Smoke Signals

Newsletter of Fullerton Radio Club

September 2024

President's Column

Saturday in the Park.

Last Saturday we had a good turnout at our third "Saturday in the Park" morning activity. We started gathering at Hillcrest park at about 8 am. Ray Rounds K6RAX arrived first and spent some time discouraging some bees (or perhaps bee flies) that wanted to use the same table that we were planning to occupy. Dan Slater AG6HF took a detour on his bike ride, to fly his DJI drone. Unfortunately, his efforts were foiled by the overly enthusiastic DJI geofencing which blocked him, even though he had authorization to fly at our location. Dick Palmer soon arrived with a Yaesu FT-847 all-mode VHF/UHF radio, and set up a dual-band yagi on a tripod pointing south. The goal was to get some FM and SSB contacts with stations who might be testing in preparation for the ARRL September VHF contest, which was scheduled to begin at 11 am. Unfortunately, his multiple calls did not raise very many stations.

A little after 11 o'clock, we packed up and several of us drove to a nearby Farmer Boys restaurant and had a leisurely lunch.

Here is list of members and friends who visited with us at Hillcrest and/or Farmer Boys:

Walter Clark
Bob Houghton AD6QF
Harish Kumar KO6FJT
John Mock K6AHY
Lois Mock
Joe Moell K0OV
Dick Palmer WB6JDH
Bart Pulverman WB6WUW
Ray Rounds K6RAX
Dan Slater AG6HF
Tom Smith KB6A

Our newest member, Harish Kumar KO6FJT arrived, full of curiosity. I was able to share with Harish a few antenna options including my current favorite HT antenna, the Signal Stick ultra-flexible HT antenna. Harish is exploring ways to mount a mobile radio into his Lexus hybrid.

Our next Saturday in the Park will be on October 12. I hope you can join us then for some more radio fun.

FRC September Board Meeting Minutes

The monthly FRC Board Meeting was called to order by President Bob Houghton AD6QF at 5:30 PM on Wednesday, September 11, 2024. Additional Board members present included VP Robert Gimbel KG6WTQ, Treasurer Gene Thorpe KB6CMO, Member at Large Bart Pulverman WB6WUW. Board members absent: Walter Clark, Larry McDavid W6FUB.

The August Board Meeting minutes were reviewed and approved without amendment.

Treasurer's Report
- Bank balance: $6257.49 as of September 5.
- New deposits: $20.02 interest, Harish Kumar membership
- New expenditures: None
- New members: Harish Kumar KO6FJT
- Bob's records show 35 memberships 2024 paid and 1 life member as of 9/5/24.

Old Business
- None

New Business
- Saturday 9/14 "2nd Saturday in the Park" at Hillcrest

There being no further discussion the meeting was ended at 5:45 PM.

Submitted by President Bob Houghton

The Magic of Ferrite

By Joe Moell K0OV

Last month I described how RF on the outside of your coax shields can adversely affect your antenna directivity and carry noise into your receiver. Adding the right amount and type of ferrites over coaxes can mitigate these problems.

Ferrite has become a go-to solution for RF interference. You probably have ferrite bulges on the cables for your computer peripherals and other devices. Ferrite suppresses RF noise on the outside of the cables without affecting the signals within the cables. Without the ferrite, these peripherals and devices might not pass FCC interference certification.

When I set up a stereo system in our then-new house, the speaker cables were about 20 feet long and made excellent unintended antennas. When the system was on, I couldn't transmit on the HF bands without hearing my signal in those speakers. Back then, the recommended fix was to put disc capacitors from each of the speaker lines to the amplifier chassis to bypass the RF. That didn't work well.

There are three problems with this approach. First, the RF gets inside the amplifier cabinet on the way to the capacitors and can radiate within

the cabinet. Second, the amplifier chassis isn't a good RF ground. Third, the added capacitors can adversely affect the frequency response and stability of the amplifier.

A better solution is to put the optimum type and amount of ferrite around the speaker leads just outside the chassis. The common-mode RF picked up by the cables is suppressed before it gets inside the amplifier, while the differential-mode audio signals are unaffected.

Sometimes a susceptible device doesn't have long leads to pick up RF. For instance, let's say that your station coax passes through the attic right over your standalone smoke alarm. When you transmit with your high-power amplifier, it sets off the alarm. Ferrite over the station coax at each end will keep the coax from radiating into the smoke alarm. However, these chokes must be designed with care. Improper suppressing of high RF currents on the outside of a transmitter feedline can result in cracked ferrite and melted coax. The photo shows a well-designed common-mode choke with eight ferrite toroidal cores for transmitting through RG-213.

