

SQUAKBOX

Issaquah Amateur Radio Club

Volume 41, No. 10

Issaquah, Washington

October 2019

ARRL Renews Request for FCC to Replace Symbol Rate with Bandwidth Limit

ARRL's Ad Hoc Legislative Advisory Committee will meet with several members of Congress later this month in Washington to introduce new Committee members, reacquaint the lawmakers with Amateur Radio's most-pressing issues, seek their input on the best ways to achieve ARRL's objectives in Congress, and request their continuing support. Committee members have completed a comprehensive analysis of Amateur Radio Parity Act deficiencies for dissemination to Amateur Ra-

dio's backers on The Hill. The panel now is following up on this process with the meetings later this month.

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(Continued on page 2)

Festival of Frequency Measurement Set to Honor WWV Centennial

HamSCI and the Case Amateur Radio Club of Case Western Reserve University (W8EDU) will sponsor a "Festival of Frequency Measurement" on the day of WWV's centennial, October 1, from 0000 to 2359 UTC (starting on Monday evening, September 30, in the Americas). The event invites radio amateurs, shortwave listeners, and others capable of making high-quality frequency measurements on HF to participate and publish their data to the HamSCI community on the Zenodo open-data sharing site.

"Changes in ionospheric electron density caused by space weather and diurnal solar changes are known to cause Doppler shifts on HF ray paths," the event announcement says. "HamSCI's first attempt at a measurement of these Doppler shifts was during the August 2017 total solar eclipse. We plan a careful measurement during

(Continued on page 3)

Also . . .

Last Meeting	2
Light Sails	3
Small Satellites	3
IOio Antenna	4
Lawmakers	4
Belt Radio	5
1 x 1 Callsigns	6
Dust	7
RYRYRY	7
Alexanderson Day	8
Coming Events	8

October Program

Packet Demod

Stephen Knapp, KB7KDT, will explain and demonstrate his OOK packet demodulator, written in Python.

Future programs are as follows:
Nov - W4MHI, goTenna
Dec - Holiday Party

Contact Joe KF7BMD 425-985-1562 to volunteer.

At the last meeting . . .

September 4, 2019

The meeting was called to order by President Lara Flores at 7:04PM. A number of twenty three members and guests were present at the meeting.

The minutes of the August month meeting were moved, seconded and approved with unanimous vote.

The next venue for dinner is Flying Pie Pizzeria.

Treasure Report - given.

Old Business

Senior Center: The cards were given to members. The rest of the cards for absent members were given to Secretary. You are welcome to get the card from him next time.

APRS Gathering: Between 6-8th of September the Valley Camp will hold the APRS Gathering. All members are invited to attend. The event has presentation about digital world of HAM radio and other subjects.

New Business

ARRL VHF/UHF Contest: September 14-16, 2019

VHF Society: Oct 11 - 12, 2019, 25th Annual - 2019 Pacific Northwest VHF Society Conference at Holiday Inn Hotel in Issaquah, Washington. Registration at: <http://pnwvhfs.org>

October Speaker: Mihai Manolache, W4MHI, goTenna - mobile mesh networking platform.

(Continued on page 4)

E-Mail Elmer

Got a HAM radio question and can't find an Elmer to talk to? Just send your question by E-Mail to our E-Mail Elmer at:

Elmer@w7bi.com - Ed. - S

2019 IARC Officers

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Symbol Rate

Cont.

Amateur Radio initiatives.

On June 12, the Legislative Advisory Committee held the first of a series of meetings in DC with ARRL Washington Counsel David Siddall, K3ZJ, The Keelen Group, and a small contingent of radio amateurs associated with various governmental and non-governmental partners to solicit their perspectives and assistance in charting a future course of action. Pacific Division Director and Committee Chair Jim Tiemstra, K6JAT, described these individuals as "critical allies in ARRL's efforts to achieve its legislative objectives."

The process of analyzing and clarifying ARRL's aims began when the Committee was reconstituted with new members at the ARRL Board of Directors' January meeting. The Board had determined a need to "review, reexamine, and reappraise the ARRL's regulatory and legislative policy with regard to private land-use restrictions," with the aim of renewing, continuing, and strengthening ARRL's effort to achieve relief from such restrictions.

