



# THE OHM TOWN NEWS

*Voice of the Bridgerland Amateur Radio Club*

>>>>>>> <http://www.barconline.org> <<<<<<<<

## June, July, August Summer 2016

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# PRESIDENT'S MESSAGE

It is June already and Field Day is just weeks away.

Our club will be participating in the [American Radio Relay League \(ARRL\) 2016 Field Day](#) event on the 25<sup>th</sup> and 26<sup>th</sup> of June. Field Day is an annual amateur radio exercise, encouraging emergency communications preparedness among amateur radio operators. It is typically the largest single emergency preparedness exercise in the country, with over 35,000 operators participating each year. Field Day is part educational event, part operating event, part public relations event. But most of all, we have a fun and enjoyable time operating the radios. Anyone can attend and participate, licensed or not, club member or not. You can operate a radio (with a control operator present) in making contacts to other amateur radio operators. If you want to listen and not operate, you can help with logging the radio contacts on a computer. We use this opportunity to let everyone try HF. We will have several radios setup.

Our location for Field Day will be the same place as last year, a half mile up the Swan Flat Road. Swan Flat Road is about 30 miles up Logan Canyon just past the State Maintenance station after mile marker 490. Swan Flat Road is suitable for automobile travel. The area is open camping so there will be a few of us that will go up early in the week to claim a spot. Others are welcome who would like to arrive early for some radio camping. We should have a radio set up to use so we can enjoy the airwaves with less man made interference that in the valley.

So here is the Field Day schedule:

## **Friday**

**Noon** - Those that can, arrive at site to help set up antennas until about 6 PM. It takes about 4 to 6 people to set up the antennas.

## **Saturday**

**Morning** - Setup remaining antennas and radios. Check everything; radios, antennas, computers, etc.

**Noon** - Contest starts. Anybody who wants to can get on the air or help with logging contacts. Contest lasts for 24 hours.

**1 PM until 3:30 PM** - The BARC Ladies' Project

**3:30 PM** - Bunny Hunt. We will have a short class and demonstration. The bunny will be hidden and anyone who would like can try to find it. Hunters don't need a license to participate, just listening to the radio.

**6 to 7 PM** - Pot Luck Dinner. Please bring a large pot luck food item to share (make sure to bring plenty to share--there are lots of mouths to feed). Bring your own chair and plates/cutlery/cups. The Club will provide a pot luck item and drinks.

## **Sunday**

**Noon** - Contest ends. Start taking down antennas, put stuff away, and clean up the camp site.

Come on up and bring your family, camp chair, mosquito repellent, water (no water at the site). Stay as long as you can, and enjoy the fun of Field Day.

The next club gathering will be on September 8<sup>th</sup> with the Fall Pot-Luck Social.

Hope everyone will have a fun and safe summer. And be sure to put on your calendar June 25 & 26 for Field Day.

73,

Cordell

KE7IK

# UPCOMING 2016 ACTIVITIES

- 14-18 June, Bridgerland Radio Rocket Recovery** —Brandon Tibbitts ([Info](#))
- 15 June, 7:00 PM** — Cache County **ARES meeting** at the Sheriff's Office
- 16 June, 8:00 PM - RACES VHF Net** 147.180 Snowbird 147.20 IRLP 146.72 Mt. Logan
- 17 June, Wasatch Back Relay** — Tyler Griffiths ([More Info](#))
- 25-26 June, Field Day** in place of regular **BARC Club Meeting** ([More Info](#))
- 8-9 July, Utah State ARRL Convention/Great Salt Lake Hamfest** ([More Info](#))
- 09 July, Cache Gran Fondo** - bicycle race - Howard Trexler ([More Info](#))
- 13 July, 7:30 PM - ARRL Rocky Mountain Division Net** 147.200/IRLP Node:9871
- 16 July, 8:00 AM** — **RACES HF Net** 3920 KHz
- 20 July, 7:00 PM** — Cache County **ARES meeting** at the Sheriff's Office
- 06 August, Rotary Raw** — bicycle race — Tyler & Jared ([More Info](#))
- 10 Aug, 7:30 PM** — **ARRL Rocky Mountain Division Net** 147.200/IRLP Node:9871
- 17 August, 7:00 PM** — Cache County **ARES meeting** at the Sheriff's Office
- 18 Aug, 8:00 PM - RACES VHF Net** 147.180 Snowbird 147.20 IRLP 146.72 Mt. Logan
- 27 Aug, Top of Utah Half Marathon** — Laurie ([More info here](#) or [Here](#))
- 08 Sep, 6-9 PM**—**BARC Pot Luck Fall Social & LOTOJA Mtg** @ the Stake Center Pavilion located at 360 E 450 N Providence, UT. This is the club meeting for September
- 10 Sep, LOTOJA** — bicycle race — Kevin & Tyler ([More Info Here](#) or [Here](#))
- 17 Sep, Top of Utah Marathon** — Laurie ([More info here](#) or [Here](#))

