

LOS ANGELES AMATEUR RADIO CLUB 40/S9

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www.losangelesarc.org

Monthly Meeting

The Los Angeles Amateur Radio Club will meet April 3, 2016. Club meetings are held at the Audrey & Sydney Irmas Youth Activity Center located at 11911 Vermont Ave., in Los Angeles Ca. 90044. This is on 120th and Vermont across from the Ralphs Market parking lot.

Club Net

The LAARC holds a radio net on 144.430 FM simplex at 8 PM pacific time every Saturday nite.

Tip of the Month

If it's quiet on the bands it's because you are not talking. Calling (CQCQCQ, this is "your call") usually gets the conversation started.

Club Officers

L.A.A.R.C. Officers

Stan Thornton	W6SMT	President
Doug Long	N6PZK	Vice-President
Jess Craig	W6CKC	Secretary
Laverne Carter	KJ6OSV	Secretary
Archie Buchanan	KD6OLH	Treasurer
Peter V. Swearingen	KJ6JQA	Sgt at Arms

Health and Welfare

None Reported

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2016 ARRL Field Day is June 25-26



To work as many stations as possible on any and all amateur bands (excluding the 60, 30, 17, and 12-meter bands) and to learn to operate in abnormal situations in less than optimal conditions. Field Day is open to all amateurs in the areas covered by the ARRL/RAC Field Organizations and countries within IARU Region 2. DX stations residing in other regions may be contacted for credit, but are not eligible to submit entries.

ARRL Tells FCC to Restore Balance of Modes on 80 and 75 Meters:

ARLB013 ARRL Tells FCC to Restore Balance of Modes on 80 and 75 Meters. In comments filed on March 23 on its Petition for Rule Making (RM 11759) seeking changes to 80 and 75 meters, the ARRL has told the FCC that its primary objective is to "rebalance" the bands by correcting a 10-year old FCC error. "ARRL's proposal is not fairly viewed as a proposal to take anything away from anyone," the League's comments assured.

"It is more properly viewed as the effectuation of a fair, equitable, and efficient 'band plan' looking forward for the foreseeable future that balances everyone's needs, and which remedies a plainly unfair plan, imprudently created in the 2006 Report and Order in WT Docket 04-140." The Report and Order can be found on the web at,

<http://apps.fcc.gov/ecfs/comment/view?id=513680269> .

Prompting the League's assurances were comments filed on the ARRL's Petition by a number of Amateur Extra class licensees, who felt that refarming 3600 to 3650 kHz for data modes could prove to be a disincentive to General licensees to upgrade. Others commenters saw it as an unfair spectrum grab. The ARRL noted that prior to 2006, the band was evenly divided between RTTY/data and phone/image subbands, with the RTTY/data subband extending from 3500 to 3750 kHz, and the phone/image subband extending from 3750 to 4000 kHz.

The 2006 FCC Report and Order "substantially altered" what the League called "this even division of emission types." In outlining the history of the proceeding, the ARRL pointed out that the FCC's Notice of Proposed Rulemaking in Docket 01-140 would have shifted the line between the 80 meter RTTY/data subband and the 75 meter phone/image subband from 3750 kHz to 3725 kHz, pursuant to a 2002 ARRL Petition for Rule Making, RM-

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10413. This would change the ratio of spectrum between phone/image and RTTY/data segments on 75/80 meters from 50/50 to 55/45, and it is what the FCC proposed in its NPRM.

In its Report and Order in Docket 04-140, however, the FCC made "a very substantial and unjustifiable departure" from what it had proposed in its NPRM, the ARRL recounted. The Commission expanded the phone/image subband at 75 meters to 3600-4000 kHz, and it reduced the 80 meter RTTY/data subband to 3500-3600 kHz, eliminating RTTY operation above 3600 kHz and changing "the entire dynamic of this band," the League said.

The FCC had said in its proposal that no licensees would lose operating privileges. Nonetheless, the FCC's phone band expansion reduced by 100 kHz the spectrum between 3500 and 4000 kHz that was previously available to General class licensees, while Advanced licensees lost 75 kHz. In an apparent FCC oversight, the Report and Order completely eliminated access by automatically controlled digital stations (ACDS) to 3620 to 3635 kHz. A subsequent FCC Report and order and Order on Reconsideration only made the situation worse by replacing the deleted ACDS segment with 3585-3600 kHz.

"It resulted in a sudden and severe dislocation of traffic-handling nets using telegraphy, without advance planning or notice," the ARRL said. "It disaccommodated net participants with General and Advanced class licenses; and it

worsened the effect of the overexpansion of the 75 meter phone/image subband."