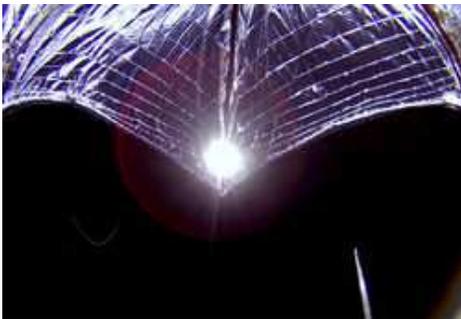
"There seems to be no countervailing policy that could justify arbitrary conditions, covenants and restrictions," Tiemstra said. "Indeed, public policy should clearly favor the needs of the Amateur Radio operator."

Amateur Radio's role in public service and emergency communication will be the Committee's strongest argument in seeking re-

(Continued on page 6)

LightSail 2 Demonstrates Flight by Light

The Planetary Society's crowd-funded LightSail 2 spacecraft is successfully raising its orbit solely on the power of sunlight. Since unfurling the spacecraft's solar sail on July 23, mission managers have been optimizing the way the spacecraft orients itself during solar sailing. After a few tweaks, LightSail 2 began raising its orbital apogee, something the mission team said demonstrated the mission's primary goal of "flight by light for CubeSats." Continuing to sail on sunlight in Earth orbit, the spacecraft's orbital apogee hit



LightSail 2's aluminized Mylar sail shines against the blackness of space, with the Sun peeking through near a sail boom. [Photo courtesy of The Planetary Society]

729 kilometers (approximately 452 miles) as of August 5, an increase of 3.2 kilometers (nearly 2 miles) since sail deployment.

LightSail 2 launched on June 25, and it deployed on July 2 from Prox-1, a Georgia Tech student-built spacecraft the size of a small washing machine. Using the Ex-

FCC Dismisses ARRL, AMSAT Requests in Small Satellite Proceeding

An FCC Report and Order (R&O) released August 2 in the so-called "small satellite" rulemaking proceeding, IB Docket 18-86, failed to address concerns expressed by ARRL and AMSAT. Both organizations filed comments on the FCC Notice of Proposed Rulemaking (NPRM) in the proceeding last year, seeking changes in the FCC's interpretations and procedures affecting satellites operating on Amateur Satellite Service frequencies.

"These comments address topics outside the scope of this proceeding, and we decline to adopt any of the requested rule modifications or updates at this time," the FCC said in the R&O. The FCC did mention amateur satellites in its 2018 NPRM, explaining what they are and describing the documenta-

perimental License call sign WM9XPA, LightSail 2 automatically transmits a beacon packet on 437.025 MHz (9,600 bps FSK) every few seconds, which can be decoded into 238 lines of text telemetry describing the spacecraft's health and status -- everything from battery status to solar sail deployment motor state.

Every 45 seconds, the spacecraft transmits "LS2" in CW on 437.025 MHz. More information is on The Planetary Society website. -- Thanks to The Planetary Society -- ARRL Letter, 8/15/2019 - S

tion and authorization process, but it did not solicit comments.

"The Commission did not seek comment in the NPRM on any modifications or updates to the

(Continued on page 6)

WWV Cont.

the 2024 eclipse."

