October 2023

Newsletter of the County of Orange Radio Amateur Civil Emergency Service

Inside this issue:

Next OCRACES Meeting

Online on Zoom

Severe Fire Weather Patrol Training

Monday, October 2, 2023 at 7:30 p.m.

Orange County Sheriff's Department
Emergency Management Division

CRO's Nest

by Ken Bourne, W6HK, OCRACES Chief Radio Officer

Diversity Reception

Diversity reception is a desirable feature for enhancing signal reliability during ionospheric fading conditions, common on the HF bands. Two antennas are required, preferably of opposite polarity. Under some conditions, signals will be weak on one antenna while strong on the other, and will then reverse. Early attempts at combining vertical and horizontal antennas did not reduce fading. Instead, a single tilted polarization resulted. Fading can actually increase because of multiple signal paths of varying polarizations and phase delays. These multiple signals could subtract (phase-cancel) or add at any given angle.

Diversity reception is available with some modern dual-receiver transceivers, such as the Icom IC-7610, the Elecraft K4D, the Yaesu FTDX101D, and the FlexRadio FLEX-6600. One antenna (such as horizontal) is connected to one receive module, and the other antenna (such as vertical) is connected to the other receive module, allowing you to hear the signal from the two antennas in right and left channel audio, often improving copy in fading conditions.

FlexRadio FLEX-6600 transceiver.

Icom IC-7610 transceiver.

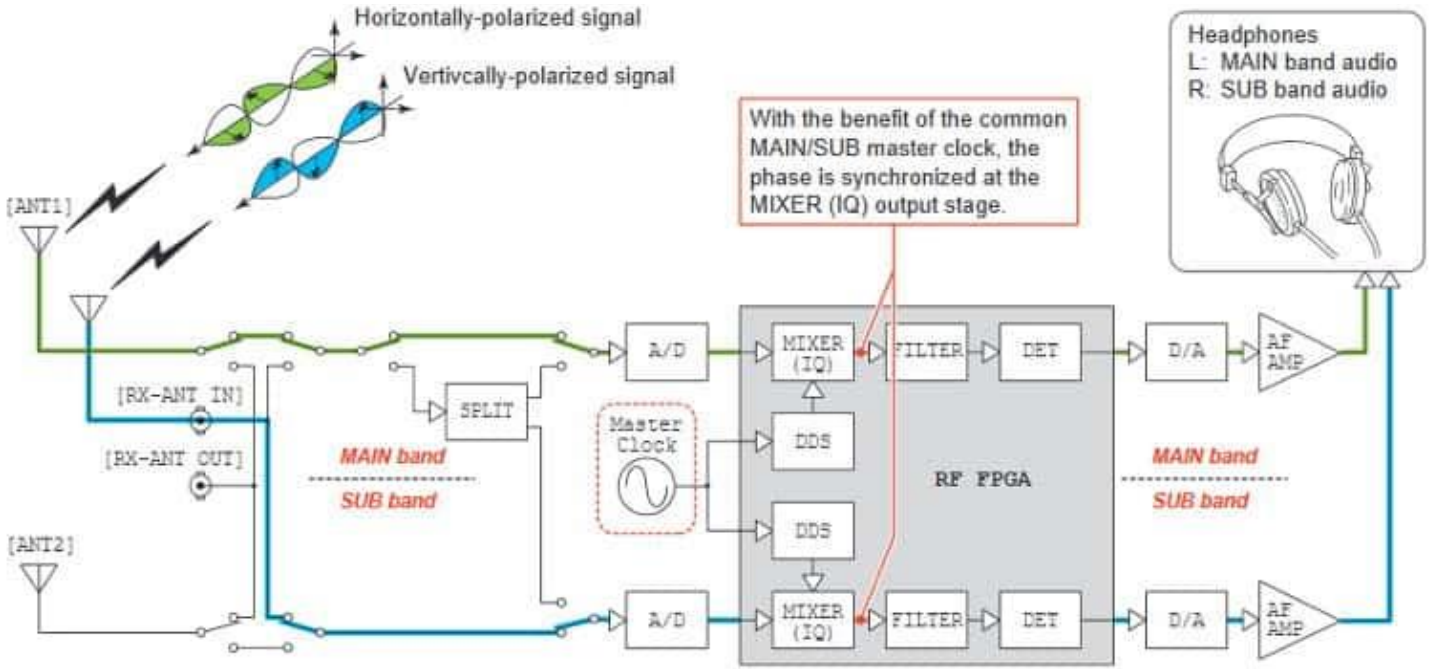
Elecraft K4D transceiver.

