MOUNTAIN SPARK GAPS

NPARC—The Radio Club for the Watchung Mountain Area

Website: http://www.nparc.org
Club Calls: N2XJ, W2FMI
Facebook: New Providence Amateur Radio Club (NPARC)

VOLUME 54 NO. 5 March 2021

Regular Meetings

Second & Fourth Mondays
"ZOOM" until we can all
get together again

Upcoming Events

Digital Net Mondays at 9:00 PM
PSK on 80 or 10 meters
CW training Net, Thursday at 9:00 PM
Watch for Email announcements.

Meeting Schedule

Regular Meeting: 7:30—9:00 PM
2nd & 4th Monday
of each month

ZOOM until further notice

Everyone is Welcome
If a normal meeting night is a holiday, we usually meet the following night.
Call one of the contacts below or check the web site

Club Officers for 2021

President: W2PTP Paul Wolfmeyer 201-406-6914
Vice President:K2GLS Bob Willis 973-543-2454
Secretary: K2AL: Al Hanzl 908-872-5021
Treasurer: K2YG Dave Barr 908-277-4283
Activities: KC2OSR: Sam Sealy 973-462-2014

—On the Air Activities

Club Operating Frequency
145.750 MHz FM Simplex

Sunday Night Phone Net
Murray Hill Repeater (W2LI) at 9:00 PM
Transmit on 147.855 MHz
With PL tone of 141.3 Hz
Receive on 147.255 MHz
Net Control K2AL

Digital Net
Mondays 9 PM
28,084 — 28,086
Will be using PSK and RTTY
Net control K2YG

Club Internet Address

Website: http://www.nparc.org
Webmaster KC2WUF David Bean
Reflector: nparc@mailman.qth.net
Contact K2JV, Barry

MOUNTAIN SPARK GAPS

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The Watchung Mountain Area Radio Club
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WB2QOQ Rick Anderson
W2PTP Paul Wolfmeyer
K2UI Jim Stekas

Climatological Data for New Providence for April 2021

The following information is provided by Rick, WB2QOQ, who has been recording daily weather events at his station for the past 39 years.

TEMPERATURE -
Maximum temperature this April, 76 deg. F (April 29)
Last April(2020) maximum was 73 deg. F.
Average Maximum temperature this April, 61.7 deg. F
Minimum temperature this April, 27 deg. F (April 2)
Last April(2020) minimum was 30 deg. F.
Average Minimum temperature this April, 42.5 deg. F
Minimum diurnal temperature range, 7 deg. (60-43 deg.)4/12
Maximum diurnal temperature range, 34 deg. (82-48 deg.)4/28

Average temperature this April, 52.1 deg. F
Average temperature last April, 49.5 deg. F

PRECIPITATION -
Total precipitation this April- 2.15" rain.
Total precipitation last April- 4.21" rain.

Maximum one day precip. event this April-

April 11, 0.65" rain.
Pea size hail was observed, briefly; during a short rain event on 5/30.
Measurable rain fell on 13 days this April,13 days last April.

YTD Precipitation - 13.7"

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Rick Anderson
5/13/2021
243 Mountain Ave.
New Providence, NJ
(908)464-8911
rick243@comcast.net

Lat = 40 degrees, 41.7 minutes North
Long = 74 degrees, 23.4 minutes West
Elevation: 380 ft.
CoCoRaHS Network Station #NJ-UN-10

President's Column May 2021

An excellent presentation/video tour, honorary life memberships, and progress on bylaw updates were the key May NPARC items….
Tim Duffy K3LR, of DX Engineering, gave a fine presentation and tour of his contesting station in western PA at our May 24 ZOOM meeting. Members of the Morris Radio Club and NJDXA were invited to participate in our ZOOM meeting.
The K3LR towers are visible to the south of Route 80 about a mile east of the Ohio/ Pennsylvania border. One is 275 feet high. What an amazing antenna farm and top notch arrays with lots of custom switching arrangements. There are 11 complete operating positions. You can view Tim's presentation (during June) at the following link and passcode but be careful to "cut and paste" the entire link and enter the password, again with care.

https://us02web.zoom.us/rec/share/0bXOOU0UWIvFxbr6QB35mofKnlHcalfSAkhEWBg443IZTqo60vkkdCgtP-lnV6rT.ZMqGAMKKIQzKDtPh Passcode: +@rz7+Ag

Besides some important "constitution business" (which I'll cover later), at our May 10 ZOOM meeting, we elected two Honorary Life Members to NPARC. Congratulations to both recipients! Highlights of their club contributions and recognition follow:

Guy Brennert, K2EFB
Guy has received the Wouff Hong Award in 2008 and 2019 and received the Grand Old Ham Award in 2010. These awards were given to Guy in recognition of his many years of dedicated service to the Club. Guy has served as an officer of the Club including Activities Manager and Field Day Manager. For many years, Guy took on the role of chairman of the officer Election Committee each November when officer elections were due. He often undertook the task by himself. He was always present at Field Day and Kids Day, ready to lend a helping hand.

