Smoke Signals

Newsletter of Fullerton Radio Club

April 2022

President's Column - April 2022

Save the date: Saturday May 14.

The Fullerton Radio Club Antennas in the Park event will take place on Saturday, May 14 at Hillcrest Park in Fullerton.

It's almost time for one of our largest events of the year; Antennas In The Park on Saturday, May 14, 2022.

As always, a key feature of the event will be the popular Joe Moell K0OV on-foot T-Hunt. In addition to the ARDF event, the theme this year will be "portable operating." Bring your favorite portable antenna setup and we will test out with a few radios. There's LOTS of room to put up antennas in the park! Or perhaps a demonstration or two – or more – from the TAG group projects? What else? It's up to your imagination!

The cabin should be open by 9:00 AM for those wishing to set up antennas and radios. The T-Hunt antenna- building project table will start at about 10:00 AM, with actual T-Hunt activities beginning at about 11:00 AM. Additional details of the T-Hunt can be found at http://www.homingin.com. We are typically active until about 3:00 PM.

Albert Solomon, AG6OF, has volunteered to BBQ some burgers for us – lunch will be provided at no cost for currently paid members; we will ask for a $5 donation for everyone else. And again this year the event will be at the Izaak Walton Cabin at Hillcrest Park (with restrooms). There are plenty of spaces for set up of radios (bring batteries) and antennas on the cabin porch and on the lawn in front of the cabin. You might want to bring a lawn chair for sitting outside.

Parking is available at several locations near the cabin. **See map and directions on page 3 for location of the cabin within the park.**

This will be our first in-person event since the December holiday party, so I hope to see lots of you there.

73, Bob - AD6QF

April Club Meeting

We'll continue to meet by Zoom until the Board is completely comfortable with the potential exposure status to COVID-19, AND an appropriate location is found for return to fact-to-face meetings. That is unless we identify that Zoom brings out a better attendance, presentations and presenters (if any) are acceptable with this format, and members also accept the Zoom process. Decisions yet to be made.

Meeting Date: Wednesday, April 20, 2022. Time: 7 PM PDT (NOTICE TIME CHANGE). Subjects: Antennas In The Park and Field Day.

We'll be at the same Zoom ID and password as usual. If you don't know the Zoom address please contact a Board member and we'll provide. We don't publish the Zoom ID/password to avoid unwanted interruptions.

Show –and–Tell

Bring something of interest to the meeting to show and share your story. Something old, new, or just of interest to hams.

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May 2022 FRC BOARD MEETING

The next Club Board meeting will be on

May 11, 2022

Due to the continued status of COVID-19 we will hold the meeting by Zoom at the usual Zoom ID and passcode.

Meeting time: 5:30 PM

All Members are welcome

April FRC Board Meeting Minutes

The April 2022 FRC Board Meeting was called to order by President Bob Houghton, remotely by Zoom, on Wednesday, April 6 at 5:32 PM. Those in attendance were President Bob Houghton AD6QF, Vice President Robert Gimbel KG6WTQ, Secretary Paul Broden K6MHD, Treasurer Gene Thorpe KB6CMO, Members at Large Larry McDavid W6FUB and Richard Belansky KG6UDD. Board member not in attendance was Walter Clark,.

Minutes of the March Board meeting were read and accepted.

Treasurer's Report: Checking account; $4260.72 – Savings account; $2608.94: as of the February bank statement. New deposits pending; Dustin Rachuy renewal, $20. New expenses; none.

Membership Report
Membership Renewal; Dustin Rachuy KK6KND
Records show 30 paid members and 2 Life members as of 4/6/22.

Upcoming Community Events: None identified. No FRC participation in Donate Life this year as the venue has changed from Cal State Fullerton to Azusa Pacific University.