Yaesu FTDX101D transceiver.

Such transceivers have two built-in separate receivers (main and sub), but not all dual-receiver transceivers are capable of diversity. The receivers must be identical (which is not the case with the dual-receiver Kenwood TS-990S transceiver), with the tuning of the main VFO and sub VFO locked together for diversity reception. This lets you listen to the signals received from both antennas at the same time. Diversity requires either headphones

(Continued on page 2)

CRO's Nest *Continued from page 1*



Concept of diversity reception in transceivers such as the Icom IC-7610, as posted at https://k0pir.us/icom-7610-diversity-reception. Rich Donohue, K0PIR, recommends a headset such as the Yamaha CM500 with boom mic, which separates the left and right channels.

(with main-receiver audio fed to one ear and sub-receiver audio to the other ear) or dual external speakers.

True diversity requires intelligent summing of the skywave signals, which cannot just be directly mixed either at audio, IF, or radio frequencies. Early diversity systems used a voting system that followed the AVC (automatic volume control). As pointed out by Tom Rauch, W8JI, since both RF and IF systems shared the same AVC voltage, the channel with the strongest signals "muted" the lower strength channel. This created a problem if the audio outputs were directly summed and signal strengths were similar, because phase errors from the antennas would translate directly into phase errors at the combining point in the receiver. Other later systems used a noise detector and noise-controlled voting system. These systems routed the better S/N channel to the audio system. This was better, since signals were never combined into one channel. The ham only "heard" one monaural signal at a time, with the noise-controlled voting system electronically selecting the best signal-to-noise channel.

The modern dual-receiver radios mentioned above have dual 16-bit ADC (analog-to-digital converters), extensive RF filtering, and great receiver specifications. However, according to some opinions, the above radios do not use "real" diversity reception, as implemented in the Apache Labs ANAN-8000DLE transceiver, with I/Q phase and amplitude adjustments at baseband. It provides the ability to change the phase relationship between the two received signals. The Yaesu FTDX101D does not export any baseband data. The IC-7610 firmware will export one I/Q channel at a time, but not combined. Elecraft claims that streaming protocols are being refined and will be fully documented in subsequent revisions.

This Apache Labs SDR radio includes two phase-synchronous front ADCs (analog-to-digital converters) to enable diversity reception and other advanced applications. Changing the phase relationship allows you to "align" the signals so that they emphasize a wanted signal, at the expense of noise and interference. Alternatively, it can be used to perform noise cancelation on an unwanted interference signal, thus improving the signal-to-noise ratio of the wanted signal. With this capability, the produced audio output can be fed to just one speaker or headphones, but two speakers are recommended for other features, such as stereo output. The newer ANAN-G2-1K 1000-watt HF and 6-meter transceiver has a large FPGA with higher 930 GMAC/s processing capability. It has a built-in Linux OS with desktop running on a quad core Arm platform. Rich I/Os include 2 × HDMI 4K, gigabit Ethernet, 2 × USB. ✸

Apache Labs ANA-8000DLE transceiver.

City/County RACES & EmComm Drill: Oct. 7th

The next City/County RACES & EmComm ACS Drill will be on Saturday, October 7, 2023, from 0900 to 1200 hours for the simplex portion. Winlink messages will be accepted over a 24-hour period, from 1500 hours on Friday, October 6th, to 1500 hours on Saturday, October 7th.

The scenario for this drill is a series of cyberattacks that have disabled major infrastructures, including power and gas utilities (resulting in a countywide power outage), water and wastewater facilities, telephone companies, cable systems and internet service providers, hospital networks, banks and other financial institutions, law-enforcement and other government administrative systems, transportation systems, dams, education, and postal and shipping services. In addition, all repeaters have failed, and all communications are on simplex frequencies.

- All participants must be at field locations with portable or mobile radio equipment.
- No home-station operations, except for Winlink.
- County and city net controls may be at EOCs that have backup power capabilities.
- Transmitted simplex voice reports will be immediate without filling out ICS-213 forms.
- Net control will fill out an ICS-213 form only if time permits. Otherwise, noted information will be quickly delivered to the EOC's Command Center.

