Spurious Emissions

Orleans County Amateur Radio Club

February 2010

OCARC Meetings

The OCARC meets at **7:30 PM** on the **2nd Monday** of each month at the Orleans County Emergency Management Office (14064 W. County House Rd. Albion, NY)

The exceptions are the August (picnic) and September (dinner) meetings

Club Officers

President
Stephen W Maier KZ2R
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Richard Toussaint KA2BCF
Dir
Bruce Sidari WA2TMC
Net Mgr
Marion Toussaint KA2BCE

OCARC Meeting February 8, 2010

WHERE: ***EMO***

WHEN:

Fevruary 8, 2010

TIME: 7:30 PM

Program:

Ok I'll be honest I don't know what the program will be this month.

I just realized yesterday that I will be out of town on meeting night.

I was going to do the program but that's not going to happen.

My apologies to all. I try to provide a live program as much as possible. Wayne N2WK did a great job last month.

I will have a program in place by meeting night.

Steve KZ2R is working with the EOC to have a program describing SKYWARN.

The SKYWARN program has always had Amateur Radio as an integral component.

This is tentatively scheduled for April.

My apologies once again for missing this months meeting.

Please attend , socialize and be assured there will be a program but most likely not a "live person".

Bruce WA2TMC

Contacting The Space Station

Fellow club member KB2BLS has contacted the ISS (Space Station) many times and has actually downloaded photographs.

Please contact Bill if you need additional information. He can tell you about the latest software for tracking and communicating with the ISS. ***All FREE***

I'll be placing a few ideas about ISS communications in this and future issues..

It's just one more aspect of Ham radio that can be exciting, educational and very inexpensive.

Breakout of the "repeater only" mode and it check it out.

1296 MHz Mobile Communications

There is a 1296 Repeater in Gasport operated by Andy KD2WA

Simplex communications at 1296 MHz FM differs somewhat from regular two meter simplex operations.

Usually, for two meter simplex operations, one would try to use gain mobile antennas to get an advantage on the signal. Since a quarter wave is eighteen inches, a gain antenna tends to be longer than a quarter wave and eighteen inches. One has some flexibility in terms of mounting the antenna on a trunk lid, off to one side, and the results are reasonably good.

If you're travelling a lot in between valleys, a quarter wave antenna is preferrable. While it has less gain, it transmits higher in elevation. That additional component in the elevated direction can help you hear signals coming from above the valley walls and similarly, helps you to be heard if there is an available path.

In contrast, a quarter wave antenna on 1296 MHz is a little more than two inches. When mounted on the trunk lid, the roof has a substantial effect on the radiation pattern and can obscure contacts. Since the antennas are so small, you can use a gain antenna, such as the Diamond NR-124 which has 8.4 dB of gain and is only 28 inches long. When mounted on the trunk lid, it offers some visibility above the roof and helps you get out some of the signal.

Still, the roof impedes a good amount of the signal. It's best if you can run a mag mount antenna, and place the antenna in the middle of the roof. You'll enjoy the 8.4 dB of gain in all directions, with no obstruction from nearby features of your car.

Since the wavelengths are 1/8 the size on 1296 MHz, multipath and mobile picket fencing is less pronounced at normal driving speeds. It has the effect upon picket fencing as if you're driving eight times faster. The received signal would drop in and out faster than the AGC would react, and those brief moments you hear when the signal gets noisy and reemerges from the noise tends to go away. Imaging hearing normally picket fencing at 30 miles per hour, but having it disappear because it seems as if you're driving at 240 miles per hour!

On analog FM, you're more likely to encounter periods when signals can be heard or not heard, rather than hearing the telltale signs of picket fencing that clue you into the fact that you're about to lose a contact. As the gaps in silence increases or the fading noise of bacon sizzling increases, you'll know you're going to lose the signal shortly.

This is more annoying on digital voice using the Icom ID-1 radio, as you really can't tell the signal quality just by listening to the audio. Since it's hard to keep watching the S meter while you're keeping your eyes on the road, you're more likely to briefly hear the other station, then hear silence when the other station becomes out of range.

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If you're mobile and the other station is fixed and running a gain antenna, you'll enjoy the greater opportunities at simplex operation. If there's buildings or other large structures that the fixed station can use to bounce the signal, it tends to give the effect as if he's operating a repeater on that building. That's especially true if the building is within two to three miles of his location.