Common-mode choke

For a wealth of information about ferrite chokes for low and high power, I recommend a 2006 paper by Chuck Counselman W1HIS,[1] originally written for the Yankee Clipper Contest Club. In addition to covering materials and choke-building, this 42-page illustrated manuscript includes techniques for identifying and characterizing surplus ferrites at swap meets and in your junk box.

Ferrite may not be the answer to world peace, but its interference-reduction capabilities may help you make peace with your spouse and your neighbors.

Joe Moell K0OV

REFERENCE:

[1] http://www.on4ww.be/emi-rfi/CommonModeChokesW1HIS.pdf

Next Park Activity

Our next Saturday in the Park will be October 12 at Hillcrest Park. The theme will be “Portable HF Operating.” Bob AD6QF will set up several examples of easily field-deployable HF antennas. You will have an opportunity to tune them with several different antenna analyzers and try to hunt some POTA stations. Watch for an email reminder a few days before the event.

Yakking around the Yagi

TAG Report for September 2024

by Walter Clark

The class photo took a technological leap by using the delay feature of the cellphone camera. I got to be in the picture. That's me on the far right.

The theme for the evening was antique electronics.

Bill Webb sitting third from the left, brought a Stereo Realist camera. It isn't exactly electronic, but it is old technology. There was some discussion on how it could be done digitally.

The stereo viewer on the right above (previous page) is about 120 years old and Bill did indeed make the image on display there. But a transparency made with the Stereo Realist camera can be placed in a Stereo Realist *Viewer*, which Ray Rounds is using in the picture below. This viewer has an adjustment for eye separation as well as focus. One peculiarity with stereo images is the direction each eye faces. Close by, they converge more than at a distance. The girl in picture we saw was seven feet away from the camera. The convergence for that distance is 0.035° which is what the viewer is adjusted for.

Harish Kumar is holding a code practice oscillator he soldered up a few years ago. See the callsign on his shirt? He really enjoys doing that with his printer and an iron and offered this service to anyone in the club, and I think he's offering the shirt too, all for free.

Larry McDavid always brings the most interesting objects. This lightening captured in plastic is called a Lichtenberg Figure. It is made by using an electron beam to charge, not just the surface but every cubic millimeter of the plastic. It's discharged at a point which is what makes this pattern. This video shows how these figures are made. It is one of the most fascinating videos you will ever see. https://www.youtube.com/watch?v=xlzIUKyA1eQ

Larry also brought an old selenium rectifier which all the old timers reminisced over the horrible smell they produced when the weren't wired in right. He also talked about the carbide light and an old Model T Ford spark coil he also shared with us.

John Mock here is holding a WW2 era aircraft transmitter. He said the radio band coverage is 2.3 - 6.5MHz. That covers the 80m band but he didn't know of any hams that used this transmitter.

The selector switch on the left has 4 positions that have to do with the kind of antenna; trailing wire, 2 fixed antennas and ICS antenna, whatever that is. PA stands for Power Amplifier. PA Tuning is the variable capacitor beneath its coil in upper left (see below) and has an adjustable antenna coupling coil in it.

The chart has tuning instructions at the top and room for 10 frequencies and their knob settings.

Upper left is a tapped coil connected between the antenna coupling coil and antenna. It has an adjustable powdered iron slug in it which the pointer knob moves in and out of the coil.

Walter Clark your host, got down out of attic a laser he made for his senior year science fair project. It was a gas laser and in 1965 the only thing my fellow students knew about a laser was what Goldfinger was going to do to James Bond. (I saved it all this time to show it to you all.) This put out a red spot but everyone was so disappointed that I couldn't burn anything

with the beam. The glass blowing I learned from a neon sign maker in Watts. (I grew up in Redondo Beach so this wasn't a far drive for my mom and me.) This was before the Watts riots and so I didn't know it was a place distinct from Hawthorne, or L.A. The hand in the picture is 60 years older than the last time it touched that laser discharge tube.

That which made the tube glow was a 75-Watt transmitter I built the year before. It was straight out of Radio Amateur's Handbook using a 6DQ5 TV horizontal flyback tube. I think. The theme was antique electronics. Well a laser in 1965 is antique technology with respect to today. Also antique is the Heathkit Analog Computer the ***laser exciter*** is sitting on.