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 53 NO. 8 August 2020

Regular Meetings

"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 at the
New Providence Hall
Elkwood Ave. NP
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 2018

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
973-635-8966

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
First & Third 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 K2UI, Jim

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W2PTP Paul Wolfmeyer
K2UI Jim Stekas

Climatological Data for New Providence for July 2020

The following information is provided by Rick, WB2QOQ, who has been recording daily weather events at his station for the past 38 years.

TEMPERATURE -
Maximum temperature this July, 93 deg. F (July 6)
Last July(2019) maximum was 96 deg. F.
Average Maximum temperature this July, 86.4 deg. F
Minimum temperature this July, 65 deg. F (July 2)
Last July(2019) minimum was 65 deg. F.
Average Minimum temperature this July, 71.1 deg. F
Minimum diurnal temperature range, 5 deg. (77-72 deg.)7/10
Maximum diurnal temperature range, 24 deg. (93-69 deg.)7/6

Average temperature this July, 78.8 deg. F
Average temperature last July, 79.3 deg. F

PRECIPITATION -
Total precipitation this July- 7.46" rain.
Total precipitation last July- 9.16" rain.

Maximum one day precip. event this July-

July 10, 2.68" rain (Trop. Storm Fay)
Measurable rain fell on 13 days this July,11 days last July.

YTD Precipitation - 25.45"

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Rick Anderson
8/23/2020
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 August 2020

Well, we continued with the pandemic, but gained the effects of storm Isaias…with power outages of several days for many of us. And discussing the impact of those outages was the main discussion of our ZOOM #8 meeting on August 10. While many have bigger generators, we are a club of Honda EU2000s—they are great for Field Day and served many of us well during this power outage, managing to run essentials like freezers, refrigerators, water heaters, and some lights... Don't forget to do the necessary maintenance so they'll be ready for the next need! Fuel storage and carburetor draining are covered in the operator's manual. Without cable TV and hi-speed internet and air conditioning, I tried to view the event like a week's vacation in the woods. It worked—to some extent.

For our ZOOM #9 meeting, Tim Farrell KD2EKN did a great program on NPARC member participation last year in the NYC Marathon. Thanks, Tim. This marathon certainly demonstrates what ham radio public service can do and be about—now for fifty years!

While James KB2FCV is watching out for banquet possibilities, we do not expect (at this time) to be able to have a holiday luncheon due to Covid-19 restrictions. Perhaps a springtime event will be possible.

In the meantime, contests and nets can be participated in. The phone net, digital net and cw net are all available to you…. On the August 24 digital net we had 8 participants—a strong showing, but more are welcome.

As a "gadget guy", I acquired a NanoVNA-F to play with. The instructions are only one-page, but there is an "io group" which is bombarding me with emails—just what I need more of! But they should be helpful.