The interference free nature of 1296 MHz mobile communications, the high antenna gain possible in small packages, and less picket fencing makes 1296 MHz mobile communications a refreshing change and challenge from two meter simplex operations. Why not be open to give it a try. You'll never see two meter simplex operations in the same way again

Additional Space Station INFO

Basic radio setup

Contacting the International Space Station resembles making an FM repeater contact over greater distances than you've experienced on earth. You can think of it as making a long, long range two meter FM simplex contact to a station that's moving real fast.

Distances from the ground to the ISS can vary from about 215 miles when the ISS is overhead, to about 1,200 miles when it approaches the horizon. Ten watts of radio output fed into a unity gain vertical antenna such as a ground plane is adequate to about 1,000 miles, provided you're the only station operating within sight of the ISS. Five watts of radio output fed into a unity gain vertical antenna is adequate to 900 miles with some noise as heard by the astronauts.

You can see it is possible to talk with the ISS using a 5 watt walkie when it is overhead, and the crew is awake and at the ARISS radio station. When the ISS is that close, you can make contact using a rubber duck antenna. As the ISS moves overhead, do not forget to rotate your handheld so that the antenna is oriented more horizontal, to send out a better signal in the vertical direction.

As the angle lowers towards the horizon, a handheld beam antenna is useful for increasing the antenna gain when transmitting and receiving.

A better setup is to use a mobile or base VHF transceiver radio. One that puts out ten or more watts is ideal. Most modern VHF radios put out a mix of low, medium and high power typically covering five, fifteen and fifty watts (as an example).

As an in-between compromise, you may use an external power amplifier hooked up to a two meter VHF walkie. It is not as flexible as the VHF mobile transceiver but it will get the job done.

ISS Antennas

Basic antenna setup by AH6RH

For VHF voice communications, the astronauts are usually transmitting ten watts into a "vertical" antenna. Because the ISS can be oriented in a number of directions at a given moment, the "vertical" orientation may or may not match a vertical orientation on earth.

The simplest antenna to use to contact the space station is a quarter-wave vertical antenna. A 1/4 wave magnetic mount antenna mounted in the middle of the roof of a car is very adequate for most situations. For orbital passes that are sixty degrees and higher, it will be adequate to drive the antenna with a five watt radio. As the ISS gets closer to the horizon, its distance increases and so the power output should be increased. Adequate communication can be made with ten watts, but twenty five, fifty or more watts is recommended for passes lower than fifteen degrees in elevation.

If the pass is lower than twenty degrees, a vertical antenna with additional gain (3 dB or more) may be advantageous. But, if the pass is higher than about forty five degrees, do not use such a gain vertical antenna. Otherwise, as the ISS passes overhead, the signal to and from the ISS will actual drop rather than increase in strength because the gain is focused towards the horizon rather than overhead.

My favorite handheld beam antenna is the Arrow Antenna Model 146/437-10. I find the roll up bag very valuable for keeping all the parts together and readily accessible for use. I also use the antenna for radio direction finding (RDF) activities.

It is possible to hand-hold the antenna and point it as the ISS moves across the sky. I find it easier to place the antenna on a good photo or video tripod and use the handle on the tripod head to point the antenna.

That allows me to concentrate on tracking the ISS, or work the laptop to make contact using the computer to work the APRS or the packet radio mailbox modes. The Arrow is ideal in that sense, as it has a pre-drilled and pre-threaded hole in the base that easily screws onto a photo tripod. I use a Manfrotto Bogen 3221 tripod which I use at other times for photos and videos. I recommend using a good, solid tripod so it doesn't blow down at the most inopportune time.

OCARC Weekly NET

The OCARC 2 Meter Net meets every Tuesday evening at 9:00 PM on the WA2DQL repeater.

Freq = 145.27 KHz –600
PL = 141.3 Hz

This is a very informal net and ALL stations are welcome.

Our monthly Simplex night is the Monday FOLLOWING our normal club meeting.

It is also at 9:00 PM and is conducted on 145.27 Simplex.

The schedule of net Control stations for the next month is:

Feb	8	KA2BCE
Feb	16	WA2TMC
Feb	23	KA2BCF
Mar	3	KC2JKU
Mar	10	KA2BCE