For more calendar information see the [barconline.org/calendar](http://barconline.org/calendar)

## Local Radio Nets:

The **Weekly BARC net** is for BARC members and anyone else that would like to check in, held **every Tuesday night at 9:00 p.m.** local time on the Mt Logan BARC Repeater and Linked Systems (146.720)

Meet the Rocky Mountain Division Ham of the Year!  
Our very own Ted McArthur, AC7II  
Congratulations Ted!



**The Randy Wirth Half Century Ride**  
**A Thank You to BARC**  
**Scott Boyer, KE7TAW & Stan Laughlin, KG7LBP**

The 2016 Randy Wirth Half Century Ride was a great event, enhanced significantly through the participation of the Bridgerland Amateur Radio Club. A special thank you to all of the operators who gave their time, equipment and vehicles to provide SAG and radio support on the day of the event. Cyclists appreciated the exceptional level of SAG support BARC provided.

The committee extends a very warm thank you to Stan Laughlin and Scott Boyer for the many months of behind the scenes organizational work. The work of this duo was of infinite value to the efforts of the committee organizing this year's ride. The RWHCR committee as a whole was improved by the detail and foresight brought relating to aspects of managing a large number of cyclists.

The Randy Wirth Half Century Ride committee recognizes that BARC members are called upon for a number of events every year. We are so thankful for your participation in ours.

Sincerely,

Sally Sears  
2016 RWHCR Event Chair, and  
Debbie Simpson  
2016 RWHCR Event Coordinator  
435-753-4777  
<http://randywirthhcr.org/>  
<http://caffeibis.com/>



# What is legal, and what is NOT legal for our Chinese radios?

Written by John, KD8DVR

Published: 09 April 2016

## Ask ten people, get ten answers.

OK... A radio needs Part 95 acceptance for FRS, GMRS, MURS. No Baofeng has this. I'm aware of only ONE Wouxun model that is approved for Part 95(a) GMRS use. Anytone has two models that are pending GMRS and MURS certification. Currently, legal issues have suspended the previous certification.

For commercial use, radios need Part 90 approval. Most Baofengs HAVE this. Many Wouxun radios have this. A few Puxing radios have this. Most Anytone radios have this. GMRS radios need Part 95A certification. MURS radios require Part 95D certification. FRS radios require Part 95B certification.

Check on the back of the radio for the "FCC ID" sticker. This FCC ID can be looked up to see what rule parts the radio is certified for. An FCC ID label is required to be placed on the back of the radio.

SOME commercial radios have more than one rule part. You'd see Part 90 AND Part 95(a). Then these would be legal on GMRS. Not FRS, Part 95(b) or MURS Part 95(d)? Because FRS radios have a maximum of 500 mw and non-removable antennas. Murs has a 2 watt maximum, and these radios exceed that on high power. Of course, you then have the field programmability, which oddly enough even violates the Part 90 approval... figure that one out!

For Amateur radio use, NO Part 97 approval is required. I don't even think there is an equipment certification for Part 97. Part 97 primarily covers operating rules, although there are some equipment rules. Since amateur operators can use \*almost\* all equipment, other rule parts dealing with equipment come into play. Part 97 does cover proper engineering practices that are required to make sure equipment is within tolerance.