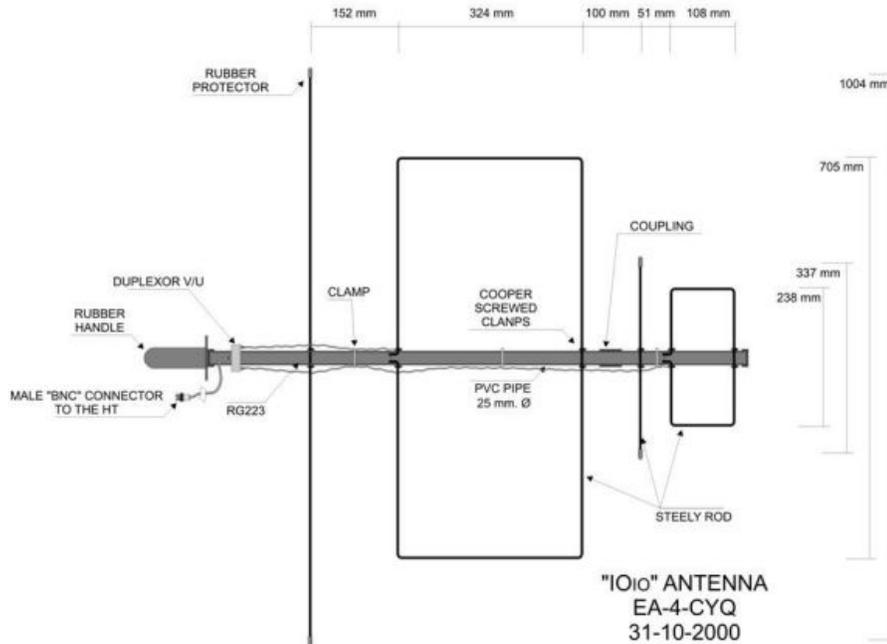
Some of the questions the research event is hoping to answer include how WWV's 5 MHz propagation path varies over a given calendar day, and how various measurement techniques for understanding the path variations compare. The objectives are to measure Doppler shifts caused by the effect of space weather on the ionosphere, and to use a specified measurement protocol available to Amateur Radio operators and other citizen-scientists. The experiment will use August 1, 2019 (UTC) as a control date.

"The recordings in this experiment are expected to show formations of the D-layer at stations' local sunrise and other daily events of the ionosphere," the announcement said. "Space weather varies day to day and some features may be prominent. We'll see what we get!"

Full information is on the Festival of Frequency Measurement website. -- ARRL Letter, 9/19/2019 - S

The IOio Antenna and Satellites

Minutes Cont.



November Speaker: Stephen Knapp, KB7KDT, Packet Demodulator

HAM Class: December 7th/14th
 Proposal: President Lara proposed the acquisition of a new banner for IARC. The proposal was moved, seconded and approved with unanimous vote.

Presentation: Quentin Caudron, K7DRQ, Antenna optimization with Genetic Algorithms

The presentation was about building a Yagi-Uda antenna and optimize it with a Genetic Algorithm. The speaker presented the NEC2++ antenna simulation engine that was used to visualize the result of the running algorithm. The algorithm had 3 inputs (3 antennas parameters). An optimized antenna was obtained after running the algorithm over a population of a 250 antennas generated from the three inputs. After 1h simulation, an antenna with 1.1 SWR and a gain of 9dBi was given as result. The result proved that an AI can choose an optimal result if the right input and expected result is well formulated.

The meeting was adjourned at 8:30PM.

Mihai Manolache, W4MHI, IARC Secretary - S

this month.

The Committee has contracted with The Keelen Group to provide advice and recommendations regarding ARRL's legislative relationships. Keelen Group advisors also will aid in organizing and

(Continued on page 5)

I ran across this interesting antenna for working FM satellites with an HT. The article is a .pdf file so I copied the above drawing of the antenna, and included a link to the whole article on the AMSAT WEB site. It looks pretty strange, but is flat and short so it is much easier to transport than the typical "tank trap" antennas.

<http://www.ea4cax.com/paginaea4cyq/Antenaioio/ioioingles.pdf>

There is other information on the Station and Operating Hints

<https://www.amsat.org/station-and-operating-hints/>

- AMSAT WEB, 9/22/2019 - S

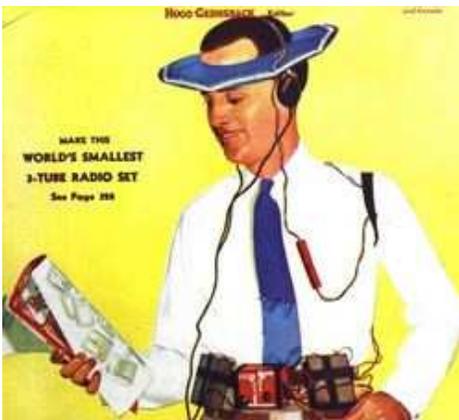
Ad Hoc Legislative Advocacy Committee to Meet with Lawmakers

