CQ de WA2LQO
Happy Holidays
The official voice of the Grumman Amateur Radio Club
DECEMBER 2010 VOLUME 84 NUMBER 12

COMMUNICATIONS SYSTEMS (continued from November 2010)

By Bob Wexelbaum, W2ILP

There are two methods of generating an SSB signal; the filter method and the phasing method. The filter method has the audio baseband signal fed to a balanced modulator. The output of the balanced modulator contains both the upper and the lower sideband. One or the other of these signals is then selected by a filter, which has a passband which encompasses the frequency range of the selected sideband. The filter must have a cutoff sharp enough to separate the selected sideband from the other sideband. The frequency separation of the sidebands is twice the frequency of the lowest frequency spectral components of the baseband signal. Speech contains spectral components as low as 70 Hz. In ham transceivers it is common however to limit the lower limit of speech audio to about 300 Hz, as this does not affect the intelligibility of speech. Similarly an upper audio limit of 3000 Hz does not cause serious distortion. Telephone quality is normally 300-3000 Hz. Limiting the audio range conserves bandwidth. The SSB filter bandpass must be relatively flat for 300- 3000 Hz , with its response falling off sharply by about 4000 Hz to 40 dB down, to provide sufficient rejection of the unwanted sideband 40 dB. It also serves to further reject the carrier itself, if any carrier gets through the balanced modulator. In commercial systems a pilot carrier may be injected at a later stage of the transmitter. As an example suppose we want to generate an SSB signal of 10 MHz. (This is just for an example, not necessarily in a ham band). We would require a filter that provides 40 dB of attenuation at a frequency within 600 Hz at a frequency of 10 MHz. Filters of those parameters are very elaborate. It is thus common to translate the baseband signal to the final carrier frequency in several stages. For example, two such stages would have a first stage that selects a carrier frequency of 100 kHz. The upper sideband, say, at the output of a balanced modulator would range from 100.3 to 103.0 kHz. The filter following the balanced modulator which selects this upper sideband only needs to have a much wider percent bandwidth (40 dB in 0.6 % frequency change) compared to a 10 MHz modulator circuit. Now when we feed the output of the second filter to another balanced modulator or mixer with a 10 MHz carrier we can again select the upper sideband. The second filter must provide 40 dB of attenuation in a frequency range of 200.6 kHz, which is only 2 % of the carrier frequency. A balanced modulator is actually two mixers. Its output is not only the sum and difference frequencies but the input frequencies as well. Here is some merit in using a simple mixer instead of a balanced modulator, because the balanced modulator in this example would output 100.3 to 103 kHz as well as the 10 Mhz carrier, but the second filter intended to pass the range of 10,100.300 to 10,103,000 Hz. It is not easy to make a filter that will suppress the 10 MHz, since the carrier is separated from the lower edge of the sideband (10,100,300 Hz) by a 1% frequency change. Thus for an HF or VHF SSB transmitter using the filter

method there must be more than one frequency translation (converter) stage. Most ham radios use three stages. The alternate method of generating SSB is the Phasing Method. The phasing method avoids the need to use passband filters but requires balanced modulators and phase shifting networks. In theory the phasing method seems mathematically simple, but it is not as popular for ham usage because it requires exacting balances which are difficult to construct and adjust, because of the practical limits of component tolerances.
(To be continued)

PRESIDENT'S NOTE by ED GELLENDER, WB2EAV
December 2010

There are two really big things to report this month. First, the annual holiday party for the Grumman Amateur Radio Club will be held on Wednesday, December 15th. It will be held, as it has been for the past few years, at Bertucci's Restaurant, located about a quarter mile north of the Northern State Parkway on Route 110. It is on the west side of Route 110 at a traffic light.

They have always been nice to us and have provided a nice dinner for a reasonable price. They also have accommodated our variable attendance numbers. Here is how it will work: We will meet at Bertucci's at 5:30 PM, and at 6:00 PM we will give them a head count. If we have enough people for a private room, it will be available; If we don't have enough they will provide us with table(s) in the main room to comfortably seat us all. I'm looking forward to seeing you.

By the way, you might want to bring a checkbook and keep your dues up to date. Basic dues are still $20 per year ($25 for two or more members at the same mailing address).