The result, the ARRL noted, has been "a shortfall in available RTTY/data spectrum on 80 meters" that has created a significant obstacle to narrowband digital data communications and experimentation. The League said its current Petition "simply restores that which was disrupted in 2006 in error."

In its comments, the League conceded that compromises are inevitable in managing a heavily used band like 75/80 meters, no matter the band planning approach. "Looking forward, it is necessary, in order to encourage experimentation with and expand the use of digital communication techniques, to rebalance the 75 and 80 meter subbands," the ARRL concluded.

Source: ARRL

(Repeat Article)

How to File a Amateur Radio Complaint with the FCC

Amateur radio complaints should be as specific as possible, citing dates, times, and frequencies on which alleged violations occurred. Complaints should also include a name and telephone number where the complainant can be reached for further details, if necessary. Please submit your complaints/concerns regarding amateur radio to the Commission's on-line complaint system. The appropriate form for your

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complaint can be found here:
https://esupport.fcc.gov/ccmsforms/form2000.action?form_type=2000F

Willful or Malicious Interference Complaints

Section 97.101(d) of the Commission's Rules prohibits amateur operators from willfully or maliciously interfering with or causing interference to any radio communication or signal. 47 C.F.R. § 97.101(d).

The **Spectrum Enforcement Division**, in conjunction with the **Regional and Field Offices**, is responsible for responding to complaints of willful and/or malicious interference (sometimes called ``jamming'') among amateur radio service licensees. Amateur radio service licensees wishing to file complaints alleging willful and/or malicious interference to other amateur radio service operations should follow the complaint process discussed above. Parties desiring further information may call: 1-888-225-5322

(Repeat Article) New Amateur Extra Question Pool Puts Greater Emphasis on Digital, SDRs, Propagation:

The new Amateur Extra class license examination question pool, effective from

July 1, 2016, through June 30, 2020, now is available at the National Conference of Volunteer Coordinators (NCVEC <http://www.ncvec.org/>) website. The latest revision contains a few minor corrections that had been released in a February 5 errata of the initial January 8 release.

Source: ARRL Newsletter

(Repeat Article) FCC QUESTION POOL REVISED FOR JULY 1, 2016

The FCC question pool for Amateur Radio Extra license exams has been revised and will be effective for exams conducted on or after July 1, 2016. ARRL will produce new study materials in preparation for the new Extra exam.

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Source: ARRL News Letter



Classes & VEC Testing

None scheduled

Ham Radio License Exam Practice

The ARRL has launched a new online resource that allows users to take randomly generated practice exams using questions from the actual examination question pool. **ARRL Exam Review for Ham Radio™** is *free*, and users do *not* need to be ARRL members. The only requirement is that users must first set up a site login (this is a different and separate login from your ARRL website user registration).

<http://arrlexamreview.appspot.com>

Free Amateur Radio Practice Testing is available on the Web

Practice exams are for those people who would like to study for a new US amateur radio license class. The questions contained within are provided by the

Federal Communications Commission and are selected from the same sub-elements that would be used for an official license examination.

<http://www.qrz.com/hamtest/>

<http://www.eham.net/exams/>

<http://arrlexamreview.appspot.com>

Find and Exam in Your Area:

You can find an Amateur License Exam In your area at ARRL.ORG

<http://www.arrl.org/find-an-amateur-radio-license-exam-session/>

You can find an Amateur License Exam In your area at ARRL.ORG

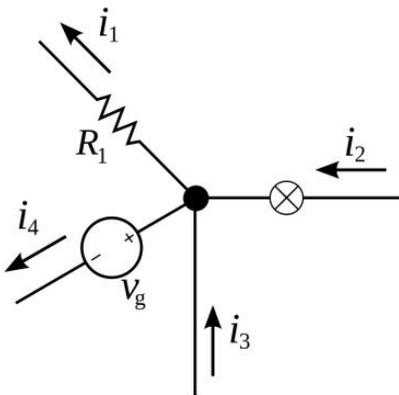
http://www.arrl.org/exam_sessions/search

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Electronics Refresher

Kirchhoff's Laws for Current and Voltage



In 1845, German physicist Gustav Kirchhoff first described two laws that became central to electrical engineering. The laws were generalized from the work of Georg Ohm. The laws can also be derived from Maxwell's equations, but were developed prior to the work of [James Clerk Maxwell](#).

The following descriptions of Kirchhoff's Laws assume a constant [electrical current](#). For time-varying current, or alternating current, the laws must be applied in a more precise method.

Kirchhoff's Current Law

Kirchhoff's Current Law, also known as Kirchhoff's Junction Law and Kirchhoff's First Law, defines the way that [electrical current](#) is distributed when it crosses

through a junction - a point where three or more [conductors](#) meet. Specifically, the law states that:

The algebraic sum of current into any junction is zero.