Old Business
Bob has obtained the 2021 bank statements

New Business

- Both fullertonradioclub web domains expire in six weeks. David Curlee holds the domain rights, and its been difficult to reach him to verify the renewal status.
- Discussion: How can we revitalize the FRC-OC list?
- Bob has uploaded recent Smoke Signals to the website files section.
- We need to trim the FRC-OC and Email list. Need to identify what criterial to use to trim "dead wood".
- Discussion: Antennas In The Park. Saturday, May 14 (International Fox Hunting Weekend)
  Tasks for completion:
  * Need City of Fullerton permit. Contact John Clements
  * Lunch on your own v. BBQ by Albert Solomon?
  (Albert agreed to do the BBQ before the discussion ended)
- Field Day: June 24 - 26.
  * If we are to participate a FD Chairperson is needed. As of 4/5/22 there were no volunteers.
- Additional discussion? When will we return to in-person Board Meetings? Consensus: Continue Zoom meetings, at least for foreseeable future.

Meeting adjourned ay 6:00 PM

Submitted by Secretary Paul Broden K6MHD

from north, go south on Lemon St (from Brea Blvd) to park entrance on right. Enter park & follow roadway to stop sign, turn right & curve left to upper parking area on the left.

from south, go west on Valley View Dr. (from Lemon St. NOTE: there is no left turn off Lemon into main entry of the park.) to 2nd entry (1st goes into Rec Center etc) . Follow roadway to the right, curve left to stop sign. Continue straight ahead to left curve to upper parking area on the left.

If upper parking area is full, there is additional parking in Lower Parking. Continue following the roadway down hill to the right & back up hill.

A parking lot that requires some steps is located on around the roadway. Those who come in off Valley View Dr. pass it by the stop sign.

2022 Spring WWV/H Scientific Modulation Citizen Science Campaign

In reading through the April edition of QST, you might have come upon a brief overview describing an opportunity for radio amateurs to participate in a "science observation" campaign occurring on the weekend of April 30, 2022.

Referred to as the "WWV/H Scientific Modulation Citizen Science Campaign", this rather unique short-wave listening exercise provides amateurs a chance to contribute to the study of propagation effects, an important topic in radio science. Volunteers are requested to record received radio broadcasts from the WWV and WWVH radio stations and upload the data of a new modulation waveform test signal to a website discussed later in this article.

Understanding of the ionosphere and the propagation of electromagnetic waves is as old as radio itself. However, propagation studies remain an active area of research today. Theoretical forecast models predicting radio wave propagation and the influence of space weather on the dynamics of the Earth's ionosphere are often based on direct measurements of received radio signals at different geographical locations. A recent collaboration between the National Institute of Standards and Technology (NIST) and the geophysical scientific community has created a custom modulation waveform that is currently being transmitted on the WWV and WWVH carrier frequencies at specific times to provide a "palette" of test signals for potential ionospheric measurements and analysis.

Most shortwave radio listeners are very familiar with the standard time announcement broadcasts transmitted by the WWV and WWVH NIST radio stations operating on frequencies 2.5, 5, 10, 15 and 20 MHz. In a world of GPS and internet (NTP) time servers, the time and frequency broadcasts from WWV/H may seem antiquated and obsolete. However, the atomic oscillator referenced carrier frequencies of these transmissions are still a valuable

tool for measuring HF radio propagation via the different layers of the Earth's ionosphere.