ARRL's Ad Hoc Legislative Advisory Committee will meet with several members of Congress later this month in Washington to introduce new Committee members, reacquaint the lawmakers with Amateur Radio's most-pressing issues, seek their input on the best ways to achieve ARRL's objec-

tives in Congress, and request their continuing support. Committee members have completed a comprehensive analysis of Amateur Radio Parity Act deficiencies for dissemination to Amateur Radio's backers on The Hill. The panel now is following up on this process with the meetings later

A Radio on Your Belt -- 1930s Style

Since the advent of wireless technology, efforts have aimed at condensing the size of the necessary equipment to permit ease of transport, mobile installation, and radios that could be hand carried, slipped into a pocket or -- in this case -- carried on the belt. Hugo Gernsback's *Radio-Craft* for December 1936 included the article, "How to Make the World's Smallest 3-Tube Radio Set" by Arthur Miller (likely not the playwright). It details how a clever radio crafter could construct a set worn on a belt around the waist and -- in this case -- with the antenna worn on the head in the manner of an old-time banker's eyeshade. The individual wearing such equipment today likely would not only have to endure considerable pointing and laughing but would raise the alert level at any airport TSA checkpoint.



Vacuum tubes of the day were not too sensitive, required separate voltage sources for filament and plate, and were pretty hard on batteries. The filaments for the three tubes came from "a liquid unspillable storage cell" (i.e., rechargeable) to supply the neces-

sary 2 V. The article says this battery should last from 7 to 10 hours and came "with an oiled silk bag and fits in the hip pocket." This was the sort of futuristic innovation that Gernsback typically featured in his publications, and the entire December 1936 issue of *Radio-Craft* is worth perusing.

"When using this 'Belt-Radio' the wearer is quite unmindful that the latest news or dance music is coming from an ultra-midget receiver which is actually being worn on the belt!" the article exults. "And it takes only a minute to put the whole equipment on -- and less to take it off!"

According to Miller's article, building the three-tube set was easy. "The loop aerial is wound on a cardboard disc 13 ins. in dia," it explains. "Litz wire is used and 22 turns are interlaced around the 9 ribs." No mention of gauging hat size.



The article concedes just to "one disadvantage" in having to wear the antenna on one's head. "The 4-ft. cable connecting it with the receiver acts as a capacity and re-

stricts the tuning range of the set," it explains.

The set tuned the AM broadcast band, and with the antenna on the head, directionality was less of an issue. While it might look silly to us now, project ideas such as this helped advance the radio art toward the technology we use and enjoy today. – ARRL Letter, 9/19/2019 – S

Lawmakers Cont.

guiding the meetings between ARRL representatives and key congressional allies in support of Amateur Radio initiatives.

On June 12, the Legislative Advisory Committee held the first of a series of meetings in DC with ARRL Washington Counsel David Siddall, K3ZJ, The Keelen Group, and a small contingent of radio amateurs associated with various governmental and nongovernmental partners to solicit their perspectives and assistance in charting a future course of action. Pacific Division Director and Committee Chair Jim Tiemstra, K6JAT, described these individuals a "critical allies in ARRL's efforts to achieve its legislative objectives."

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(Continued on page 7)

Unraveling the Mystery of 1 × 1 Call Signs

The 1 × 1 Special Event Call Signs system offers a way for clubs, groups, or even individuals to use a short call sign of special significance to the amateur community. These 1 × 1 call signs are reserved in advance for use in conjunction with short-term special events and commemorative operations. The FCC does not assign 1 × 1 call signs, so they are not "official."

On the matter of special event call signs, the FCC says, in Section 97.3(a)(11)(iii) of the Amateur Service rules: "The call sign is selected by the station licensee from a list of call signs shown on a common database coordinated, maintained and disseminated by the amateur station special event call sign data base coordinators. The call sign must have the single letter prefix K, N, or W, followed by a single numeral 0 through 9, followed by a single letter A through W or Y or Z (for example K1A). The special event call sign is substituted for the call sign shown on the station license grant while the station is transmitting."

The FCC also says in Section 97.119 (d): "Additionally, the station must transmit its assigned call sign at least once per hour during such transmissions." This requirement tends to be widely flouted, however.