Barry Cohen, K2JV
Barry, with a passion for ham radio that has enabled him to create friends around the world, has been a mainstay of NPARC since its early days. He has been awarded the Wouff Hong in 1970 and then again in 2006 - a testimony to his long dedication to the Club. He was awarded the Grand Old Ham Award in 2015 in recognition of his efforts in setting up live ARISS contacts via ham radio with the astronauts aboard the International Space station with students at a local grammar school and at summer school camps in Berkeley Heights and New Providence. He was a mentor to many young hams and school students. After 9/11, Barry led the formation of the NPARC Emergency Response Team which served local agencies such as the police and fire departments and the Red Cross. Barry has served as an officer of the Club for many years in the past as president, activities manager and treasurer.

Because your Executive Committee enacted bylaw amendments to NPARC Bylaws under the NJ Governor's Emergency Order and amendments to the NJ Non-Profit Corporation Laws, we are able to hold video and/or hybrid meetings as a club and conduct business. These bylaw changes/additions will be posted on the NPARC website and are as follows:
The enacted bylaws are subsections under Section 4 and Section 6 as follows:

Sec. 4 - MEETINGS

Subsec. A - The Club may meet by electronic and/or hybrid means if all members have been given reasonable electronic notice of the meeting and the ability to discuss and vote on business items. The quorum for an electronic/hybrid meeting is one quarter of voting members on the role at the time of the meeting.

Sec. 6 EXECUTIVE COMMITTEE

Subsec. A - The Executive Committee may meet by electronic or hybrid means if Executive Committee members have been given reasonable notice of the electronic meeting and the ability to discuss and vote on business items. The quorum for an electronic and/or hybrid meeting is three Executive Committee members.

With our ability, under the emergency, the several NPARC Bylaw changes were proposed, modified, and moved and seconded at the meeting. These will be read for approval (two-thirds vote) at our June 14 NPARC Business Meeting (a quorum is required—so please attend). The intent of the amendments is to continue our ability to have video and/or hybrid meetings after the (pandemic) emergency and to update our membership practices. The proposed amendments follow:\

<u>Revise Sec. 4 Subsec. A</u>

"The Club may meet by electronic and/or hybrid means if all mem bers have been given reasonable electronic notice of the meeting and have the ability to discuss and vote on business items. The quorum for an electronic/hybrid meeting is one quarter of voting members on the role at the time of the meeting."

Revise Sec. 6 Subsec. A

"The Executive Committee may meet by elect ronic or hybrid means if Executive Committee members have been given reasona ble notice of the electronic meeting and have the ability to discuss and vote on business items. The quorum for an electronic and/or hybrid meeting is three Ex ecutive Committee members."

And on membership:

Sec. 1 - NEW MEMBERSHIP

Add civil rights clause to Sec. 1

"Membership may not be denied because of race, creed, color, religion, gender, sexual orientation, politi- cal affiliation, marital status or any other reason that would be biased or prejudicial."

Sec. 1 - NEW MEMBERSHIP

Delete Subsec. A

Delete Subsec. B

So, again, please attend—we hope it will be "painless" and then we can all share our plans and thoughts about our individual and/or small group Field Day events. Field Day is June 25 and 26—THIS MONTH…

And don't forget the nets, we have had some new participants!

73

Wolf W2PTP
201-404-6914
W2ptp@arrl.net

Presenting K2JV with his Life Membership

5G Drives New RF Technology

Jim Stekas - K2UI

The new 5G standard is designed to provide high speed broadband data service at 1Gbps, a 30x increase over 4G (LTE). To get there, 5G incorporates many enhancements, chief among them inclusion of broadband channels in the 24-50 GHz frequency range. As a result, a new generation of mm-wave RF components and products are becoming available at consumer quantities and prices.