On 2 meters simplex and on 60 meters, all participants must be at field locations with portable or mobile radio equipment. County and city net controls may be at EOCs with backup power, but no operations will be from home stations, unless running on batteries or generators and using portable antennas. Communications will consist of simplex communications on 2 meters FM and HF NVIS (Near Vertical Incidence Skywave) on 60 meters. OCRACES net control will operate from the Orange County EOC. City and County RACES and EmComm members will operate portable stations, preferably at locations that need to be tested for local and countywide simplex radio coverage.

The simplex drill will run from 0900 to 1200 hours. On 2 meters, the first hour will be devoted to communicating with each RACES unit's own members on their primary simplex frequency. Check-ins may include simulated emergencies and requests for resources. The remaining two hours will be for communications between OCRACES and city net controls on 146.595 MHz, while city RACES and EmComm members may continue to call their net controls for urgent resources.

On 60 meters (5371.5 kHz upper sideband, dial frequency), the drill will probably conclude before 1130 hours.

a) At first, net control will use the same roll call of Orange County City and County RACES and EmComm stations as on the Saturday morning OCRACES ACS net.
b) Net control will then call for additional RACES and EmComm stations in Orange County that were not on the Saturday roll call.
c) Relay stations inside and outside Orange County will assist OCRACES net control in covering various areas of Orange County.
d) OCRACES net control will then call the roll of RACES/ACS stations outside Orange County. If a Cal OES station checks in, OCRACES net control may request simulated emergency resources from the state or from other counties via Cal OES.
e) OCRACES net control will then call the roll of non-EmComm stations.
f) OCRACES net control will then stand by for visitors.

The Winlink portion of the drill is open to all licensed amateur radio operators and is detailed in the drill plan. Telnet communications (direct internet connection and not via radio) are acceptable and encouraged for those who are unable to communicate with a Winlink RMS (Radio Message Server) gateway via radio. Winlink net control will be at the Orange County EOC at Loma Ridge. Participants are encouraged to "go mobile" and are invited to set up their Winlink stations at a temporary remote location. However, it is not required for this drill, and operating from your city EOC or home location is a great way to practice. Winlink messages will be accepted for the 24-hour period up to 1500 hours on Saturday, October 7th (i.e., 1500 hours Friday, October 6th, through 1500 hours on Saturday, October 7th). Using the Winlink Express software application, participants will prepare a message with an attached Field Situation Report form (listed in Template Manager, Standard Templates, under GENERAL forms, as Field Situation Report.txt) and will send it to OCRACES tactical and backup member addresses (details in the drill plan). Fields to be completed in the Field Situation Report Form are detailed in the drill plan. Messages should be sent only to CAORCO; KM6RTE (note semicolon). Send your latitude and longitude, using decimal GPS coordinates. Additional comments should include information on your role in the drill and the organizations you are affiliated with (as detailed in the drill plan), your email address, and information on what Winlink band and session type through which you will be sending your message.

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Great ShakeOut Drill: October 19th

On Thursday, October 19, 2023, the Great California ShakeOut will officially occur at 10:19 a.m. In conjunction with this event, OCRACES will conduct an earthquake drill that day from 1000 to 1100 hours, simulating a strong earthquake striking Orange County. Net control will ask for locations and observation reports from participants in county and city RACES and EmComm units via the 146.895 MHz repeater and via Winlink. Simulated reports must be given as "Mike-Mike" intensities rather than Richter magnitudes, using the USGS Modified Mercalli Earthquake Intensity Scale, shown below. This Scale is also posted in the "Files" section of the ocsd-races.groups.io website and on the "Forms" page of the OCRACES website (https://ocraces.org). If you plan to participate, please print a copy of that form and have it ready for October 19th at 10:00 a.m.

The drill is posted on the Reserve Tracker Calendar, and RACES PSRs and sworn Reserve Deputies are reminded to register. Net control operators are to report to the Orange County EOC in uniform before 10:00 a.m. Uniforms are not required at other participants.

The international Great ShakeOut is the world's largest earthquake drill. It is held annually on the third Thursday of October, and millions of people participate all over the world. In 2022, over 200 million people participated worldwide. The goal of the ShakeOut is to teach people how to protect themselves during an earthquake.