For amateur equipment, Part 15 largely applies on VHF and UHF radios. This is primarily for radios with a scanning function, to certify the radios cannot monitor cellular, as well as receiver products interfering and receiving interference from consumer products.

If you take your Icom, Kenwood, etc., radios and enter the FCC ID into the FCC database, you will see it likely listed as "Part 15 scanning receiver." That's why you see some new equipment like on Universal being listed "This radio has not received FCC approval." Not waiting for Part 97 approval; but waiting for that Part 15 receiver compliance.

The applicable rule here is 15.101 Paragraphs (a) and (B)

Most Part 90 radios.... Which are commercial radios, can be used on the amateur bands legally. That's why all these Baofengs, Wouxuns, Puxings, etc., have taken off. Wouxun started it off by being the first Chinese radio to get FCC approval. All these other radios floating around at the time had no approval. Of course, when this hit the net with a firestorm and sales took off, other manufacturers finally got into the fray, and we now have the mess we are in today.

You see all the hams with Motorola, Midland, and other radios on the ham bands. They are Part 90 radios, which makes them legal for amateur operators. They have been certified for use in the USA, based on technical standards for commercial use. Amateurs may use any equipment certified under any other rule part. The reverse is NOT true. Amateurs are expected to utilize proper engineering practices and are granted wide latitude for operation.

What about all those Quangshengs, and oddball brands. Forget it. If they have no FCC ID, they are not legal for use on ANY radio service in the USA.... Including amateur. This may, at first thought, contradict my previous

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statements regarding proper amateur engineering practices. The answer to that is simple: The radios have not passed any type of scrutiny in regards to spectral purity, or any other factors governing equipment for use in the USA.

This will not, by any means, stop the debate. If I get one person to consider the rules, then that is a victory. I will hear 100 different reasons why I am wrong. This is an interpretation. I've tried to be as literal as possible, with as little personal bias as possible. I could spoon feed each and every applicable regulation, and draw pictures. I'd still be doubted. At any rate, at least I'd cause a pause to consider. For the record, I own several brands of radios, such as Baofeng and Puxing.

The point, really, is to make people stop and consider the **fact that ALL radio services have rules, regulations and technical standards**. Not all radios will work with other radios. Very few can be used by the general public.

[Update 11-27-2015 for Part 15 clarifications and Part 90 corrections]

Note: the FCC approval process only applies to commercially manufactured equipment. Homebrew stuff is exempt.

Of course, feel free to consult the FCC regulations if you don't want to take my word on this:

<https://www.fcc.gov/encyclopedia/rules-regulations-title-47>

**For UK Users:**

Baofeng, Wouxun, TYT, and many other radios are ILLEGAL on PMR446.

**For Australian users:**

Baofeng, Wouxun, TYT and most if not all Cheap Chinese Radios, are **illegal in Australia for ALL PURPOSES! This includes amateur and commercial use. The ACMA will and has confiscated many radios.** Unlike many nations, the ACMA is an active enforcement agency.

John, KD8DVR Ohio Repeaterbook Admin.

Submitted by Ted McArthur:

I sent this out a while ago, the author changed the info some but there is good info for people buying the Chinese Radios. Most of them are Legal in the Amateur band but not anywhere else. As good Operators I feel it is prudent that we set good examples by using them in an acceptable manner.

This was written in a blog by John, KD8DVR, from Ohio. I feel he did a very good job in his research.

Ted McArthur  
AC7II  
[kb7pab@gmail.com](mailto:kb7pab@gmail.com)

## HR 1311 Bill and the objections by CAI

The CAI is an association of HOA's that has, apparently, been the main objector to HR 1311 in congress. The following links and documents list several suggested amendments to HR 1311, which seek to retain HOA control of how (whether) amateurs can put up towers, antennas, etc.