So stay safe…the next ZOOM meetings are September 14 and 28th--hope to see you…

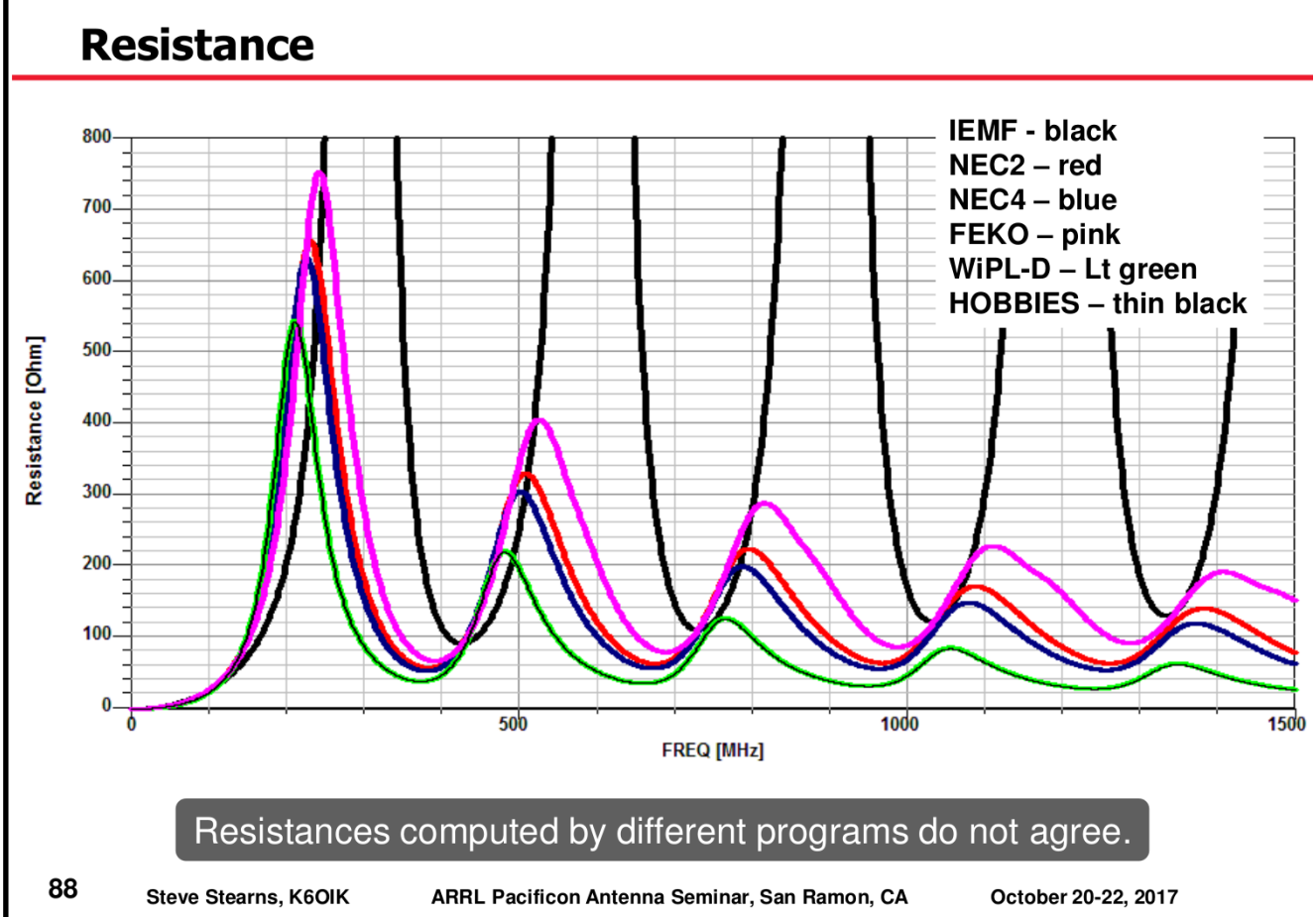
73
Wolf W2PTP
201-404-6914 or W2PTP@arrl.net

The Not-so-Simple Dipole

Jim Stekas - K2UI

While randomly browsing the net I came upon a presentation on "Antenna Modeling" given by K6OIK at the ARRL Pacificon Antenna Seminar in 2017[1]. It traces the history of antenna theory and the increasingly sophisticated computer models created to address various issues: complex ground conductivity, buried radiators, insulated wires, conducting planes, etc.

The talk is filled with pictures and equations, but the key "take-away" for me is that even the lowly dipole is much less well understood than you may think. The plot below gives the center feedpoint impedance of a fat 1m long dipole as calculated by various models. The legend lists the models from simplest (top) to most complex (bottom). All the models pretty much agree on the impedance at ~150 MHz where the dipole is 1/2 wavelength long. At ~450 MHz where the dipole is 3/2 wavelengths long agreement is also fairly good. Even the IEMF model that is simple enough to be computed by hand isn't too bad.