The ShakeOut drill is simple. At the designated time, participants Drop, Cover, and Hold On (DCHO). This means getting under a sturdy desk or table and holding on until the shaking stops.

Amateur radio operators participate by registering their volunteer radio group for the Great ShakeOut with Earthquake Country Alliance (ECA).

OCRACES has done that. Winlink groups participating will send their DYFI ("Did-you-feel-it?") exercise reports on October 19th after 10:19 a.m. local time) to the United States Geological Survey (USGS). Exercise ID is 2023SHAKEOUT.

Many of the jurisdictions in the Orange County Operational Area will be participating in various events for the Great ShakeOut. The OA invites these jurisdictions to participate in the Great ShakeOut WebEOC Drill. Anytime throughout the day on October 19th, participants may log into WebEOC, complete an "Initial Status" for their jurisdiction, complete an initial damage estimate (IDE), post a few status updates, request a resource, and complete an activity log and post to the Significant Events Board. ✸

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest,especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

USGS Modified Mercalli Intensity Scale.

Next OCRACES Meeting: Oct. 2nd on Zoom

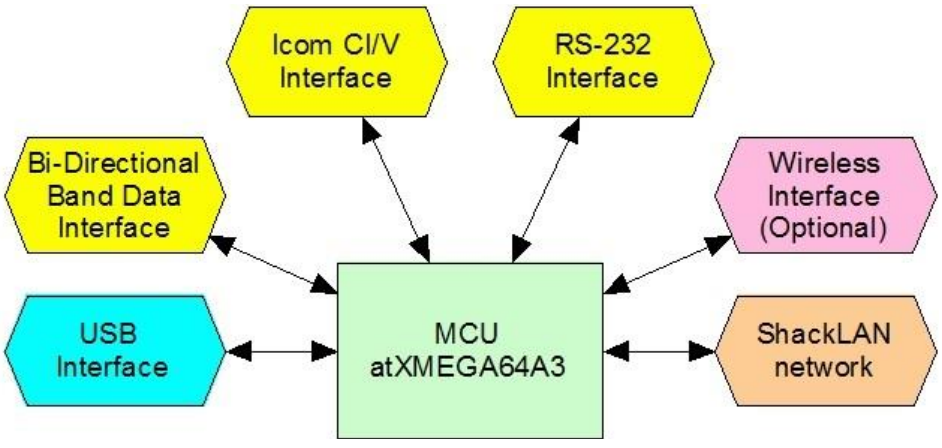
The next County of Orange RACES meeting will be online on Zoom on Monday, October 7, 2023, at 7:30 p.m. During this meeting, Orange County Fire Watch Manager Tony Pointer will provide our annual training for the OCRACES Severe Fire Weather Patrol. This will be timely, as we are approaching the most hazardous days of the Santa Ana wind season. Our patrols are now mostly stationary, with occasional driving through the canyon areas that are most prone to wildfire outbreaks. Tony will teach us about dangerous weather, wind, and brush conditions and what to look for while patrolling. City RACES members are welcome to attend this training. ✸

SM-8 Shack Master Automates Station Ops

The SM-8 Shack Master, manufactured by Hamation and available from Array Solutions, contains a universal band decoder and antenna switch controller. It features five communication channels. All channels are active simultaneously and provide data translation for your station accessories. In other words, if you are using an Icom radio on the CI/V interface, the Shack Master will output RS-232 data in Yaesu or Kenwood format. In reverse, when using a radio on the RS-232 interface, the Shack Master will output an Icom CI/V data stream.

The USB interface may be connected to your PC for radio control. The USB interface may be connected directly to a Flex SDR, with no additional cables or interfaces required. The Shack Master contains a fully bi-directional band data interface. The band-data interface operates in input mode when using band data from a Yaesu or Elecraft radio. When operating in band-data mode, the Shack Master will output data on both the CI/V and RS-232 interfaces with the frequency fixed to the middle of the current band. The band-data interface operates in output mode when any of the other data interfaces are used for your radio. Configuring the Shack Master is easily done from the front panel. No PC software is required. Antennas are assigned to each band. No diode matrix is needed for antennas used on multiple band. The Shack Master can directly control the RC-16 relay controller. From the front panel you may assign any combination of 16 relays for each band. There is also a wireless option for controlling the new 1x8 and 2x8 Hamation wireless antenna switches, thus eliminating the need for expensive control cabling. ✸

