

# The Rochester VHF Group

# The VHF



# Journal

Volume 66, Issue 4

December 2013

The next regular meeting of the Rochester VHF Group will be Friday, December 13th, 2013 at 7:30 PM

K2TER's QTH  
130 Angels Path,  
Webster, NY 14580  
Map and directions on last page

**Map and directions on last page**

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EMR  
Classified

**Topic:** Tune-up Clinic

RVHFG's Beacons	
Band	MHz
6m	50.078
2m	144.298
1.25m	222.050
70cm	432.300
23cm	1296.257

## The Chairman Speaks! Bob Nezelek W2CNS

**Groupers:** We had a great meeting at the AWA last month. The AWA staff proudly demonstrated numerous working apparatus to the group. Everyone was impressed and I want to thank the AWA for their hospitality.

This month we are having our yearly "tune-up" clinic at the residence of K2TER. Bring your preamps as well as other equipment and see how they perform.

I want to discuss a matter than is very important to our hobby: Electro Magnetic Radiation (EMR) and how it relates to rf safety in our hobby. In a recent email on moon-net-googlegroups.com Doug McArthur, VK3UM wrote an excellent article on this subject and I asked Doug for permission to include his article in our newsletter and he concurred...

Continued....

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# The Chairman Speaks!

Continued... I urge all of you to read this material. You might be surprised how the power levels are that can cause health issues. FYI, VK3UM has software that is on his website to evaluate your station. PLEASE read the information carefully!

In these past months the annual ARRL International EME contest was held. Usually, after the contest, operators publish their results on the internet. Reading the summaries of stations worked and identified revealed some amazing data. The data showed that there are more active EME capable stations worldwide than I could ever imagine. I am sure that others already know this. Can you imagine that many EME capable stations copied over 200 EME stations via the moon during the contest! Also, I am not ignoring CW as a way to make contacts.

How is this done? Use the digital modes that are available to us. I am referring to WSJT and MAP65. You do not have to be a super station to participate. Would you believe that a single yagi station can be worked? Usually with a better equipped station is on the other end.

Why am I discussing this? Well technology (hardware and software) allows us to do this and I believe that the new younger generation hams will embrace this technology. We need them! Our country needs them!

Finally, the ARRL VHF Contest will be in January. How about putting on a great effort that will put the local grids on the map again

Also, try to bring a guest to the meeting.

W2CNS Bob Nezelek

## Secretary Report

Freddie Sulyma, WB2GFZ

### Rochester VHF Group Meeting Minutes for 8 November 2013

The meeting was called to order at 1920L by Bob (W2CNS). Bob welcomed everybody and asked if there was a motion to accept the minutes from the last meeting as printed in the Journal. Frank (K2OS) made the motion to accept and Tom (KV2X) seconded. W2CNS asked if there was a motion to accept the Treasurer's Report from the last meeting as printed in the Journal. K2OS made the motion to accept and Dave (K2DH) seconded.

**Attending:** KV2X, W2UAD, K2GAB, WB2BYP, W2IT, K2OEQ, W2FUI, W2CNS, WB2GFZ, AB2YI, N2EKR, AA2DT, K2DH, KC2PCD, WA2ZNC, and K2STF.

**Old Business:** The Microwave Update (MUD) committee (K2DH and K2OS) indicated that they have been planning for next year's MUD event which is tentatively scheduled to take place here in Rochester NY the weekend of October 18 2014. The committee indicated that they presented an informal Power Point presentation at this year's MUD meeting. Frank indicated that there were approximately 3 venues that might be appropriate for Hotels/Meeting place for next year MUD event and that efforts to identify resources is under way. Also three coach lines are being evaluated to provide transportation from the hotel to the AWM.

The RVHFG/RDXA 6m Skimmer project status was highlighted by WB2BYP. John indicated that the Skimmer system was being move to Jeff Ach's QTH on 9 November 2013.

**New Business:** WB2GFZ indicated that the Rochester VHF Group's Domain name fee was coming due and that he would touch base with Bill (K2TER) to determine if we should renew for 1 year (\$35.00), 2 years (\$60.00) or 5 years (\$120.00).

Roy (W2IT) talked about AWA membership and that at present the annual dues is \$25.00 which include newsletters and visits without the \$7.00 entrance fee. It was also mentioned that youths 19 years of age and younger would not have to pay the \$7.00 AWM entrance fee.