Guy M. Hatch, MD  
N7WAT

### CAI ISSUES STATEMENT FOR THE RECORD ON H.R. 1301, AMATEUR RADIO PARITY ACT

Megan Newman - 1/13/2016

On Jan. 12, 2016, the House Subcommittee on Communications and Technology held a legislative hearing on four bills including H.R. 1301, the Amateur Radio Parity Act. CAI took the opportunity to submit [a statement for the record](#) for the hearing. The purpose of a legislative hearing is for committee members to hear about the proposed legislation – a vote is not taken during a congressional hearing; therefore no action was taken. CAI was pleased to hear Representative Anna Eshoo (D-CA) express concern about the bill recognizing the importance of private contracts as well as resident's expectations of community aesthetics.

A special thank you to CAI members who participated in grassroots advocacy efforts by contacting their Members of Congress. These grassroots efforts are absolutely essential and have provided an introduction for the CAI lobbying team to be more effective when meeting with Members of Congress.

CAI statement, by Thomas M. Skiba, CAE, CAI's Chief Executive Officer, discusses how H.R. 1301 overrides private contracts and interferes with the rights of property owners. Additionally, the statement emphasizes the importance of local control over our communities and suggests amendments to the bill.

"CAI members do not oppose amateur service communications and appreciate the role of amateur service operators in times of national or local emergency. Nevertheless, CAI members strongly support the long-standing principles of state and local control of land use policies and the right of parties to lawfully contract." [Read the full statement here.](#)

CAI has taken to social media to continue our efforts on the Ham Radio issue. In addition to contacting all of the House Subcommittee members via twitter prior to the hearing, we launched a social media call to action that allows you to tweet directly to your legislators and ask them to OPPOSE H.R. 1301. [Visit our Take Action! Center to tweet your legislators!](#) You can also help boost our efforts by [e-mailing your Representative](#), and checking our [Take Action! Center](#) frequently for the newest calls to action.

Also for more info see: [Community Associations Institute](#) and [Compromise Information](#)



# The ARRL Letter for May 18, 2016

## IARU Assumes Custody of *Ethics and Operating Procedures for the Radio Amateur*

The International Amateur Radio Union ([IARU](#)) has become the custodian of the operating standards guide [Ethics and Operating Procedures for the Radio Amateur](#). The IARU Administrative Council recently accepted an offer "with gratitude" from authors John Devoldere, ON4UN, and Mark Demeuleneere, ON4WW, to take over maintenance and updating of the document.

"Over the last 8 years, the booklet *Ethics and Operating Procedures for the Radio Amateur* has become a respected work describing the best standards of operating on the amateur bands," the IARU said in a news release. "[Translated](#) into most major languages, the booklet is a valuable reference work for all radio amateurs."

Devoldere and Demeuleneere met with IARU Region 1 President Don Beattie, G3BJ, on May 5 in Brussels to officially hand over the document. IARU will now carry the work forward in future years to ensure its continued relevance and currency.

*Ethics and Operating Procedures for the Radio Amateur* is available as a PDF document in more than 25 languages. A [PowerPoint](#) presentation appropriate for club presentations is available in English, Dutch, and French.

The authors' stated goal is, "to improve, where necessary, the behavior on the bands in matters of ethics and operating procedures, and make available to the newcomers in the hobby a document covering these subjects in detail." The guide was accepted by the IARU Administrative Council in 2008 as the recommended manual covering the subject of ethics and operational procedures.

Visit the Ham Radio Ethics and Operating Procedures website for [more information](#).



## Preparing for Wildfires

A wildfire is an unplanned, unwanted fire burning in a natural area, such as a forest, grassland, or prairie. There's a misconception that wildfires only happen in western and the Great Plains states. While wildfires are more common in certain states, they can occur anywhere in the country. In addition, homes and business are more susceptible to wildfires as building development expands into once forested areas. This is called the wildland urban interface, and this interaction can put individuals at risk for exposure to wildfire. To help reduce the chance of wildfire, the [America's PrepareAthon! How to Prepare for a Wildfire](#) guide calls on everyone to practice fire prevention, such as learning terms relevant to wildfire communication that are used by the National Weather Service:

**Fire Weather Watch:** Potentially dangerous fire weather conditions are possible over the next 12 to 72 hours.

**Fire Weather/Red Flag Warning:** Fire danger exists and weather patterns that support wildfires are either occurring or expected to occur within 24 hours. (Your community may also use the National Fire Danger Rating System to provide a daily estimate of the fire danger [i.e., low, moderate, high, very high, and extreme]).