The other big announcement is that on Sunday, January 9th – just a few short weeks away – is the 2011 Ham Radio University. If you have never been to one, you simply must try it. It is held at Briarcliffe College (1055 Stewart Avenue in Bethpage) and from 9 AM to 3:30 PM it is chock full of forums. From noon to 1 PM, ARRL President, Kay Craigie, N3KN will be giving the keynote speech. Admission is only $3 and full information is available at the website: www.hamradiouniversity.org

By the way, many local clubs will have tables there. W2ILP has been doing an excellent job representing our club for years, be he apparently cannot do so this year. Unfortunately, I have other commitments too. Any volunteers??
73,
Ed, WB2EAV

SILENT KEY

Our Secretary Karen's father, Kenneth H. Kuhn, 85 (formerly N2XXS) passed away on November 17th. He was a Marine and he had encouraged Karen to become a ham.
Karen's vanity call sign is to honor her late uncle, Robert M. Kuhn, W2ABK.

GRUMMAN AMATEUR RADIO CLUB

MINUTES OF GENERAL MEETING 11/20/2010

By Karen, W2ABK, Secretary

The meeting was called to order by Ed at 5:45 PM.

TREASURER'S REPORT – Ed, WB2EAV

Finances continue to be in good shape.

REPEATER REPORT – Gordon, KB2UB

The repeaters are working.

NET REPORT – Karen, W2ABK

Thursday night net at 8:30 PM on 145.330 MHz had a few check ins.

Sunday morning net at 7:30 AM on 7.289 MHz had 4 check ins.

VE REPORT – Bob, W2ILP

Two ham applicants passed exams, one new Technician and one upgraded to Extra Class. There were 4 VEs present: AB2ZW, W2ABK, WB2IKT and W2ILP.

OLD BUSINESS

We need programs and new ideas for our meetings.

NEW BUSINESS

The December general meeting/ holiday party will be held at Bertucci's Restaurant. See President's message for details.

PROGRAM

The November meeting is usually the time for election of officers, however an election was not held due to the lack of a required number of members being present.

GARC NETS:

40 Meters: 7.289 MHz at 7:30 AM EST Sundays Net Controller: Eugene, W4JMX

2 Meters (via repeaters): 146.745 MHz (-600 kHz) at 8:15 PM EST Thursdays

145.330 MHz (-600 kHz) at 8:30 PM EST Thursdays

Tone for both repeaters: 136.5 Hz.

GARC Net Controller Karen, W2ABK

ARES/RACES NETS: Mondays

MEETINGS

General Meetings of the GARC are held on the third Wednesday of each month, starting at 5:30 PM, at the Ellsworth Allen Park in Farmingdale. Driving directions and maps can be obtained from http://www.mapquest.com. It is suggested that the GARC web site be checked to be certain of meeting location, which may change after this newsletter is distributed. Board meetings are held a week before the General Meeting at the Bethpage Skating Rink.

WEB SITE

The GARC web site can be found at http://www.qsl.net/wa2lqo . Webmaster is Pat Masterson, KE2LJ. Pictures of GARC activities, archives of newsletters, roster of members, and other information about the GARC may be found there.

INTERNET LINK OF THE MONTH FOR INTERNERDS AND PUZZLE

This month I am going to present a puzzle for you to solve. It is based on the TV program "Let's Make a Deal", which you may be familiar with. The solution to the puzzle may be found by Googling the "Monte_Hall_Problem" on the Internet (which can now be our Internet link for this month). PLEASE DON'T LOOK UP THE SOLUTION BEFORE YOU ATTEMPT TO SOLVE THE PUZZLE YOURSELF.

Monte Hall was the MC on "Lets Make a Deal" and he presented three doors, labeled #1, #2, and #3 to a contestant. Behind one of the doors was a desirable new automobile. Behind each of the other two doors there was an undesirable goat. The contestant is asked to select one of the doors. He plans on picking door #1, but before he can open it, Monte opens door #2, exposing a goat. The contestant is now given the opportunity to open up door #1, as planned, or to switch his choice to door #3. Should he switch? Would it make any difference if he did not switch and opened door #1? Why? The answer may be found by Googling to the subject and clicking on the Wikipedia solution. Before doing so, I'd bet even odds that you will come to the same wrong conclusion that I did at first.

