



HARMONICS

1916

South Jersey Radio Association

2013



Merry Christmas

From the Officers and Directors of
SJRA

**The SJRA Christmas-
Holiday Party on
December 18, 2013 at
6:30 PM in the Gibson
House.**

The menu for the dinner is the following:

- Choice of Spiral-Cut Ham, Vegetable Lasagna, or Lemon Chicken
- Garden Salad, Pasta Salad, and Green Beans
- Beverages (coffee and soft drinks courtesy of SJRA)

*Holiday Desserts (courtesy of the Board of Directors)

Remember, you must have reserved your place for the meal prior to December 11, 2013.

The South Jersey Radio Association – Addendum to the Leap Year Specials – Part Lucky Number 13

A Look into the Future of the Great South Jersey Radio Association for the Year 2016 – Her Twenty-Sixth Leap Year

As the Historian of SJRA, the oldest continually operating amateur radio club in North America, I know that I am supposed to write about our past, but at this time most of us are thinking about our future – our Big Bang 100th Anniversary. In two years the future, 2016 will be the present and in less than two and a half years, our future – the SJRA future will be here. No one knows (or in most cases) wants to know the future, but I predict that our future will be as great as our past and present. During our Big 100, the SJRA operators will sent /100 after our callsigns. The entire world will celebrate with us.

The word 'Future' comes from the Latin 'Futurus' – going to be, yet to be. I am not a physicist, so my knowledge of travel into the past and future is extremely limited. To travel into the past, one would have to go faster than the speed of light and even I know that is impossible or maybe fall into a black hole or a worm hole – not a pleasant

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SOUTH JERSEY RADIO ASSOCIATION

HARMONICS is published monthly and is the official news letter of the South Jersey Radio Association. The SJRA was established on June 16, 1916 and has been meeting continuously since its inception. The club has been affiliated with the American Radio Relay League since 1920.

The SJRA meets each month on the fourth Wednesday, January through September; and usually the third Wednesday, October, November and December; in one of the Meeting Room of the Gibson House at 525 East Main Street, Marlton, NJ 08053. Visitors are always welcome at our general meetings. **"Our Meetings are Smoke Free"**

SJRA operates the K2AA Repeater (145.290 - PL 91.5) located in Medford, NJ and the K2UK Repeaters (146.865 and 442.350 - PL 131.8) located in Pine Hill, NJ. The repeaters are open for use without restriction to all licensed amateur operators.

There are currently over 100 SJRA members active in most all aspects of amateur radio. Membership is by application and is subject to the approval of the Board of Directors. Club dues are currently \$30/yr. for memberships, \$22.50/yr for retired-person membership (62 plus 1 yr membership), and \$15/yr. for additional family members and student membership. Membership information is available on the K2AA Repeater or from Mary Von Lintig, KV2M, 856-772-6475

EMAIL: [sjra at sjra dot org](mailto:sjra@sjra.org) SJRA's web page www.sjra.org
 Mark O'Brien, K2AX, is the SJRA/ARRL VUCC card checker
 Joe Fisher, KC2TN, is the SJRA/ARRL WAS card checker

 ★ **Harmonics** is now available on the WEB in pdf format at: ★
 ★ <http://www.sjra.org> ★
 ★ **South Jersey ARRL Section News** is available on the WEB at: ★
 ★ <http://www.arrl.org/sections/?sect=SNJ> ★

Officers

President: Ken Botterbrodt, K2WB
Vice Pres.: Jon Mac Millan, W2MC
Treasurer: Ray Golley, N3RG
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Cor. Sec: Dennis Cioffi, AC2FO

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Kathy Edwards, KM2KME
 Rich VonLintig, KV2R
 Debbie Pullaro, W9QWN
 Ira Weinstein, W2IRA
 Mary VonLintig, KV2M
 Jim Vecchiola, KR2T
 Al Witner, N3AVT

Committees:

Historian: Mary VonLintig, KV2M
Membership: Mary VonLintig, KV2M
Field Day: Ken Botterbrodt, K2WB
Contests: Jon Mac Millan, W2MC
Repeater: Joe Fisher, KC2TN
Programs: Kathy Edwards, KM2KME
H&W: Kathy Edwards, KM2KME
Awards: Lou Priestley, N2HQL
Hospitality: Jean Priestley, KA2YKN
Nets: John Fogleboch, WY2J
Publicity: Debbie Pullaro, W9QWN
Picnic: Debbie Pullaro, W9QWN
Ways & Means: Ray Golley, N3RG
Property: Jon Mac Millan, W2MC