Front and rear views of the SM-8 Shack Master. The main screen shows the operating frequency and band on the top line of the display. The bottom line shows the currently selected antenna and if the selection is in the Auto or Manual mode. The bottom line can also show operational error messages. The SwErr message indicates no communications with the antenna switch. This only applies to ShackLAN equipped switches such as the 2x8-Pak and 4x8-Pak. For multiple-radio ShackLAN equipped switches, the SM-8 will indicate when a desired antenna is already in use by another radio displaying the Busy message. The SM-8 provides two methods of antenna selection. The AUTO mode determines the current band of operation from radio data and automatically selects the antenna assigned to that band. The AUTO mode is activated by pressing the AUTO button. Antennas may also be selected manually by using the PREV and NEXT buttons. When these buttons are pressed, the SM-8 automatically enters the MANUAL mode. When using the ShackLAN equipped switch, the antenna selection shown on the display the actual antenna selection reported by the switch. If the SM-8 is configured to operate in Macro mode, the currently selected macro will be displayed instead of the actual antenna selection.



SM-8 Shack Master block diagram.

Countywide RACES/EmComm News

"RACES/ EmComm News" provides an opportunity to share information from all City & County RACES/ACS units and EmComm organizations and supportive amateur radio clubs in and near Orange County, as well as from Cal OES and federal agencies.

Please send your news to *NetControl* Editor Ken Bourne, W6HK, at:

kbourne.ocsd@earthlink.net

Costa Mesa RACES (MESAC)

Bob Potter, WA6CEL, Silent Key

With sadness we report that MESAC Member Bob Potter, WA6CEL, is now a silent key. He was a catalyst in starting MESAC with Gordon West, WB6NOA. He lived in Costa Mesa most of his life and was dedicated to MESAC and to ham radio. Bob held an Extra Class amateur radio license. He and his wife Sandy were married for 49 years and knew each other since they were 13 years old. His graveside service will be held on Saturday, October 7, 2023, at Forest Lawn in Cypress at 12:30 p.m.

Orange County Amateur Radio Club

The next meeting of the Orange County Amateur Radio Club (OCARC) is Friday, October 20, 2023, at 7:00 p.m., at the American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, second floor, Room #208, in Santa Ana. This meeting will be the annual Club Radio/Electronics Auction.

The room will open at 6:00 p.m. to allow registration, setup, and viewing. All buyers and sellers are welcome. Only ham radio or electronic equipment/items will be allowed. Sellers and buyers should register to receive a bid number. The bid number is the seller's number. Registration is free, but sellers will be charged 10 percent of the selling price for items sold by OCARC. Sellers should tag each item in their lot. The tag should be identified with the seller's number, a dash, and a sequential number starting at "1" for each item to be auctioned. The tag should also indicate a minimum bid or "No Minimum Bid" and, if needed, a short item description. Only three items from a seller's lot will be auctioned during each turn, and then the auctioneer will move on to the next lot. Once all lots have been offered, the auctioneer will start the second round of auctioning with the next three items starting with Lot #1. Auction bidding will take place as follows:

a) $0.00-to-$5.00 bidding will take place in #0.50 increments
b) Over-$5.00-to-$50.00 bidding will take place in $1.00 increments
c) Over $50.00-to$100.00 bidding will take place in $5.00 increments
d) Over-$100.00 bidding will take place in $10.00 increments

The above two rules may be changed at the auctioneer's discretion to expedite the auction. Payments for purchased items are due at the end of the auction and shall be by cash or check with the appropriate ID. No two-party checks or credit cards will be allowed. Disbursements to the sellers will be only by OCARC check. A special table will be set up for items donated to the OCARC. Proceeds from the sale of donated items will go into OCARC operational funds.

South Orange County

The South Orange County Disaster Preparedness Expo will be held on Saturday, October 21, 2023, from 0900 to 1200 hours, at the Norman P. Murray Community Center, 24932 Veterans Way, in Mission Viejo. County and City RACES and EmComm members are encouraged to attend.