After New Business Tom (KV2X) made a motion to adjourn the meeting and W2FUI seconded the motion.

**Program:** The AWM personnel provided a tour of the newly established museum.

VHF Group  
**Treasurer's Report**

CHECKING/CASH ACCOUNT

Balance (as of 11/7/2013, Cash = \$60.00, Checking = \$2030.09)	\$2090.09
Income:	\$60.00
Membership/Renewals:	
11/8/13	
K2OEQ, AB2YI, WA2ZNC, W2IT	
11/29/13	
KB2EJZ (11/29/13)	
Anonymous Cash Donation (11/8/13) - \$10.00	
Expenses:	\$50.00
Donation to Antique Wireless Association (Check# 1038, 11/15/13)	
Current Balance (\$110.00 Cash, \$1990.09 Checking):	\$2100.09

*Respectfully submitted,*

*Freddie Sulyma, WB2GFZ, Treasurer*

## **The Vice Chairman's Report**

**By Tom Jennings KV2X**

I would like to remind everybody that the December RVHFG Meeting (Friday December 13) we will be having our yearly Tune-Up Clinic, so be thinking now about preamps, transverters, converters or filters that you would like measured and or tweaked for Noise Figure, Gain or Loss performance. The Tune-Up Clinic will be held at the home of K2TER, Bill Rogers, in Webster. Map can be found at the end of the Journal.

How is everybody's prep coming for the upcoming January VHF Contest? Don't forget about the two new categories. First is the **3-Band** category in which participants are limited to 100 W or less on 6 and 2 meters, and 50 W or less on 70 cm. This category is just right for those sporting an "all-band, all-mode" rig! The second category is to encourage new hams to give VHF+ contests a try without having to buy new equipment, the **FM Only** category allows operation with 100 W or less on the 6 meter, 2 meter, 1-1/4 meter, and 70 cm bands. Experienced VHF+ contesters will want to include FM capability to work these new stations. Remember to upgrade your logging software and operating aids to add these new categories well in advance of the January contest date

73,

Tom kv2x

# EMR

By Doug McArthur, VK3UM

I note the discussions continue about the power handling of relays and coaxial cable...so it is obvious that many out there are running serious 'goo'. I too have cooked several over the years and photos can be seen on my website of my vaporized disasters. **But ... Have you ever thought about the amount of Electro Magnetic Radiation (EMR) being emitted from your Station? Have you considered the safety of yourself, your family and those you neighbors?**

To put it into perspective here are four common 'typical EME' examples I have chosen to illustrate my point.

ARPANSA and CEU (European)						
Band	Power (W) at Feed	Antenna	Gain	SW	on axis exclusion zone bore site	safe tower height
2 M	1500	4 x M <sup>2</sup> 32 XPol	21.74 dBd	JT65	74.87 M (245.57ft)	9.94 M (32.29ft)
70 cm	1000	4 x DJ9BV	21.51 dBd	JT65	31.38 M (102.92 ft)	7.08 M (23.24ft)
23 cm	300	4 M Dish	29.95 dBd	JT65	47.85 M (156.96 ft)	6.20 M (20.32ft)
3 cm	20	2.5 meter Dish	43.93 dBd	JT65	49.73 M (163.12 ft)	5.25 M (17.22ft)
FCC						
2 M	1500	4 x M <sup>2</sup> 32 XPol	21.74 dBd	JT65	119.79 M (392.92 ft)	12.75 M (41.82ft)
70 cm	1000	4 x DJ9BV	21.51 dBd	JT65	79.38 M (260.36 ft)	10.27 M (33.70ft)
23 cm	300	4 meter Dish	29.95 dBd	JT65	66.31 M (217.50 ft)	6.66 M (21.84ft)
3 cm	20	2.5 meter Dish	43.93 dBd	JT65	66.31 M (217.5 ft)	5.40 M (17.70ft)

Those figures relate to the mandatory EMR requirements required by the FCC, CEU and ARPANSA (VK) Standards. (Derived from WHO and other eminent Health recommendations)

The distances are naturally less for conversational CW, but I won't go there!! Play with the software and see for yourself what your Station situation requires to meet EMR. (If you happen to live in UA then they are far more stringent, so check you Countries' requirement if you are not sure, and if different, my software may be varied to suit.

Recently here in VK, an application by the WIA to the Licensing Authority to permit an increase in the maximum permitted power of HF stations to 1000W PEP resulted in a 12 month trial.