Harmonics Staff:

Publisher/Editor: Ted Groke, W2TAG
 or Don Beaulieu, WA2DUE
Circulation: Mary VonLintig, KV2M;
 Jim Vecchiola, KR2T

LOCAL WEEKLY NETS

Monday	K2AA, Medford	145.290 @ 8PM
Thursday	Various Locations	28.405 @ 8PM

Harmonics Deadline

Articles submitted for the next HARMONICS will be accepted until Friday, January 10, 2014. Email:
[ted.w2tag at gmail dot com](mailto:ted.w2tag@gmail.com)

SWAP SHOP - For Sale/Wanted ads are free of charge and are accepted for Amateur Radio related items only. While ads are not restricted to SJRA members, there is only limited space available and members have priority for listings. No items will be accepted for inclusion in the Swap Shop from commercial vendors or traders. All ads must be submitted at least three weeks prior to the scheduled SJRA general meeting date.

GENERAL ADVERTISING - Limited commercial advertising is accepted on a space available basis. Annual advertising rates range from \$25/yr (Min 1/8 page) to \$200/yr (Full Page). Information is available from Ken Botterbrodt, K2WB.

Meeting Minutes

General Meeting of 11/20/2013

The meeting was opened at 1930 by Jon, W2MC. All officers and directors were present except Ken, K2WB, and Debbie, W9QWN. We opened with a flag salute and introductions around. The meeting was held at the Gibson house in Marlton New Jersey. Minutes of the previous meeting were approved on a motion by Bob, W2RWN, and Jim, KR2T. Ray, N3RG, reported 130 paid members and a balance the same as last month, his report was approved on a motion by Chris, KC2GNQ/Craig, WE2Q.

New members by Mary, KV2M: a badge was presented to John, W2FDJ; a membership packet was presented to Jordan Bookstaber and Bob, K2UT, who was welcomed back. As historian, Mary, showed a letter commemorating the 1976 EME contact to south America.

Health and Welfare by Kathy, KM2KME: a report was received that the XYL of Rich, KC2UXV, had a pacemaker failure and replacement. Programs: December, Christmas party; January, estate auctions; February, white elephant sale; March, Ray Golley with another presentation.

VE team for November reported one candidate one passed. So far we have had 28 technicians, seven generals, and six extras.

Web team reported that we are in transition 28 commercial provider.

Nets by John, WY2J: 2 M is doing

okay, 10 M still needs to net controls.

Awards Committee: Reported still needing nominations.

No old or new business was discussed. A motion to break for refreshments by Don, WA2DUE. After a short break we were treated to a fine program presented by Dr. Joe Taylor, K1JT.

Board of Directors Meeting 12/4/2013

The meeting opened at 1930 chaired by Jon, W2MC. All officers and directors were present except Ken, K2WB; Ira, W2IRA; Ray, N3RG, and Debbie, W9QWN. It was noted that the clock had been fixed and operated showing an incorrect time. Minutes of the previous meeting were approved as printed on a motion by Jim, KR2T/Al, N3AVT. The treasurers report was read via e-mail. There were new no new members to propose. Historian Mary, KV2M, showed an article about the Tuckerton Tower and its application in World War One. Health and welfare report was no one ill and all birthday cards out.

Programs: December, Christmas party; January, estate auctions; February, white elephant auction; March, Ray N3RG, on antennas; April is open; May is Ken. K2WB, with field day prep; June is K2WB with field day wrap. Dennis reported no correspondence. VE team reported one candidate for November.

Repeaters report as working. Harmonics deadline is December 9, the nor-

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(Lucky No. 13 from page 1)

thing. Traveling at near the speed of light theoretically could transport you into the future, but that also has its drawbacks.

Those who made it happen in the leap year 1916 are no longer with us, but their legacy will continue far beyond 2016. Many of those SJRAers who built on that sturdy and powerful foundation and carried our club to greatness are now part of our past. Few, or none of us celebrating that 2016 Big Birthday will be there for our 2116 Birthday, but each one of us here in the present will be part of what happens.