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*Evacuation Notice:* Local authorities may issue an evacuation notice to alert residents that a fire is nearby and it is important to leave the area. When authorities issue a mandatory evacuation notice, leave the area as soon as possible.

More [here](#), from FEMA. Please also see "Wildfire Communications: Fog and Friction", pp. 85-86, February 2014 QST, for education and training references on safety and providing amateur service communications for responding agencies and public safety.

## **The ARRL Letter for May 26, 2016**

### **ARRL "Strongly Supports" Petition to Drop 15 dB Restriction for Amateur Amplifiers**

In comments filed on May 26, the ARRL said it "strongly supports" a petition to the FCC seeking to eliminate an Amateur Service rule, spelled out in §97.317(a)(2), that amateur amplifiers not be able to boost the RF input signal by more than 15 dB. The *Petition for Rule Making* ([RM-11767](#)), was submitted in April on behalf of an amateur amplifier distributor, [Expert Linears America LLC](#) of Magnolia, Texas.

"The *Petition* proposes relief that is in the nature of eliminating unnecessary regulatory underbrush, and it continues an effort started by the Commission on its own motion in 2004...to do precisely that," the ARRL said in its comments. "The rule proposed to be eliminated is outdated; it constituted overregulation when it was adopted long ago, and it now substantially limits the flexibility of Amateur Radio operators to experiment with the current generation of software-defined Amateur Radio equipment."



The 15 dB provision came into the rules during an era when the FCC initiated various actions to rein in a major interference problem resulting from the use of illegal 11 meter amplifiers during the Citizens Band radio boom of the 1970s. "In its effort to address that problem, the Commission enacted a series of largely redundant and overlapping regulations that, in their overall effect, unnecessarily (and inappropriately) penalized the wholly innocent Amateur Radio operators," the League asserted. "There was created a plethora of restrictions on manufacturers of external RF power amplifiers."

The ARRL noted that while the FCC eliminated some of the unnecessary regulations in 2004, others remain, including the 15 dB gain restriction. The rules adopted in 1978 also called for type acceptance (certification) of manufactured RF power amplifiers operating below 144 MHz, including a 50 W minimum drive power requirement and a ban on amplifiers capable of operation between 24 and 35 MHz.

"Indeed, precisely the same rationale for elimination of the 50 W minimum drive power rule in 2006 applies to the elimination of the 15 dB gain rule for amateur amplifiers," the ARRL said in its comments. "There is no continued justification for retaining the 15 dB gain limitation." Read [more](#)..

### **Search Continues for STMSat-1 Radio Signal**

Youngsters at St Thomas More Cathedral School in Virginia remain optimistic that their [STMSat-1](#) CubeSat, deployed on May 16 from the International Space Station (ISS), will begin transmitting a signal. Helping in the search is the Space Science Center at Morehead State University in Kentucky, which is using its 21 meter dish to scan multiple frequencies for the spacecraft's signal. STMSat-1 is supposed to transmit on 437.800 MHz FM and transmit slow-scan television (SSTV) pictures back to Earth.

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"Morehead University picked up something within our frequency range last night," STMSat-1 Education Manager Emily Stocker said May 25 in response to an ARRL inquiry. "It may have been us; it is possible it was [MinXSS](#)." The University of Colorado's MinXSS deployed from the ISS at the same time as STMSat-1. Stocker said they were trying to determine if Morehead State picked up a beacon, which probably would suggest a MinXSS signal, or SSTV data, which would likely confirm a signal from STMSat-1. In addition, JA0CAW posted a tweet reporting a signal heard on 437.800 MHz at 1225 UTC on May 25.

The school thanked students at Morehead State for staying up all night listening in the 437 MHz range. Their next step is to install SSTV software to see if they can decode a signal.

The CubeSat was rebooted from the ground just after 0400 UTC on May 24. The reboot was scheduled after the satellite had not been heard from for 7 days. STMSat-1 was supposed to turn itself on once its batteries were fully charged and its mechanized antennas deployed.