U.S. Department of Defense

As part of their communications interoperability outreach to the amateur radio community, the U.S. Department of Defense (DOD) will be conducting a DOD COMEX 23-4 exercise. During the week of October 16, 2023, they will conduct a series of high-power HF information transmissions on 60 meters and channel 1 (5330.5 kHz).

Phishing Email Scams

RACES members are advised to use caution when opening emails with attachments or links to unfamiliar websites or to websites that appear to be familiar but have a tricky change to a URL (such as substituting an "l" with a "1"). Some come from unknown email addresses such as zy5x34tk@aol.com, or from an apparently familiar address but with a tricky change (such as substituting an "e" with a "c"), or even from your own (spoofed) address. The attachments might be malware, ransomware, viruses, or attempts to obtain passwords or other personal information. The links might be to websites that will infect your computer with malware or ransomware.

October 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2 Weekly 2 m ACS Net & OCRACES Meeting	3	4	5	6	7 City/ County RACES ACS Drill
8	9 Weekly 2 m ACS Net	10	11	12	13	14 Weekly 60 m ACS Net
15	16 Weekly 2 m ACS Net	17	18	19 Great ShakeOut Drill	20 Orange County Amateur Radio Club Meeting	21 Weekly 60 m ACS Net
22	23 ACS Nets on 4 Bands	24	25	26	27	28 Weekly 60 m ACS Net
29	30 Weekly 2 m ACS Net	31				

Upcoming Events:

- **October 2, 1930 hours:** OCRACES monthly meeting online on Zoom; Severe Fire Weather Patrol training
- **October 7, 0900-1200 hours:** City/ County RACES & EmComm ACS Drill
- **October 19, 1000-1100 hours:** Great ShakeOut Drill for City/ County RACES & EmComm members on OCRACES 146.895 MHz repeater
- **October 20, 1900 hours:** Orange County Amateur Radio Club Meeting, American Red Cross (George M. Chitty Building), 600 Parkcenter Drive, Santa Ana
- **November 8, 1830 hours:** Orientation for PSR Applicants, Sheriff's Regional Training Academy, Tustin
- **November 18, 0900 hours:** Prescreen for PSR Applicants, Sheriff's Regional Training Academy, Tustin

https://ocraces.org

Mission Statement

County of Orange RACES has made a commitment to provide all Public Safety departments in Orange County with the most efficient response possible to supplement emergency/disaster and routine Public Safety communications events and activities. We will provide the highest level of service using Amateur and Public Safety radio resources coupled with technology, teamwork, safety, and excellence. We will do so in an efficient, professional, and courteous manner, accepting accountability for all actions. We dedicate ourselves to working in partnership with the Public Safety community to professionally excel in the ability to provide emergency communications resources and services.

County of Orange RACES Frequencies

60 m: 5371.5 kHz USB (dial) (Channel 4) (OC ACS Net—Saturdays, 1000 hours)
40 m: 7250 kHz LSB
10 m: 29.640 MHz output, 29.540 MHz input, 107.2 Hz PL (down for repair)
6 m: 52.620 MHz output, 52.120 MHz input, 103.5 Hz PL
2 m: 146.895 MHz output, 146.295 MHz input, 136.5 Hz PL*
2 m: 146.595 MHz simplex
1.25 m: 223.760 MHz output, 222.160 MHz input, 110.9 Hz PL
70 cm: 446.000 MHz simplex
70 cm: 448.320 MHz output, 443.320 MHz input, 141.3 Hz PL (private)
70 cm: 449.100 MHz output, 444.100 MHz input, 110.9 Hz PL (private)
70 cm: 449.180 MHz output, 444.180 MHz input, 107.2 Hz PL (private)
70 cm: 449.680 MHz output, 444.680 MHz input, 131.8 Hz PL (private)
*Primary Net—Mondays, 1900 hours

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Visit Our Web Site
https://ocraces.org
It's Where It's @!

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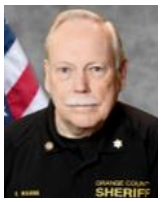
"W6ACS ... Serving Orange County"

Meet Your County of Orange RACES Members!

Officers



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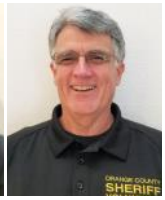

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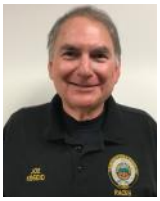

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