In searching our History files, I find members from A to Z. The leadoff alphabetic member found is Sylvia Abbott - WA2NBJ, joining SJRA in 1977 and the cleanup member is Joseph Zook - W2EOZ, joining in 1952. Here is something totally amazing and unbelievable. In all our nearly 100 years, I cannot find a single member whose last name begins with the letter Q. There were also no last names beginning with X. Maybe the 2016 we will have a Q member and maybe, just maybe, an X will appear and all the letters of the alphabet will be represented.

By traveling faster than the speed of light I was able to go back in time and find out where some of our members call their home QTH. I found that we came from AZ - this is a very special member. His call was K7UGA and he is non-other than Barry Goldwater. We have also come from the States of NC, PA, NY, FL, SC, CA, MA, MI, CO, DE, KS, CT, VA, MD, OR, TN, and of course NJ. Members of our club came from the distant lands of Ireland and Japan. We are all over. One of our Distinguished Honorary Members was Neil Armstrong, astronaut and first person to walk on the moon during the Apollo 11 Mission from the state of TX. SJRA can also boast that Joseph Tay-

lor, K1JT, recipient of the Nobel Prize in Physics for 1993 as a member.

A very famous person once said, "I never think of the future. It comes soon enough." That famous person was Albert Einstein.

May the Leap Year and 100th Birthday of South Jersey Radio Association be good to all of you.

73 and I am History and in this particular case Future.

Mary, KV2M

Not a State Possessions

Part 4 - Midway Atolls

Midway is a 2.4 square mile atoll in the North Pacific Ocean. It is about equidistant between North America and Asia and lies almost halfway around the world from Greenwich in the United Kingdom. The atolls are administered by the United States Fish and Wildlife Service. Due to its location, someone (the United States Navy) thought that Midway would be a perfect for this tiny atoll. It is 140 nautical miles east of the International Date Line. If any of you have ever crossed the International Date Line via ship, it is an unforgettable experience. I was six years old when we crossed it going to Japan and nine years old when we crossed it coming back to the United States. I remember how we kept having to set the clocks either one hour ahead each night or one hour behind. I even have a little card stating when the ship we were on crossed over it. Midway Atoll is part of a chain of volcanic islands, atolls, and seamounts that consist of Sand Island, Eastern Island Spit Island and Midway Atoll.

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(Ham Tech from page 4)

The islands were sighted on 5 July 1859 by Captain Middlebrooks and named Middlebrook Islands or just Brook Islands. He claimed the islands for the United States under the Guano Islands Act of 1856. On 28 August 1867 Captain William Reynolds formally took possession of the atoll for the United States and its name was changed to Midway shortly after this. Midway Islands were the first Pacific islands annexed by the United States government. The Trans-Pacific cable was laid from about 1900 to 1903. Also in 1903 President Theodore Roosevelt placed the islands under control of the US Navy. It was annexed in 1908. The Battle of Midway was one of the most important battles of the Pacific Campaign. It was fought between 4 June and 6 June 1942. The US Navy defeated a Japanese attack against the Midway Islands, thus marking a turning point in the war in the Pacific. Between 1935 and 1947 the atoll was used as a refueling stop for trans-Pacific flights. From 1 August 1941 to 1945 the atoll was occupied by military forces. In 1950 the Naval Air Station Midway was decommissioned and they recommissioned to support the Korean War.

Here are a few interesting tidbits about Midway Atolls.

Midway Atolls are the second most northern atolls in the world. Atolls are only found in the tropics and subtropics.

Only islands in the Hawaiian archipelago that are not part of the State of Hawaii.

Midway has the largest gooney bird colony in the world. I do believe that some folks I have met belong to that colony.

Their time zone is UTC - 11, also known as Samoa time. The Midway Atolls are one hour behind Hawaiian time.

Sand Island has a port.

The highest point is about 12 feet above sea level and is in an unnamed location.

There are ten miles of paved roads and two miles of gravel.

There is one airport on Sand Island that is used for emergencies - Henderson Field. It was named after Major Lofton R. Henderson who was killed in the Battle of Midway during WWII. There are also two unstable runways on Eastern Island.

The call signs for Midway are AH4, KH4, KM6, NH4, and WH4. Midway is high on the DX Most Wanted List. It is also IOTA OC-053.