The 21 meter dish at Morehead



Pupils at St Thomas More Cathedral School in Arlington, Virginia, assembled STMSat-1 in a NASA-provided "clean room." [St Thomas More Cathedral School photo]

Pupils at the school built STMSat-1 during a 4-year-long project, and the satellite was launched to the ISS last December. After being placed in orbit (it is [object 41476](#)), the CubeSat initially continued roughly in the same orbit as the ISS and of other satellites deployed on May 16, but it's been moving away a little bit each day. The youngsters have been tracking its orbit.

The satellite is designed to transmit slow-scan television (SSTV) images (Robot 72) of Earth on 437.800 MHz FM. Stocker advised all those interested to follow the STMSat-1 [Twitter](#) feed, [@STMSat11](#), to stay up to date.

Office provided the school with a mobile "clean room" for the construction, and a ground-station antenna. The agency has been advising the school on tracking the satellite and finding its signal.

The satellite is the first to be designed and built by grade schoolers, who were supported by NASA technical advisors and local radio amateurs. NASA's Technology Demonstration

## The ARRL Letter for June 2, 2016 Signal Bounced Off ISS Heard Across the Atlantic

A 2 meter signal from the UK, reflected off the structure of the International Space Station (ISS) on May 2, was heard across the Atlantic. Following 2 weeks of preparation, Tim Fern, G4LOH, in Cornwall (IO70jc), and Roger Sturtevant, VE1SKY, in Nova Scotia (FN74iu) attempted a FSK441 contact.

Both stations aimed at the calculated grid HO11nl for a 144.175 MHz contact attempt with a mutual window of less than 1 minute. VE1SKY was able to copy G4LOH at a distance of 4441 kilometers (approximately 2753 miles). This was the first signal received via ISS bounce from Europe to North America, and the first *intentional* signal heard via ISS reflection in any direction across the North or South Atlantic.



While two-way communication did not happen, the reception is being verified as a possible DX record for satellite reflection.

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Later in May, Fern, operating as GK4LOH and transmitting in CW, was received twice in the much-closer GN37 grid by VO1HP at VO1FN in Newfoundland.

In 2014, RSGB VHF Manager John Regnault, G4SWX, [received](#) a 2 meter signal from VC1T, where a team was trying to win the Brendan Trophy for the first transatlantic contact on 144 MHz. Upon investigation, it was determined that the VC1T FSK441 signal that G4SWX heard also had bounced off the ISS rather than via terrestrial propagation and would not qualify for the Brendan Trophy, offered by the Irish Radio Transmitters Society ([IRTS](#)). The Brendan Trophy will recognize the first "traditional mode" two-way contact (ie, SSB or CW) capable of being copied without machine assistance.

## Dayton Hamvention General Chairman Believes 2016 Attendance Was Up Slightly

Recapping Dayton [Hamvention](#)® 2016, Jim Tiderman, N8IDS, who has served as general chairman of the event for the past 2 years, said attendance this year may have been up slightly from 2015. Tiderman, who now passes the baton to a new general chairman -- Ron Cramer, KD8ENJ -- said he feels the 2016 show, overall, went well.



Hamvention 2016 General Chairman Jim Tiderman, N8IDS, appeared on "Amateur Radio Roundtable" in May.

"In my humble opinion, it went smoother than we had a right to think it could," Tiderman told ARRL. "The credit for that happening -- this year and last -- goes to our volunteer base and returning committee chairs, who get their talents in gear and go for it." He said each year's innovations feed into the vision that guides the next Hamvention administration, which Cramer will head after serving with Tiderman as assistant general chairman for the past 2 years.

Tiderman said that while it's still too soon to get an accurate attendance count for Hamvention 2016, "indicators we use as a matter of course are showing us the slightest increase." He said that while it may not have seemed that way to some visitors, he prefers to keep a positive mind. Official attendance at the 2015 show was 25,621, up by about 750 from the previous year.