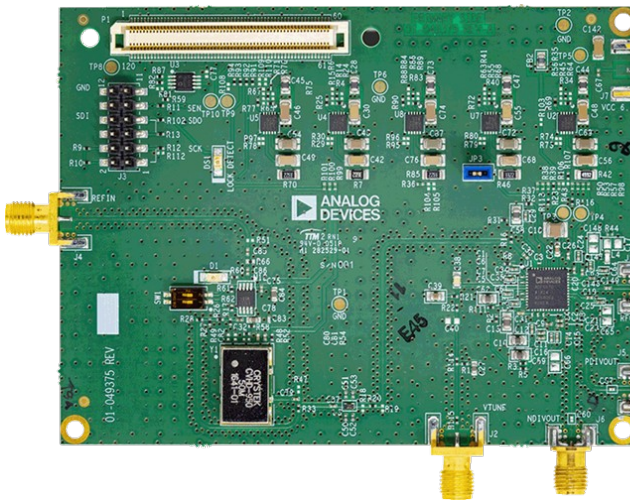
The traditional path to higher frequencies in ham radio has been the transverter. Back in the 1950's and 60's a popular way of getting on the 2m band was to use a 28-144 MHz transverter together with a 10m transceiver, and many homebrew and commercial examples have been produced over the years. Today, the "bleeding edge" in ham radio is 10 GHz and the most common way to get there is to use a 1.2 GHz transceiver plus a transverter.

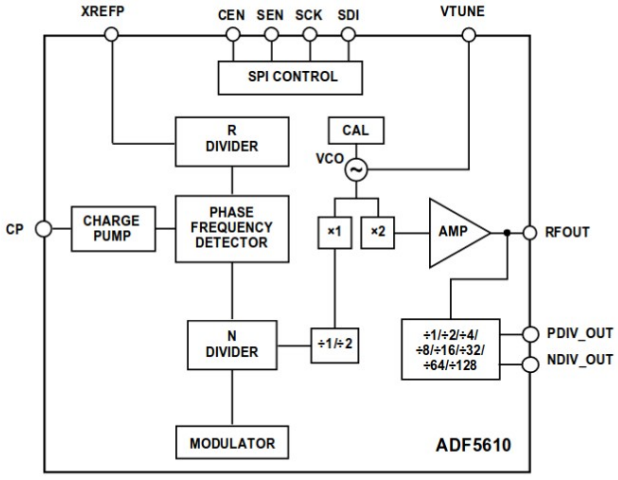
Analog Devices Inc. (ADI) is a leader in producing mixed signal chips for wireless applications. Many ham designs have used $10 "digital VFO" boards[1] based on the AD9850 DDS chip. Many companies (e.g. Adafruit) sell ADI chips on small circuit boards that are easily integrated into you projects. If you have a bit of money spilling out of the sock drawer, ADI evaluation boards are a good way to play with bleeding edge technologies.

Here are three ADI boards that that are building blocks for a transverter to push a 10 GHz system up to 40 GHz.

EVAL-ADF5610 Local Oscillator

The EVAL-ADF5610 is evaluation board based on the ADF5610 digital synthesizer chip which is capable of generating RF signals from 73-14600 MHz. Frequency resolution is good to a few Hz. Power output is 5 dBm and spurious signals are -105 dB down. Cost is around $450.