A 1 × 1 Special Event Call Sign aids other radio amateurs by calling attention to the special event or other occasion. 1 × 1 call signs may be used for a variety of pur-

poses, such as conventions, festivals, dedications, anniversaries, commemorations, and ARRL Field Day. Even local events qualify.

There are 750 1 × 1 Special Event Call Sign possibilities, and radio amateurs of any license class may reserve one as far as a year in advance to use for up to 15 days. Of course, 1 × 1 Special Event Call Signs are recycled. It's first come, first served. See the Frequently Asked Questions page for more information.

The FCC has selected coordinators to approve and post 1 × 1 Special Event Call Sign reservations to a searchable database. -- Thanks to The Radiogram (Portage County Amateur Radio Society newsletter)- ARRL Letter, 9/5/2019 - S

Symbol Rate Cont.

lief from private land-use restrictions that limit amateurs' ability to operate effectively.

The Committee will analyze the outcomes of this month's meetings and draft a report with recommendations for the ARRL Executive Committee to review and consider at its October 12 meeting. The full Board is expected to take up the issue at its January 2020 meeting. – ARRL Letter, 9/19/2019 - S

Satellite Cont.

rules governing Experimental or amateur satellite licensing. The streamlined Part 25 small satellite process adopted in the Order is an alternative to existing license processes and does not replace or modify the authorization procedures for satellites currently contained in Parts 5, 25, or 97 of the Commission's rules," the FCC explained. "Nevertheless, we received a number of comments in response to the NPRM, particularly regarding the rules applicable to amateur satellite operations, suggesting that aspects of those rules be improved or clarified."

In its 2018 NPRM, the FCC had said, "Because the type of operations that qualify as amateur [is] narrowly defined, an amateur satellite authorization will not be appropriate for many small satellite operations."

In its 2018 comments, ARRL said it wanted the FCC to preclude exploitation of amateur spectrum by commercial small-satellite users authorized under Part 5 Experimental rules and suggested that the FCC adopt a "bright line test" to define and distinguish satellites that should be permitted to operate under Amateur Satellite rules.

ARRL's position was to support and encourage college and university Amateur Radio experiments where the sponsor of the experiment is a licensed radio amateur and all operation in amateur spectrum is compliant with Part 97.

(Continued on page 8)

Dust Particles Reflecting RF in the Atmosphere

With all the propagation modes available to the modern Amateur Radio operator today, how many have tried dust scatter?

That is a misleading term just to grab your attention. But it is not far from the truth, as the majority of Amateur Radio operators have had their signals reflect off this medium everyday and land hundreds and even thousands of miles away without their knowledge!

If you have not yet figured out where I am going with this, perhaps I will mention one of the major annual meteor showers called the Perseids to help clue you in.

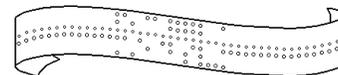
The Perseids is a prolific meteor shower associated with comet Swift-Tuttle. It is called "Perseids" because the point in the sky from which the meteors appear to come from -- the "radiant" -- lies in the constellation Perseus.

Meteor forecasters predicted that the peak of the shower would take place on August 11-12 with 100 meteors per hour zipping across the sky.

As a scientific experiment, I wondered if I could detect a "passive" meteor back-scatter from the Perseid meteor shower. First, let me define "passive" for this study -- a radio transmitter used to generate the required RF power to a target (meteors, in this case) that is not located at the receiving site and is not assigned within the Amateur Radio bands.

Early in the night (2200-2300 UTC) on August 11, the radiant

RYRYRYRY...



DE KA7TTY

Hello everyone,

Wow. Summer really came crashing down in the last couple weeks. Suddenly the temperatures are back in the 50's and the rain is back. Hopefully it will hold off for Salmon Days (Oct. 5-6).

Remember, we have the PNW VHF Conference coming up right here in Issaquah (See coming events and link to registration).

OK. Its time to remind everyone of the Wilderness Protocol. As you will recall this applies to travel thru wilderness areas where there is no cell phone coverage or ham repeater. You listen on VHF and UHF simplex calling frequencies for 5 minutes starting at 7am, 10am, 1pm, 4pm and 7pm and be prepared to pass messages for hams with problems out in these areas once you get in range of cell towers or ham repeaters. Enough soap box.