Station WWV Fort Collins, Colorado

Station WWVH Kauai, Hawaii

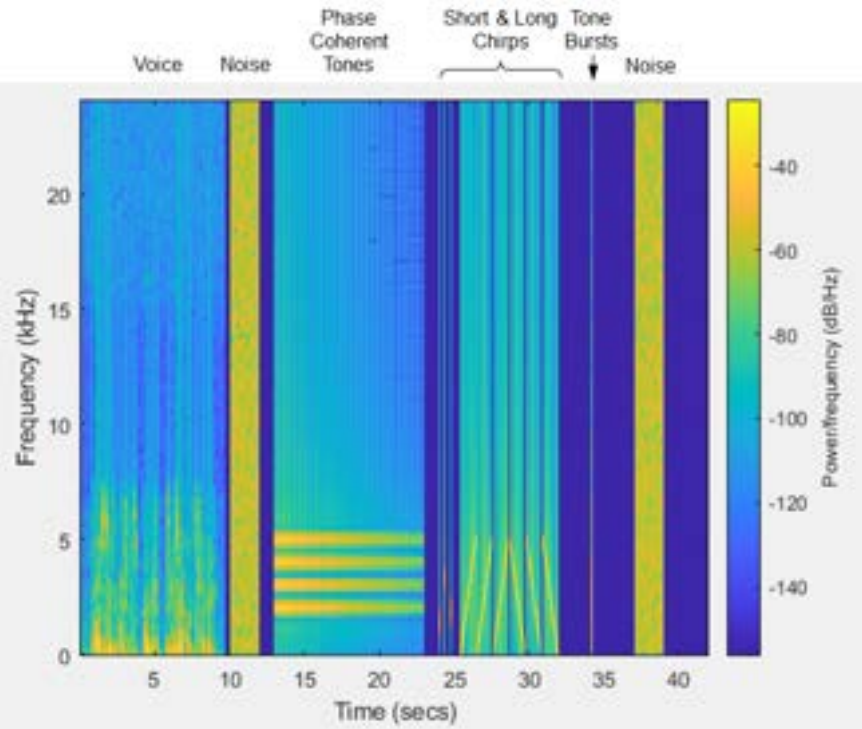
Since November 15, 2021 both WWV and WWVH began hourly transmissions of a scientific modulation test signal at eight minutes past the hour (UTC time) for WWV and forty-eight minutes past the hour for WWVH. The content of this test signal was designed by the WWV/H Scientific Modulation Working Group consisting of members from NIST, WWV/H, the geospace scientific community and Amateur Radio Science Citizen Investigation (HamSCI).

HamSCI provides a forum for collaboration between professional researchers and amateur radio operators. The scientific focus of HamSCI is the study of upper atmospheric and space physics and the various programs or campaigns coordinated by HamSCI provide opportunities for hams and amateur scientists in general to participate in radio science investigations.

Ham Radio Science Citizen Investigation (www.hamsci.org)

This new scientific modulation test signal has a time duration lasting a little over 40 seconds and starts with a brief verbal announcement describing the test signal proceeded by different modulation components (with "blank" or zero signal sections inserted to divide the modulation components) creating the complete test waveform. The waveform is composed of the following modulation components: a white (Gaussian) noise burst (2 sec total), several phase-coherent tones that are sequentially attenuated down in 3 dB amplitude steps (10 sec total), a sequence of both short (50 msec) and long (1 sec) linear up and down chirps (8 sec total), several one-cycle-tone bursts (1 sec total) and a final white (Gaussian) noise burst (2 sec total).

The HamSCI WWV/H website (www.hamsci.org/wwv) provides several downloads including a WAV (.wav audio) file of the entire test signal. Matlab has a spectrogram function that can be used to generate a "visual picture" of the frequency spectrum of the different signal components versus each signal's time duration. A typical spectrogram plot format has the vertical axis representing frequency, the horizontal axis representing time while a color range (the "third dimension" of the plot) indicates the signal's amplitude or strength (e.g. blue is a very weak signal strength and red is a very strong signal strength). Processing the downloaded WAV file, results in a graphical "look" at the entire composite waveform test signal shown in the spectrograph plot below.



Spectrogram Plot of the Entire WWV/H Test Signal

I recommend downloading this WAV file and playing the file on your computer while staring at the plot shown above to help you hear the details you are "seeing".

While the many potential "uses" of this test waveform are still being investigated and developed by the research community, listening and recording the WWV/H transmitted waveform signal at various receiving locations around the country is an ongoing activity today. Computer based software define radio (SDR) technologies enable both shortwave listeners and ham operators to tune into the different broadcast frequencies and provide the convenient capability to record the received signal as either an audio WAV or I/Q data file for uploading using the HamSCI website.

On April 30 thru May 1, 2022, HamSCI is coordinating campaign called the Spring Sunrise Festival with the intent to engage the amateur community to record and analyze this new modulation test signal. The goals of this campaign include the observation of multipath propagation during sunrise, conduct time-of-flight (TOF) measurements and incorporate a contesting structure (receiving points based on level of effort) as part of the event for all participants. There is a partial solar eclipse occurring the weekend of the campaign, thus, providing an additional opportunity to observe/measure possible propagation effects using the test signal. This is a great opportunity to actively contribute to a citizen science effort, learn something and, hopefully, have some fun.