Since current is the flow of electrons through a conductor, it cannot build up at a junction, meaning that current is conserved: what comes in must come out.

When performing calculations, current flowing into and out of the junction typically have opposite signs. This allows Kirchhoff's Current Law to be restated as:

The sum of current into a junction equals the sum of current out of the junction.

Kirchhoff's Current Law in Action

In the picture, a junction of four conductors (i.e. wires) is shown. The currents i_2 and i_3 are flowing into the junction, while i_1 and i_4 flow out of it. In this example, Kirchhoff's Junction Rule yields the following equation:

$$i_2 + i_3 = i_1 + i_4$$

Kirchhoff's Voltage Law

Kirchhoff's Voltage Law describes the distribution of [electrical voltage](#) within a loop, or closed conducting path, of an [electrical circuit](#). Specifically, Kirchhoff's Voltage Law states that:

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The algebraic sum of the voltage (potential) differences in any loop must equal zero.

The voltage differences include those associated with electromagnetic fields (emfs) and resistive elements, such as resistors, power sources (i.e. batteries) or devices (i.e. lamps, televisions, blenders, etc.) plugged into the circuit. In other words, you picture this as the voltage rising and falling as you proceed around any of the individual loops in the circuit.

Kirchhoff's [Voltage](#) Law comes about because the electrostatic field within an electric circuit is a conservative force field. In fact, the voltage represents the electrical energy in the system, so it can be thought of as a specific case of conservation of energy. As you go around a loop, when you arrive at the starting point has the same potential as it did when you began, so any increases and decreases along the loop have to cancel out for a total change of 0. If it didn't, then the potential at the start/end point would have two different values.

Positive and Negative Signs in Kirchhoff's Voltage Law

Using the Voltage Rule requires some sign conventions, which aren't necessarily as clear as those in the Current Rule. You choose a direction (clockwise or counter-clockwise) to go along the loop.

When travelling from positive to negative (+ to -) in an emf (power source) the voltage drops, so the value is negative. When going from negative to positive (- to +) the voltage goes up, so the value is positive.

Reminder: When traveling around the circuit to apply Kirchhoff's Voltage Law, be sure you are always going in the same direction (clockwise or counter-clockwise) to determine whether a given element represents an increase or decrease in the voltage. If you begin jumping around, moving in different directions, your equation will be correct.

When crossing a [resistor](#), the voltage change is determined by the formula $I \cdot R$, where I is the value of the current and R is the resistance of the resistor. Crossing in the same direction as the current means the voltage goes down, so its value is negative. When crossing a resistor in the direction opposite the current, the voltage value is positive (the voltage is increasing). You can see an example of this in our article "[Applying Kirchhoff's Voltage Law](#)."

Source:

<http://physics.about.com/od/electromagnetic/s/f/KirchhoffRule.htm>

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Safety

Electrical Shock Safety Guidelines

These guidelines are to protect you from potentially deadly electrical shock hazards as well as the equipment from accidental damage.

Note that the danger to you is not only in your body providing a conducting path, particularly through your heart. Any involuntary muscle contractions caused by a shock, while perhaps harmless in themselves, may cause collateral damage. There are likely to be many sharp edges and points inside from various things like stamped sheet metal shields and the cut ends of component leads on the solder side of printed wiring boards in this type of equipment. In addition, the reflex may result in contact with other electrically live parts and further unfortunate consequences.

The purpose of this set of guidelines is not to frighten you but rather to make you aware of the appropriate precautions. Repair of TVs, monitors, microwave ovens, and other consumer and industrial equipment can be both rewarding and economical. Just be sure that it is also safe!

- Don't work alone - in the event of an emergency another person's presence may be essential.

- Always keep one hand in your pocket when anywhere around a powered line-connected or high voltage system.
- Wear rubber bottom shoes or sneakers. An insulated floor is better than metal or bare concrete but this may be outside of your control. A rubber mat should be an acceptable substitute but a carpet, no matter how thick, may not be a particularly good insulator.
- Wear eye protection - large plastic lensed eyeglasses or safety goggles.
- Don't wear any jewelry or other articles that could accidentally contact circuitry and conduct current, or get caught in moving parts.
- Set up your work area away from possible grounds that you may accidentally contact.
- Have a fire extinguisher rated for electrical fires readily accessible in a location that won't get blocked should something burst into flames.
- Use a dust mask when cleaning inside electronic equipment and appliances, particularly TVs, monitors, vacuum cleaners, and other dust collectors.
- Know your equipment: TVs and monitors may use parts of the metal chassis as ground return yet the chassis may be electrically live with respect to the earth ground of the AC line. Microwave ovens use the

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chassis as ground return for the high voltage. In addition, do not assume that the chassis is a suitable ground for your test equipment!