73 from the State of New Jersey, the QTH of SJRA, the oldest continually operating amateur radio club in the United States and the best.

Mary, KV2M

The SJRA would like to congratulate the following on their recent achievements:

Test session date: 12/11/2013

Arthur Powis
39 Magnolia Rd.
Pemberton, NJ 08068
Passed his Technician Exam
Michael S Wampole, N2MSW
17 Argo Dr.
Sewell, NJ 08080
Passed his General Exam.

	Tech	General	Extra
YTD	29	8	6

HAM TECH

Vol 4 No. 12 by John - WY2J

wy2j at arrl dot net

HF RECEIVER NON-LINEAR DISTORTION

Part 3 of 3: Receiver Architecture and Roofing Filter Implications

Introduction – Last month I introduced the calculation of inter-modulation limited dynamic range (DR) using a simple receiver architecture. The performance was outstanding, better than 100 dB DR, by eliminating RF preamplifiers, using a high intercept point ring quad diode mixer and by placing the final bandwidth crystal filter after the first mixer. This shielded the low noise IF amplifier from the out of band interfering signals thus preventing inter-modulation distortion from being generated in these following circuits. I didn't include a block diagram of this simple receiver but the one included this month as Figure 1, with the 2nd conversion and following filter deleted is last month's receiver. I pointed out that this simple receiver architecture had some limitations that would be addressed this month.

The USB/LSB Issue – SSB crystal filters today are usually of the Dishall Ladder design which requires all crystals on the same frequency, a requirement that is easier to achieve in manufacture than designs which require highly accurate but different crystal frequencies such as lattice designs. The ladder filter has an asymmetrical response falling faster on the high frequency side which is desirable for SSB but it makes it essentially a lower sideband filter. It works on USB signals by inverting the spectrum with a preceding mixer with a high side local oscillator (LO). The mixer changes a USB signal into an LSB one. While switching side-

bands this way by means of the first LO is simple to implement with a frequency synthesizer, the low side spurious performance of the mixer is seriously degraded. High side operation is required with the possible exception of one or two band rigs where the poor low side spurious problem can be solved by careful selection of frequencies.

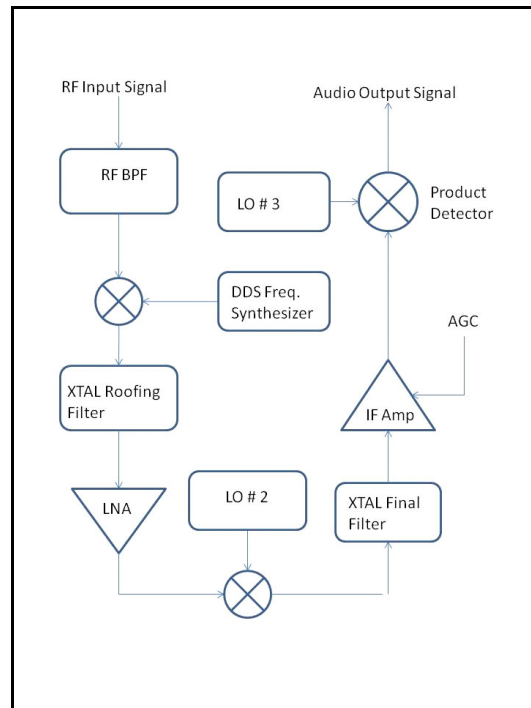


Figure. 1, Functional Block Diagram of a Practical HF SSB and CW Ham Receiver.

The RF Frequency Coverage Issue – Starting in the 1930's ham receivers started covering the AM broadcast band, the short-wave broadcasts and the ham bands. In the early days a ham could not justify to his spouse spending money on a radio that only he would use. So every one of them went from 540 KHz to 16 then 22 and later to 30

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(Ham Tech from page 6)

MHz and the legacy continues today in many receiver designs even though it compromises the ham band performance. In the 1950's Collins bucked this trend with their 75A4 receiver that covered the ham bands from 160 to 10 meters (no 60, 30, 17 or 12 M then) and limited modes to CW, AM and SSB. It out-performed every other ham receiver on the market. Today's receivers are designed for broad coverage in modest priced rigs and more ham band specific in the high end like the Yaesu FT-5000 and FT-9000 series.