I encourage those who may find this of interest to visit the HamSCI WWV/H Scientific Modulation website (www.hamsci.org/wwv) for the technical details regarding the modulation test signal. Included as part of this website are two embedded YouTube videos that present a brief overview of the WWV/H Scientific Modulation Working Group (presented at the 2021 Tucson Amateur Radio Digital Communication Conference) and a video showing a waterfall plot and audio recording of the received WWV test signal. For a complete description of the up-coming campaign and how one can sign-up and participate, please visit the HamSCI festival website (www.hamsci.org/sunrisefest).

Rich Belansky
KG6UDD

TAG Activity Report for February 2022

Dick Bremer brought a 10 GHz Gunnplexer and talked about the early days of the San Bernardino Microwave Society. The Gunnplexer is a complete transceiver consisting of a varactor-tuned Gunn source, a circulator (which decouples the transmit and receive signal) and a mixer diode for the received signal. Dick has been involved with microwave for at least 50 years and now has some rather sophisticated gear. But the first affordable microwave was the Gunnplexer which you had to assemble. The output of a Gunn diode was a 30 MHz intermediate frequency which went into a standard VHF receiver. For more on the Gunnplexer see: https://www.qsl.net/n9zia/ma87127.html

Dick Palmer brought his Gunnplexer too, but let Bremer talk about it. Instead Palmer did a show and tell on a network analyzer / spectrum analyzer. The unit he showed us was a nanoVNA 2.8 inch screen at $50. It was 900 mhz at the top end. The new units are 1,500 mhz and are $75 for the 2.8 inch and $95 for the 4.2 inch screen. That's somewhere between ten and hundred times cheaper than what the most sophisticated hams had to shell out even just a few months ago. The highest frequency these affordable units go up to is 1.5 GHz and there was some discussion on why they stopped there. It is the L band; the top end of the ultrahigh frequency (UHF) band, at the lower end of the microwave range. It is where most GPS frequencies are, and the IF frequency coming down coax from satellite dishes.

There was some discussion about the modern trend ***not*** to put spare tires in new cars. That is, there's no place for them. Bob Houghton drives a Tesla and told us that if you are a AAA member, and get a flat tire, AAA will flatbed your Tesla to the nearest Tesla center. This is the same as they do for all cars that do not carry spares. If Tesla service comes to you they carry "loaner" wheels to get you on your way again. That discussion led to a discussion about car batteries and the kind of currents they can deliver. LiPo battery safety and the replacing of batteries in hybrids.

John Mock raised the level of discussion about batteries to the possibility of electric powered ultra-light planes. This is the category of flying where the point is not to go anywhere. It is flying for fun. We asked John about his flying experience, and it turns out flying was a big part of his life and has owned and flown many. Even now he keeps a FlightStar-2 in a hanger at Perris Airport. He is in the process of repairing the landing gear he broke on a bad landing. We will hear more about his flying experience in future TAG Activity Reports.

Larry McDavid had a show-and-tell in the form of constant-width solids that look lumpy. In geometry, a surface of constant width is a convex form whose width, measured by the distance between two opposite parallel planes touching its boundary, is the same regardless of the direction of those two parallel planes. Larry showed three plastic complex shapes called Meissner tetrahedra. This 30 second clip is kind of fun: https://www.youtube.com/watch?v=jYf3nOYM_mQ Larry also shared an amusing story about his drive from his house in Anaheim to Walter's House in Fullerton. His Garmin car GPS navigator displayed Walter's name as a possible destination without his entering any destination into the unit. He observed that happening when his traveling is done at certain days of the week and at a certain time of the day. He has regular Thursday lunch meetings and again without entering any data it announces that restaurant destination by name. It does this based on day of week and time of day of previous travels! Big Brother *is* watching!