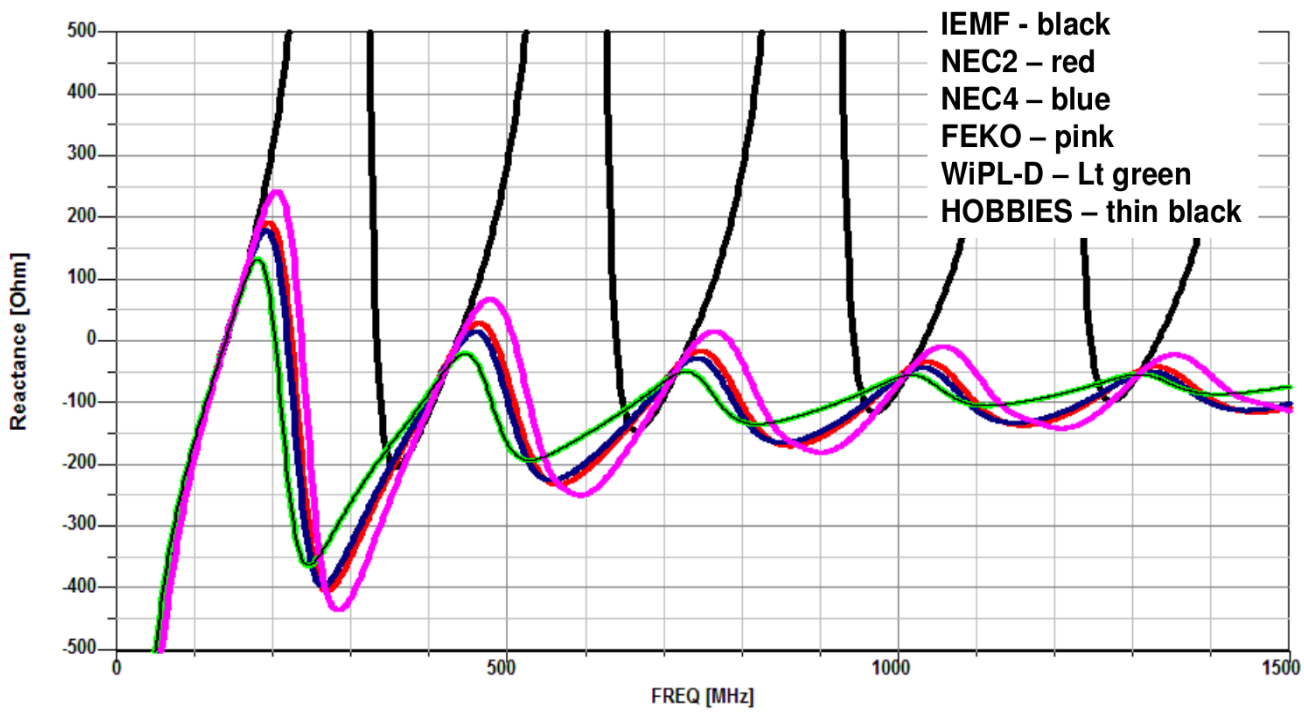


At multiples of one wavelength there is strong disagreement between the models. This is because the feed point current is "trying" to be zero and the radiation resistance is trying to be "infinite". The radiation resistance at these points is a very sensitive function of the geometry and the particular model.

1 See https://www.fars.k6ya.org/docs/k6oik for a great collection of antenna related material.

We can also look at the reactive component of the feedpoint impedance, which we expect to be near zero a resonance. At the 1/2 wavelength dipole resonance (~150MHz) all the models cross X=0 at the same frequency. But at higher harmonic frequencies the models disagree as to where X=0 occurs. All the computer models predict that for F>800 MHz the reactance remains capacitive (X<0).

Reactance



Reactances computed by different programs do not agree.

It is surprising that state-of-the-art computer models cannot agree on the impedance of ideal dipoles[2] longer the ½-wavelength. Real antennas aren't ideal. They tend to couple in unknown ways to ground, coax, gutters, A.C. wires, etc. Except for the one and three half-wavelength resonances (which are fairly well behaved) the impedance at other frequencies will be uncertain. If you want to know the impedance of your antenna vs. frequency you will need to sweep it with an antenna analyzer. If you are lucky, will get rough quantitative agreement with your antenna modeling software.

2 An “idea dipole” is one isolated in free space, who's dimensions are exactly known, and fed directly by a voltage (or current) source.