The weather did provide some momentary excitement, Tiderman said, when a microburst occurred in the flea market just north of the Mendelson's tent. The strong gust of wind took out two or three vendor tents, winding a pop-up tent leg around the fiber cable handling

Internet service for the flea market office. "This caused stress and strain on the cable, and down it came," Tiderman recounted. "It did not break, but it did stop activity around the area of the downed cable until the Hara crew got it back into the air.

"So, where in other years there have been instances of things erupting 'from below,' this year it came from above," Tiderman quipped.

Vendor spaces were nearly full, both inside and outside Hara Arena. Tiderman said the 525 to 530 booth spaces inside were nearly filled to capacity, while first-day occupancy of the 2500 flea market spaces was at 96 percent.

Tiderman said he observed an "overall good mood" and "a positive attitude," and the Hamvention staff received many upbeat comments. Read [more](#).

## Questions for Extra Class License

These questions are from the new question pool going into effect on 1 July 2016

1. (E1A09) What is the first action you should take if your digital message forwarding station inadvertently forwards a communication that violates FCC rules?
  - A. Discontinue forwarding the communication as soon as you become aware of it
  - B. Notify the originating station that the communication does not comply with FCC rules
  - C. Notify the nearest FCC Field Engineer's office
  - D. Discontinue forwarding all messages
2. (E2A10) Why may the received signal from an amateur satellite exhibit a rapidly repeating fading effect?
  - A. Because the satellite is spinning
  - B. Because of ionospheric absorption
  - C. Because of the satellite's low orbital altitude
  - D. Because of the Doppler Effect
3. (E3A17) What is meant by circularly polarized electromagnetic waves?
  - A. Waves with an electric field bent into a circular shape
  - B. Waves with a rotating electric field
  - C. Waves that circle the Earth
  - D. Waves produced by a loop antenna
4. (E4B02) What is an advantage of using a bridge circuit to measure impedance?
  - A. It provides an excellent match under all conditions
  - B. It is relatively immune to drift in the signal generator source
  - C. It is very precise in obtaining a signal null
  - D. It can display results directly in Smith chart format
5. (E5B09) What is the relationship between the current through a capacitor and the voltage across a capacitor?
  - A. Voltage and current are in phase
  - B. Voltage and current are 180 degrees out of phase
  - C. Voltage leads current by 90 degrees
  - D. Current leads voltage by 90 degrees
6. (E6D04) Which materials are commonly used as a slug core in a variable inductor?
  - A. Polystyrene and polyethylene
  - B. Ferrite and brass
  - C. Teflon and Delrin
  - D. Cobalt and aluminum
7. (E7B02) What is a Class D amplifier?
  - A. A type of amplifier that uses switching technology to achieve high efficiency
  - B. A low power amplifier that uses a differential amplifier for improved linearity
  - C. An amplifier that uses drift-mode FETs for high efficiency
  - D. A frequency doubling amplifier
8. (E8C04) What technique is used to minimize the bandwidth requirements of a PSK31 signal?
  - A. Zero-sum character encoding
  - B. Reed-Solomon character encoding
  - C. Use of sinusoidal data pulses
  - D. Use of trapezoidal data pulses
9. (E9B09) What type of computer program technique is commonly used for modeling antennas?
  - A. Graphical analysis
  - B. Method of Moments
  - C. Mutual impedance analysis
  - D. Calculus differentiation with respect to physical properties
10. (E0A02) When evaluating RF exposure levels from your station at a neighbor's home, what must you do?
  - A. Make sure signals from your station are less than the controlled MPE limits
  - B. Make sure signals from your station are less than the uncontrolled MPE limits
  - C. You need only evaluate exposure levels on your own property
  - D. Advise your neighbors of the results of your tests

(For answers to test questions see bottom of page [14](#))

# BARC Club Officers

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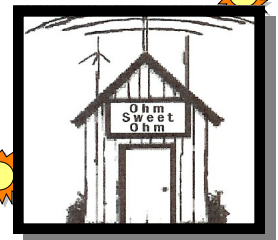
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Answers to questions on page [13](#): 1-A, 2-A, 3-B, 4-C, 5-D, 6-B, 7-A, 8-C, 9-B, 10-B