- If circuit boards need to be removed from their mountings, put insulating material between the boards and anything they may short to. Hold them in place with string or electrical tape. Prop them up with insulation sticks - plastic or wood.
- If you need to probe, solder, or otherwise touch circuits with power off, discharge (across) large power supply filter capacitors with a 2 W or greater resistor of 100 to 500 ohms/V approximate value (e.g., for a 200 V capacitor, use a 20K to 100K ohm resistor). Monitor while discharging and/or verify that there is no residual charge with a suitable voltmeter. In a TV or monitor, if you are removing the high voltage connection to the CRT (to replace the flyback transformer for example) first discharge the CRT contact (under the insulating cup at the end of the fat red wire). Use a 1M to 10M ohm 1W or greater wattage resistor on the end of an insulating stick or the probe of a high voltage meter. Discharge to the metal frame which is connected to the outside of the CRT.
- For TVs and monitors in particular, there is the additional danger of CRT implosion - take care not to bang the CRT envelope with your tools. An implosion will scatter shards of glass at high velocity in every direction. There is several tons of force attempting to crush the typical CRT. Always wear eye protection. While the actual chance of a violent implosion is relatively small, why take chances? (However, breaking the relatively fragile neck off the CRT WILL be embarrassing at the very least.)
- Connect/disconnect any test leads with the equipment unpowered and unplugged. Use clip leads or solder temporary wires to reach cramped locations or difficult to access locations.
- If you must probe live, put electrical tape over all but the last 1/16" of the test probes to avoid the possibility of an accidental short which could cause damage to various components. Clip the reference end of the meter or scope to the appropriate ground return so that you need to only probe with one hand.
- Perform as many tests as possible with power off and the equipment unplugged. For example, the semiconductors in the power supply section of a TV or monitor can be tested for short circuits with an ohmmeter.
- Provide a reliable means of warning that power is applied and that high

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voltage filter capacitor(s) still hold a charge during servicing. For example, solder a neon indicator lamp (e.g., an NE2 in series with a 100K ohm resistor) across the line input and a super high brightness LEDs in series with 100K, 1 W resistors across the main filter capacitor(s).

- Use an isolation transformer if there is any chance of contacting line connected circuits. A Variac(tm) (variable autotransformer) is not an isolation transformer! However, the combination of a Variac and isolation transformer maintains the safety benefits and is a very versatile device. See the document "Repair Briefs, An Introduction", available at this site, for more details.
- The use of a GFCI (Ground Fault Circuit Interrupter) protected outlet is a good idea but may not protect you from shock from many points in a line connected TV or monitor, or the high voltage side of a microwave oven, for example. (Note however, that, a GFCI may nuisance trip at power-on or at other random times due to leakage paths (like your scope probe ground) or the highly capacitive or inductive input characteristics of line powered equipment.) A GFCI is also a relatively complex active device which may not be designed for repeated tripping - you are

depending on some action to be taken (and bad things happen if it doesn't!) - unlike the passive nature of an isolation transformer. A fuse or circuit breaker is too slow and insensitive to provide any protection for you or in many cases, your equipment. However, these devices may save your scope probe ground wire should you accidentally connect it to a live chassis.

- When handling static sensitive components, an anti-static wrist strap is recommended. However, it should be constructed of high resistance materials with a high resistance path between you and the chassis (greater than 100K ohms). Never use metallic conductors as you would then become an excellent path to ground for line current or risk amputating your hand at the wrist when you accidentally contacted that 1000 A welder supply!
- Don't attempt repair work when you are tired. Not only will you be more careless, but your primary diagnostic tool - deductive reasoning - will not be operating at full capacity.
- Finally, never assume anything without checking it out for yourself! Don't take shortcuts!

Source:

<http://www.repairfaq.org/sam/safety.htm>

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Radio and Software Tech Talk

New DV4home Coming To Dayton



For those of us who take and interest in digital radio or have been experimenting with the DV4Mini. According to Wireless Holdings, the DV4home is going to include the following features:

- Can be used with or without a DV4mini for DStar/C4FM/DMR/dPMR/P25
- Use your radio or connect a microphone and speaker to the DV4home
- No Linux experience is required
- Simple set up with navigation on display
- Improved shielding with metal case
- Extended temperature range (-40C – +85C) for mobile use
- Works with 12 V power supply

For Sale or SWAP

For Sale:

This space is reserved for anything amateur related you want to sale, swap trade, buy or get rid of. Send your list to K6FED@yahoo.com. Items are listed for one month. Additional time can be requested by email.