Solution to the November puzzle:

Last month, in my editorial, I asked you to solve the riddle of why and how Cablevision settled their financial dispute with Fox TV before Election Day. My own belief is that it had little to do with the FCC or fear of FCC enforcement, and thus even less to do with amateur radio. Since this subject (at least from my point of view) seems basically political, it really doesn't belong in this newsletter. Any reasons for the settlement are entirely up to your own judgment of the facts involved. Enough said.

Repeater News

The following information comes from the Radio Central Club's Newsletter;

Elisa Bellido, KC2WPU is the Telecommunications Manager at Saint Charles Hospital. With the help of her friend Steve Ackerman, W2CZN and the Radio Central Club, she has set up a 2-meter emergency ham station in her office on the first floor of the hospital using a FT-720 (provided by Suffolk County). Neil Heft KC2KY, Richie Fisher KB2ZPW, and Stan Bryer W2SCB ran preliminary tests using HTs to determine the best antenna location for the emergency station antenna. Of consideration was the possibility that the St. Charles Hospital antenna would be too close to the Radio Central Repeater W2RC (145.15). Tests were run for simple de-sensing and for communicating with local repeaters, including the Larkfield Club's 145.43 repeater and the GARC 145.33 repeater.

GARC Officers

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1 Yr. Board Member: Dave Ledo AB2EF
1 Yr. Board Member: Bob Christen W2FPF

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Contributing writers: All GARC members (we hope). To submit articles or ham equipment advertisements, contact the editor. Articles will only be edited when permission is granted by the author.

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GARC VE Exams We normally proctor exams for all classes of ham licenses on the second Tuesday of each month, starting at 5:00 PM. The exams are given at Briarcliffe College, 1055 Stewart Avenue, Bethpage, NY in room: Long Beach #5.
Ham Exams are: Element 2 – Technician, Element 3 - General, Element 4 – Amateur Extra Class. All applicants must preregister by contacting W2ILP (see above). Time and location of exams are subject to change. If there are no applicants VE sessions will be cancelled. The fee for 2010 is $14 for all exams taken at one sitting. New first time applicants should be aware that their Social Security Number will be required on the application form unless they register with the FCC for an FRN. Applicants for an upgrade should bring their present license and a photocopy of it. All applicants should bring picture ID such as a driver's license. Study material may be bought from the ARRL-VEC or W5YI-VEC http://www.arrl.org or http://www.w5yi.org All VECs use the same Q & A pools.

Commercial FCC Radio Operator Exams We are certified by the National Radio Examiners to administer exams for all classes of FCC commercial radio operator and maintainer exams. All Commercial Operator License Examiner Managers (COLEMS) use the same commercial license pools. Administrating fees vary. For information or to register contact W2ILP.

EDITORIAL ***I have decided to resign from the GARC board of directors. My health is not so good now and I need to reduce my activities wherever I can. Traveling to board meetings is not convenient, and I feel not worthy of the effort, since my inputs (from my point of view) are usually ignored. I tend to interrupt others and I must apologize for not following Robert's (not Robert Wexelbaum's) Rules of Order. I will however continue to put together this newsletter, and to act as CVE/CE at monthly licensing sessions as long as my health holds out.***

[Bob's efforts for the club are greatly appreciated and admired -WB2EAV]

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FIELD DAY 2010 SCORES

The 2010 Field Day scores of all participating stations were published in December 2010 QST. The GARC's WA2LQO score, listed in category 3A, using a gasoline-generator, was a total of 2088. We came in 182nd out of a total of 343 stations in our category. The scores varied from a high of 19,748 to a low of 424 in the 3A category.

Now let me contrast the above with the score for Radio Central, which came in first in the 2D Commercial power category, with a score of 6,464. First out of only 34 stations! The scores in this category varied from 6,464 to a low of 48. I admit that they had lots of avid operators…but had they competed using a generator, they would have moved to category 2A where they would be in 32nd place….which does not seem as impressive as being in first place is.

From the above numbers it seems to me that there may be very little advantage in using a generator rather than using commercial power. That is something for the GARC to think of before going through the hard work of schlepping a generator for future FDs. I know that it has been a GARC tradition to always use a generator on FD…but lots of other GARC traditions have been broken. --73, w2ilp—

[Hmmm… As an emergency exercise, I don't think it was ever intended for serious entries to use commercial power ....as much as I'd love to stop schlepping the damn thing! -WB2EAV]