Larry is always alert for any new or improved data communication standard such as protocol and connector type. The latest thing for him is Thunderbolt 4. It uses a USB Type C connector and allows twice the data rate as the standard USB C. It is also noted for its power carrying capacity and its use for high resolution graphic displays. Strangely, new laptops no longer have dc power input jacks in favor of the Type C USB or Thunderbolt connectors. And, the usual RJ45 Ethernet jack is now often missing in favor of using a USB Type C port with an adapter; this allows laptop computers to be thinner.

Bill Webb gave yet another talk on his fasciation with 3-D. My earliest memories of Bill (mid 90s) was his collection of 3-D cameras. Many years later it was 3-D printers and now 3-D animation. Of course, in the background was ham radio from APRS: Automatic Packet Reporting System, then later Internet Ham Radio and digital modulation schemes. Then there's his weather stations which he made a part of Internet's Weather Underground. https://www.wunderground.com/forecast/us/ca/orange/KCAORANG21?cm_ven=localwx_10day At Wednesday's meeting he gave a presentation on his work with Blender; an extensive software tool that allows manipulating images in computer to simulate physics as well as motion.

Shown above is a frame from his presentation on Walter's TV set. This may be a familiar experience for most of you, but this is the first time Walter has seen a computer display on his TV set. More than dumbness, this reflects Walter's large gaps in time between upgrades. This is only the second TV he's ever owned. It's Samsung's "The Frame" and when not showing KCET it is displaying fine art.

What you see in the image above is Bill's homework assignment for a class at Santiago Canyon College on Blender. It is four vacuum tubes in a box with a bug. All created out of his mind with Blender. The Vacuum tubes are glass with a getter spot that reflects like a curved mirror reflecting objects in a pretend room. The glass doesn't reflect as much so it only reveals a shine from the geometrically located source of light. This demonstrated the ability of Blender to do optical ray tracing. The cockroach is three ellipsoids with a 2-D pattern draped over them.

Tom Risher KD6HWD, SK

Thomas (Tom) Allen Risher (KD6HWD), a long time FRC member, passed away April 8 at 10:10 (not a joke) after a long illness.

He leaves a wife Vicki, 2 married daughters 4 grandchildren and a brother.

He was a good friend and we will miss him sorely.

Tom and Vicki KD6MCM were active FRC members and also active with the Hospital Disaster Support Communications System when they lived in Anaheim. Tom worked for the city of Placentia and was a big help in getting us access to Tri-City Park when we used to have Antennas In The Park there. He ALWAYS wore short pants.

Tom Risher KD6HWD
(Photo by Joe Moell K0OV}

Christie Edinger K0IU, SK

Former FRC member Christie Edinger K0IU passed away from pancreatic cancer on March 26, 2022 at the age of 79.

Christie had a great deal of technical skill, which earned her a producer-director position at KOAM-TV in Pittsburg, Kansas. In 1976, she visited an Amateur Radio display at a county fair in Missouri and got very eager to get her license. Soon she was WB0SDO and having regular CW QSOs on 40 meters with her sister, April Moell WA6OPS, who had also just become licensed.

Christie upgraded to Extra and obtained a vanity callsign, K0IU. In 1989, she moved to Fullerton and went to work at Compact Video Productions. Later, she joined the staff of KRCA-TV (Channel 62) in Burbank as Master Control Operator.

While in Fullerton, K0IU was active with the Fullerton Radio Club and also the Hospital Disaster Support Communications System. She particularly enjoyed being on the North Pole Network team that brought Santa by ham radio to Childrens Hospital in Orange every December. She continued her love of Morse code, which led to a fascination with the instruments of this art. Christie amassed a large collection of historic keys, bugs and sounders for radio and telegraph communications, and gave a well-received presentation on that topic to the Fullerton Radio Club. Portions of her collection have been on public display and have won awards at the Orange County Fair.

In 1994, Christie moved to Burbank and became a Satellite Uplink Operator for The Disney Channel. Once retired, she became very active in the Los Angeles Live Steamers Railroad Museum at Griffith Park. She designed and commissioned her own model train set, which she enjoyed using to give rides to the public on Sunday afternoons on the large LALSRM layout.

Christie Edinger K0IU