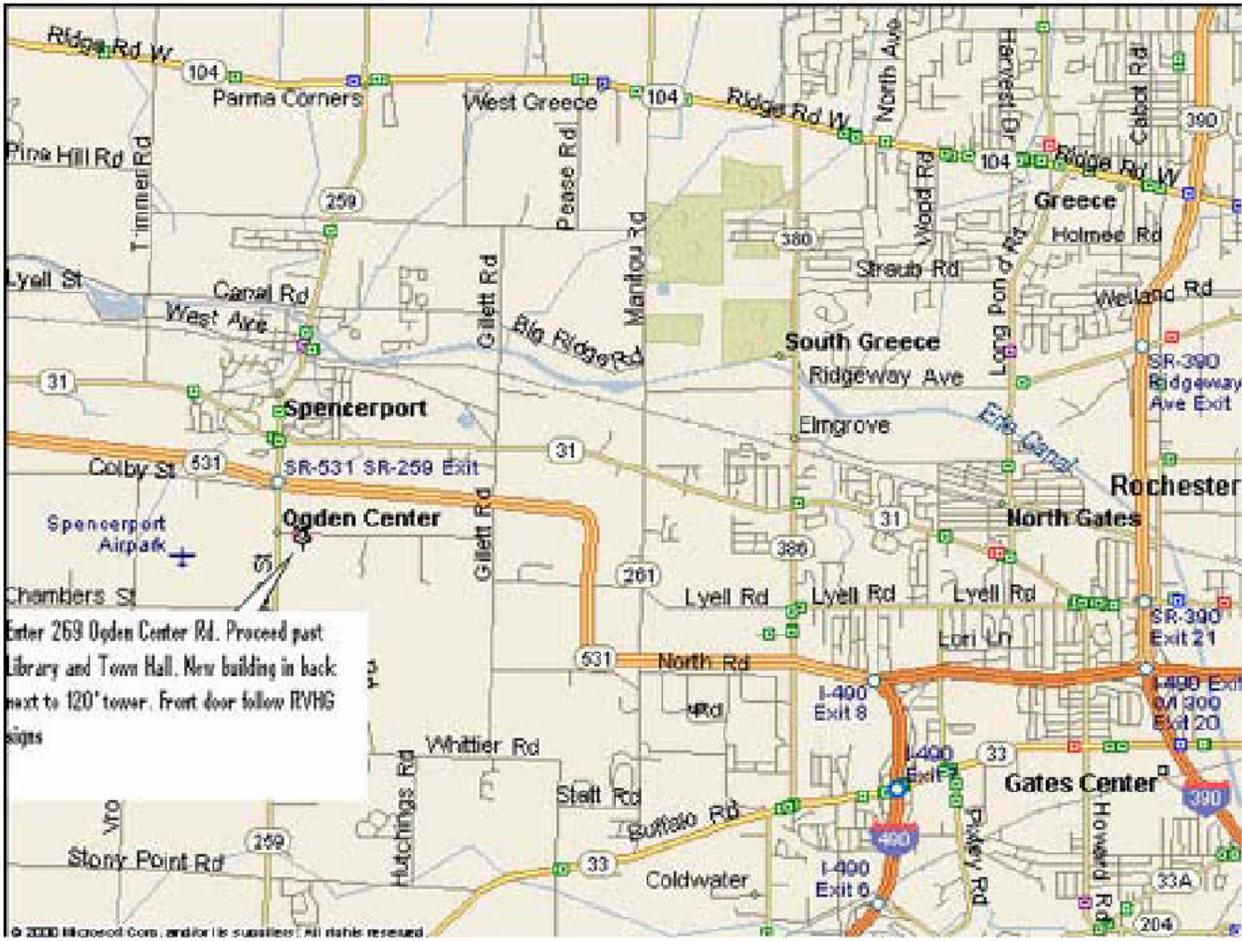
- 10 GHz 200mW 30" prime focus dish**
- 24 GHz 2W 22" prime focus dish**
- 47 GHz 30mW 12" cassegraine**

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RVHFG Meeting Site: 269 Ogden Center Rd (Ogden Town Hall / Coordination Center)



Things of note about our Meeting Location:

- 1) It's VERY convenient from ANYWHERE in the Rochester area. From downtown, it's under 10 minutes. From the eastern towns it's under 25 minutes. From the south of Rochester (Geneseo) it's only 45 minutes.
- 2) It's a VERY nice building. A brand-new building, modern facilities, and PLENTY of parking
- 3) It has access to internet connections and a video projector, and has seating for up to 70 people.
- 4) In other words, it's a tremendous location. BIG thanks go out to the Town of Ogden and Jeff Tewksbury (N2JQR) for allowing us the privilege of using this facility.