First IF Frequencies - For the wide tuning range receivers the 1st IF will be at least 20 percent higher than the maximum RF frequency, usually 54 MHz with a 65 MHz IF. The 1st LO will be high side and tune from 66.8 to 119 MHz well within the range of modern DDS synthesizers operating at 480 MHz clock frequencies. The roofing filter shown in figure 1 will be build with overtone crystals, have a minimum bandwidth in the order of 15 to 25 KHz and be limited to 4 to 6 poles. Clearly our close- in- interfering signals are in the pass band of the roofing filter so the IMD performance of the LNA and 2nd mixer are limiting DR performance. The frequency space of the interference is 15 to 25 KHz which is significant on crowded bands.

If we limit the frequency coverage of the receiver to just the HF ham bands we can lower the 1st IF frequency to the 4.5 to 9 MHz area and build 6 KHz AM, 2.4 KHz SSB and 300 to 500 Hz CW/RTTY filters thus preserving the 100 dB + DR. Filter center frequencies of 4.5 to 5 or 8 to 9 MHz are often used. The roofing filter shown in Figure 1 can be built with a 6 KHz bandwidth making it useful for AM, the 2nd LO takes care of sideband switching and the LSB SSB

filter follows the second conversion. The 6 KHz filter can be made with fundamental cut crystals with near symmetrical stop bands by neutralizing the crystal shunt capacitance. The response of such a filter with 6 poles at 5 MHz is shown in Figure 2 below.

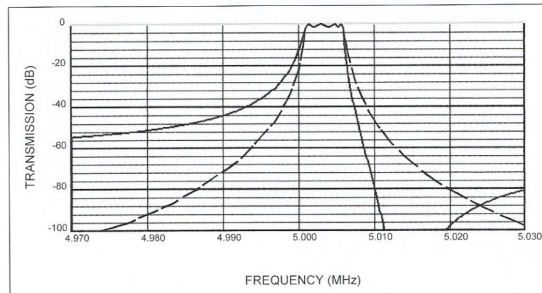


Figure. 2, Response of a 6 pole Neutralized Crystal Filter with a 5 KHz BW at 5 MHz. Solid curve is without neutralization and dotted one is with it.

The final filter as shown in Figure 1 can be a physical crystal or mechanical filter for CW and SSB or the 2nd conversion mixer can down convert to typically a 30 KHz IF followed by a 16 bit A/D converter and a DSP. Both techniques work but both are inferior to the approach with the final filter after the first mixer. With identical performance in the two mixers and use of a high intercept point LNA the degradation in the DR will be determined by the gain of the LNA. With no gain in the LNA the sensitivity of the overall receiver would be unacceptable. Let's calculate the minimum LNA gain for 1 dB NF increase which equals 1 dB loss of sensitivity. Noise factor (F), the linear version of NF, adds up according to Equation 1 below.

Equation 1: $F_T = F_1 + (F_2 - 1) / G_{LNA}$
where:

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Special Event Stations Educate and Entertain

Dan, KB6NU, *cwgeek at kb6nu dot com*

I like special event stations. I enjoy operating them and making contact with them. Whenever I operate WA2HOM, our club station at the Ann Arbor (MI) Hands-On Museum, one of the first things I do is to search for special event stations.

One of the reasons I enjoy operating special event stations is that it's educational. For example, on November 17, I worked W4D in Mayaguez, Puerto Rico. They were commemorating the 520th anniversary of the discovery by Europeans of the island of Puerto Rico. As a result, I learned that on November 19, 1493 Christopher Columbus landed on the island, naming it San Juan Bautista in honor of Saint John the Baptist, a name that was later changed to Puerto Rico (rich port).

Working special event stations is also entertaining. Most times when you work a special event station, you can tell that they're having a good time. One time, I worked W4B, operating from the Kentucky Bourbon Festival. Now, those guys were really having a great time!

How do you find special event stations?

One way to find special event stations is to just tune around. Most special event stations will be operating at least a 20m phone station, so take a look at that band first. Also, consult the special event stations listings in QST or on the ARRL website (<http://www.arrl.org/special-event-stations>). KE2YK also has a special events page (<http://ke2yk.wordpress.com/special-event-station-events/>).