At the conclusion of this trial (just ended) the Licensing Authority (ACMA) declined to allow the permanent acceptance of this requested power increase partly on the grounds that some Amateurs were not adequately conversant with EMR requirements. (I am paraphrasing). Note that this was a only High Frequency request, not VHF and above. (High power (HP) permits for EME are still issued on a case by case basis... very difficult to obtain if you live in a city)

The WIA has now embarked on an education campaign to address the ACMA concern with the view to re apply again in ~12 months time.

Feed back gained from the audiences from my talks on EMR of late seem to confirm the ACMA viewpoint.

At the 2002 International EME Conference in Prague I first presented an EMR paper (and the associated software EMR Calc) which was a 'by product' of obtaining the first high power EME license issued in VK under the new licensing requirements [LCD]. During the recent HP trial the ACMA accepted my software (with minor additions and small changes) as part of an applicant's submission.

The radiated power coming from your antennae is just one aspect of your EMR safety. **Have you considered the radiation from the current crop of solid state PA's or even the shielding of your current PA? How much RF is coming out the blower output? Has any radiation measurements been performed on these new solid state units?** Most of these constructions are promoted without shielding and little or no mention of

safety procedures when tuning and aligning the pallets. **This I believe is totally irresponsible by the magazine publishers and kit manufacturers.** Very few of the commercial manufacturers warn of the dangers if covers are removed.

Snow flaking SHF PA's is wrought with danger as any professional will tell you, yet in the Amateur field it appears relatively common practice. Two prominent VK's, now SK, that I knew well, had cataract burns directly related from their professional and Amateur work on HP SHF amplifiers. Have you wondered why the ON0EME beacon is restricted to transmit in elevation?

During my 'part past life' in High Power Broadcasting my staff and I, maintained the most stringent EMR requirements within our laboratories and out in the field. As designated RF workers we were permitted to work in higher power fields but were required by law, to have yearly medical checkups (eyes). Servicing PA's was always an absolute pain in removing and replacing covers with each adjustment but it just had to be done. Very few of the manufacturers PA's could be worked upon safely (openly) at powers even as low as 10 watts. (UHF Analog TV).

**I raise this as a matter that some of the new comers to our hobby may not be aware of the dangers of EMR and how it could affect themselves, their families and their neighbors.** In most Countries, EMR compliance is part of your Licensing condition and which you required to abide by Law. Yes, in EME circles, talking about your power has been and still is a taboo subject in many countries.

*It is more than your relay and coax you can cook!! Your microwave oven can cook a chook on 13cm with 800watts... you too can generate the same EIRP power!!*

For further information please refer to my web site where you will find my EMRCalc software ( <http://www.vk3um.com/emr%20calculator.html> ), detailed information, and link to a video presentation I gave recently given to a prominent VK3 Radio Club. (Beware it runs for over an hour)

Please be careful with EMR, this really is serious stuff.

73 Doug VK3UM  
[www.vk3um.com](http://www.vk3um.com)

Comments from K2OS:

This is very interesting to me. Doug makes a good point on SSPAs vs. forced-air cooled vacuum tube PAs. My thoughts are that a forced-air cooled tube type PA is inherently safer (in regard to EMR) due to construction practices. Aluminum chassis and associated covers used numerous fasteners to improve sealing of the forced-air path. The use of numerous fasteners likely aided in the reduction of EMR leakage from a PA anode compartment. I am not sure whether chassis pressurization or EMR safety was the primary need to be mitigated by hams who built high power tube type PAs. By default, we covered both mechanical and EMR requirements.

From watching website videos, I recall seeing VHF/UHF SSPAs being tested with no shielding enclosure around the pallet. Since cooling of SSPAs is generally accomplished by external fans blowing air across a heat sink, there is no need for an enclosure that is necessary in a vacuum tube PA for cooling purposes. I agree that Doug's comments are very appropriate in this new era of SSPAs.

When I exhaust my supply of spare tubes for my high power PAs, I certainly will switch to the SSPA units. Also, I will certainly have the SSPA contained in a shielded enclosure using an appropriate amount of fasteners to reduce EMR leakage.

This is a great subject for discussion for VHF/UHF and above clubs and individuals.

73, Frank, K2OS

# Classified Listings

None this month

## Meeting Location

K2TER's QTH 130 Angels Path, Webster, NY 14580