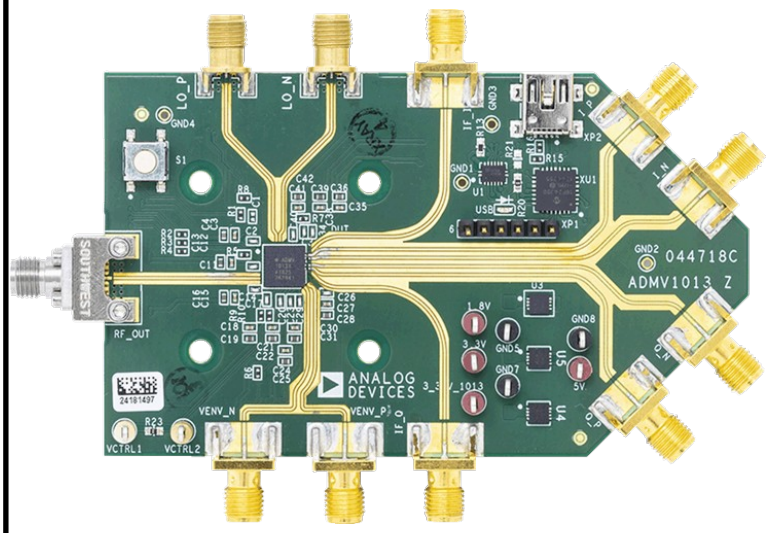


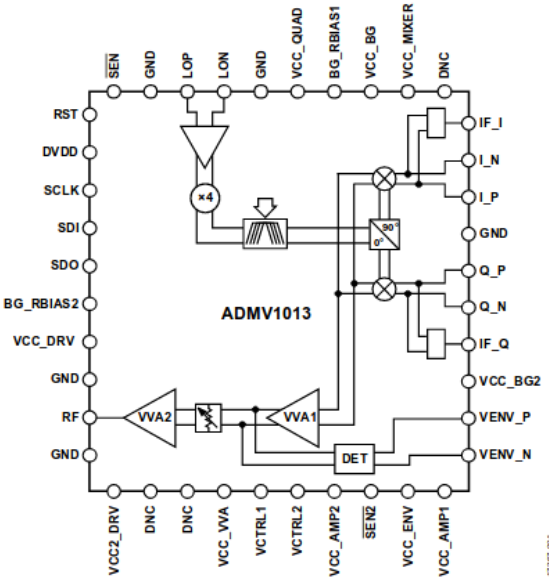


1 Search online for DDS AD9840 ....

EVAL-ADMV1013 Digital Up-Converter (DUC)

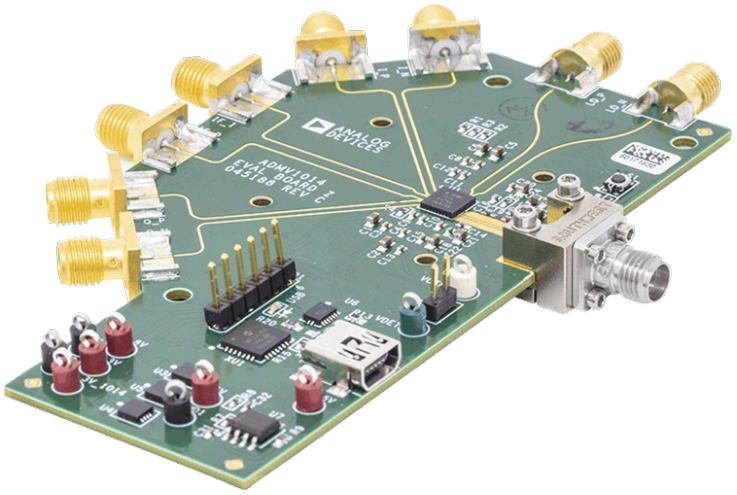
This evaluation board is built around the ADMV1013 DUC chip. It will will shift your 10 GHz transmit signal up to 40 GHz. Set the LO to 7.5 GHz. The DUC board has a built-in 4X frequency multiplier which will generate a 30 GHz conversion frequency to up-convert the 10 GHz input to 40 GHz. Cost is around $700.

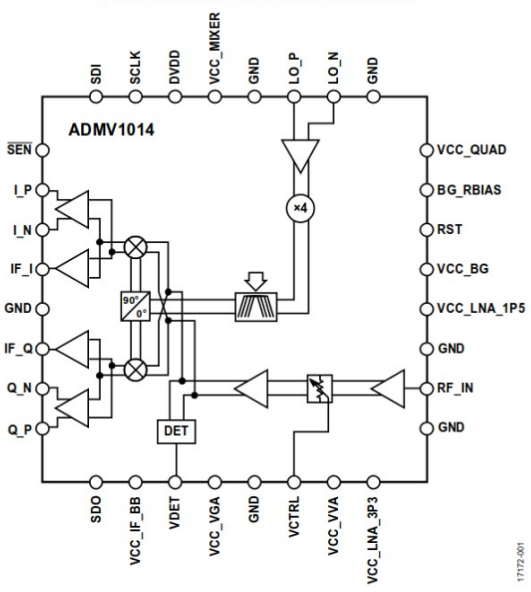




EV-ADMV1014 Digital Down-Converter (DDC)

This evaluation board is built around the ADMV1014 DDC chip. It will will down convert a 40 MHz RF signal to 10 GHz for your receiver. It also has a built-in 4X frequency multiplier and can use the same LO as the DUC. Cost is around $700.





The ADI evaluation boards are costly but they save a lot of labor and avoid a lot of technical issues involved with laying out circuit boards that operate in the 10-40 GHz range, which have wavelengths in the 0.25-1" range. I have enough trouble getting a circuits to work properly at 28 MHz and I am sure the evaluation boards would represent a big saving in labor and scrap.

Even with pre-built boards many issues remain, like just connecting them together. You will need to use SMA connectors and coax that are rated for microwave frequencies, and they don't come cheap. Don't even think about ordering cheap SMA jumper cables from a Chinese eBay sight.

Getting signals to and from the antenna is an even bigger challenge. At 40 GHz, you'll be lucky to keep losses below 1 dB/ft. For 5G, chip manufacturers are bonding 8x8 antenna arrays directly onto RF chips, eliminating transmission lines entirely.