In addition to working special event stations, you should consider organizing and operating one of your own. For the past two years, several members of our Rotary Club who are also amateur radio operators have operated W8P on the third weekend in February, which commemorates the founding of the Rotary Club and helps spread the word about the End Polio Now campaign (<http://www.endpolio.org/>). It was not only fun to do this, but I think that we helped raise awareness about polio around the world.

Whatever your reason for holding a special event, you'll want to be somewhat knowledgeable about your topic. For example, if you decide to set up a special event station at the local Rutabaga Festival, you might want to know how long they've been having the festival, how many pounds of rutabagas are produced by local farms and around the U.S., and maybe even find a couple of rutabaga recipes that you could send out to stations that work you.



When he's not working special event stations, Dan, KB6NU enjoys building kits and working CW. For more information about his operating activities and his "No-Nonsense" series of amateur radio license study guides, go to KB6NU.Com or e-mail *cwgeek at kb6nu dot com*.

**List Your "For Sale"
Ham Stuff in the SJRA
Harmonics**

Email Ted, W2TAG, with your listing, *ted.w2tag at gmail dot com*

Items For Sale

- Yaesu FT-736R 144/432 with 50 & 1296 modules, hand mic, manual -- \$1250
- Yaesu FT-736R 144/432 with 222 module, hand mic, manual --\$800
- DEMI 903-144 Package Only with, 903 LNA, 60W amp & Astron 24V power-supply, 1 W in 144 separate IF, DEMI 4-step sequencer and antenna relays \$625
- DEMI 2370, 60 watt 1296 Amp Package Only with 1296 LNA, DEMI 4 step sequencer, antenna relays --\$425
- Tokyo Hy Power HL-350V DX 144 MHz Amp 10,25,50W in, 330-350W out, manual, built in preamp, requires 13.8VDC @ 42 Amps --\$750
- RF Concepts 2-117- 144 Amp, 10W in-170W out, built in preamp --\$175
- Mirage C1012G- 222 Amp, 10W in-120W out, built in preamp --\$175
- RF Concepts 4-110- 432 Amp, 10W in-100W out, built in preamp --\$175
- Bird 43 element 500W, 400-1000 MHz - -\$45
- Bird 43 element 500W, 10-250 MHz -- \$45
- Yaesu YS-500, 140-525 Mhz Pwr/SWR meter --\$65
- Military AN/URM-120 Power Meter, with metal carry case, 70-470MHz multi pwr element 50-100 watts, 200-1000MHz multi pwr element 10-500 watts --\$85
- Pyramid 35A power Supply, Variable-12 to 15VDC, Volt meter not working \$75
- West Mountain 4012 Rig Runner, 12 Anderson power pole outlet strip --\$65

(Continued on page 10)

Monthly Puzzle

Don – WA2DUE, wa2due at arrl dot net

Last months puzzles were:

The sum of three numbers equals 72. The second of these numbers exceeds the first by 5 and the third number is greater than the second by 11. What are the numbers?

Solution: $N_1 + N_2 + N_3 = 72$ substituting $(N_2 - 5) + N_2 + (N_2 + 11) = 72$ and combining terms we have $3N_2 = 66$; therefore $N_2 = 22$; $N_1 = 17$ and $N_3 = 33$.

If you have a resistor of 220 Ohms rated at 5 Watts, what is the maximum allowable current?

Solution: Wattage = Voltage x Amperage and Voltage = Resistance x Amperage. Therefore we form the equation $W = RI^2$ and solving for $I = (5/220)^{0.5}$ we get the answer 150 milliamperes.

Art, N2CPR, and Fred, W2EKB submitted solutions to these puzzles. Thank you both.

For this month we offer these puzzles:

1. Find the area of a circle that circumscribes an equilateral triangle with each side 100 feet long. This problem may seem formidable but it really isn't, just draw the figure and the solution becomes readily evident.
2. What time does it take for a radio signal to travel from the Earth to the planet Mars? The planet Mars distance from Earth varies from 54 to 103 million km. Speed of light is 299,792,458 meters per second.

Please submit solutions and/or comments to wa2due at arrl dot net.

(Ham Tech from page 7)

$F_1 = 31.6$ (NF = 15 dB) (at RF BPF input w/o 2nd conversion)

$F_2 = 25.1$ (NF = 14 dB) (at 2nd mixer input)

$F_T = 39.8$ (NF = 16 dB) (at RF BPF input with 2nd conversion)

Equation 2: $G_{LNA} = (F_2 - 1) / (F_T - F_1) = 2.9 = 4.7$ dB

The net gain ahead of the 2nd mixer is -4.3 dB making the interfering signal -24.3 dBm here and with an IP3 = +30 dBm the IMD is -128.6 dBm referenced back to the receiver input. Adding it to the -122 dBm from the 1st mixer (by linear addition) the total IMD is -121.1 dBm. Our 102 dB DR will degrade to approximately 101.1 dB for interfering signals within the 6 KHz BW of the roofing filter but outside the final filter bandwidth, not a bad trade-off to add AM coverage and sideband selection to the receiver.

The final take away message is if you want excellent HF receiver performance for high QRM situations stay away from broad coverage rigs with wide band roofing filters. Read the QST published test data for the rig you are considering buying, especially the IMD performance data and how it was measured. A high DR measured 20 KHz off frequency isn't a good choice if your interests are 20 M contests or DX pile-ups.

Next month I am planning to start a four part series on digital signal processing in Ham transceivers. Part 1 will cover some of the basics of digital filtering and I promise to keep the math to a minimum. This series is my response to comments received from a question I asked in HAM TECH this past summer on what do you want to see next.

(Items For Sale from page 9)

- West Mountain 4008 Rig Runner, 8 Anderson power Pole outlet strip --\$55
- Ham IV Rotator & control box --\$300
- Ham IV Rotator & control box --\$300
- Ham M Rotator & older lever type control box, rotator needs new brake springs --\$225
- Cushcraft 12 el 222 beam (originally 17 el), Includes tubing to replace bent driven element --\$50
- Cushcraft 214B 144 Jr Boomer beam --\$65
- Directive Systems 2304 MHz, 76 el "blowtorch" loop yagi --\$145
- Numinous tower related items are also available.

Please contact Bob, W2SJ, for more information:

bobw2sj at gmail dot com

(Meeting Minutes from page 3)

mal date. All awards were reported ordered. Contests: Jon W2MC, will compile a list of logs turned in and standings for those who reported working any contests. There was no report on the hundredth anniversary party. Old business: Christmas party, 42 sign-ups so far. Richard, KV2R, said he will send out one more e-mail before reporting a final number to the caterer. There was no new business to discuss. Members were reminded that there will be no directors meeting in January due to meeting day falling on New Year's Day. Officers and Directors were once more reminded that they are to bring deserts to the Christmas meeting. Meeting adjourned.

SJRA Jackets, Shirts, Hats

Order NOW - Next order going in soon!



Spring Jacket is \$44 (S,M,L,XL), Fall Jacket is \$55 (S,M,L,XL),
Shirts are \$27 (S,M,L,XL), Hats are \$25 (one size fits all)
Name and Call Sign embroidery included....Larger sizes slightly more!
Email Joe, KC2TN, with orders or additional info:
kc2tn at comcast dot net

Amateur Radio FCC License Testing

The SJRA sponsors *FREE* Amateur Radio FCC License testing on the second Wednesday of each month. The location is: 443 Commerce Lane, Suite 5, West Berlin, NJ 08091. Registration is at 7:00 PM and testing begins at 7:30PM. Walk-ins are accepted.

VE team members can be reached at VE@SJRA.org. A calendar and more information can be found on the SJRA web site.

December Meeting
Third Wednesday

December 18, 2013

“Our Meetings are Smoke Free”

The meeting commences promptly at 7:30PM in the first floor Meeting Room of the Gibson House on Main Street, Marlton, NJ 08053. Guests are always welcome.

Program For December:

Our December Christmas Party will be held at the Gibson House this year! We are planning a nice evening for all. A catered dinner, \$15 each. Desserts and coffee by the Board of Directors and don't forget our Award Presentations! Hope to see you there!!

December 2013 Health and Welfare:

Happy Birthday to those celebrating in December: Happy Birthday to: Ed Fletcher, N2ZPR; 12- Ralph Foy, KC2HOC; and 13- Ray Golley, N3RG.

Kathy Edwards, KM2KME

First Class Mail

South Jersey Radio Association
PO Box 1026
Haddonfield, NJ 08033