73, and see you at the meeting, John KA7TTY

appeared near +58 degrees inclination above the horizon in the sky towards the northeast. At this point in time, longer shooting stars (fireballs) were zooming across the sky at velocity speeds of 58 km/s.

According to the International Meteor Organization (IMO), the typical maximum of the Perseids is in the period between 1200-1430 UTC on August 12 for observers in the Northern Hemisphere. Mid-northern latitudes are favored compared to observers from the Southern Hemisphere, such as Australia and New Zealand.

For those who spotted the shower visually, the moon was in the waning crescent phase, which was a nuisance due to its relative proximity to the radiant. Other factors that impaired visibility were local weather conditions, such as overcast clouds, rain and fog.

During the predawn hours, the

Lawmakers Cont.

regulatory and legislative policy with regard to private land-use restrictions," with the aim of renewing, continuing, and strengthening ARRL's effort to achieve relief from such restrictions.

"There seems to be no countervailing policy that could justify arbitrary conditions, covenants and restrictions," Tiemstra said. "Indeed, public policy should clearly favor the needs of the Amateur Radio operator."

Amateur Radio's role in public service and emergency communication will be the Committee's strongest argument in seeking relief from private land-use restrictions that limit amateurs' ability to operate effectively.

The Committee will analyze the outcomes of this month's meetings and draft a report with recommen-

(Continued on page 8)

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SQUAKBOX

This newsletter is published monthly for the members of the Issaquah ARC W7BI. Items for publication must be received by the 15th day of the month preceding publication. Send items to:

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The IARC is affiliated with the American Radio Relay League (ARRL). Visit our WEB page at: <http://www.w7bi.com>

Membership is open to anyone regardless of age, sex, race, national origin, religion, or amateur radio license status. Dues are \$15 per year for a family membership, free for those under 19 years of age.

A two-month courtesy mailing of this newsletter will be made to meeting visitors and others upon request.

Original material may be quoted without prior permission provided ISSAQUAH ARC SQUAKBOX is credited.

– Coming Events –

- **October 2** - Monthly Issaquah ARC meeting at the Issaquah Senior Citizens Center, 75 NE Creek Way, Issaquah. Doors open at 6:45 PM, the meeting begins promptly at 7:00 PM and the program begins at 8:00 PM. Refreshments are provided.
- **October 11** - Pacific Northwest VHF Society Conference. Issaquah, WA. <http://www.pnwvhfs.org/conference/2019/announcement.html>
- **October 12** - Kitsap County ARC Hamfest. Bremerton, WA. hamfest@kcarc.org <http://www.kcarc.org/>
- **October 19** - Swap-Tober-Fest. Mid-Valley ARES. Polk County Fairgrounds, Rickreall, OR. www.swaptoberfest.net
- **October 27** - Issaquah Communications and Support Team meeting, Issaquah Public Works, Issaquah, talk-in 146.56 MHz at 6:45 PM, Meeting at 7:00 PM.
- **November 6** - Monthly Issaquah ARC meeting. See Oct. 2nd

Alexanderson Day

Sweden's Alexanderson Alternator station SAQ says it received 438 listener reports -- "an incredible amount" -- for its June 30 Alexanderson Day transmissions. The list included five reports from the US and three from Canada. The historic electro-mechanical transmitter, which dates back to the 1920s, is fired up periodically throughout the year on 17.2 kHz. "We are very thankful for all your enthusiastic and positive feedback, with images, recordings, videos, and even Morse ink writer strips," SAQ said. The station is a World Heritage Site in Grimeton, Sweden. SAQ's June 30 message commemorated the 100th anniversary of the first east-to-west transatlantic voice transmission from the Marconi station in Ireland to Cape Breton Island, Nova Scotia. SAQ has posted an interactive map

showing the locations of all received listener reports from recent transmissions, including the June 30 transmission, and video of the Alexanderson Day transmission event has been posted to its YouTube channel. – ARRL Letter, 8/29/2019 - S

Dust Cont.

radiant decreases towards the horizon, which is the perfect time to point your high-gain horizontal outdoor antenna at the horizon, because the ping (meteor detection) rates will increase substantially.- Stan Horzepa, WA1LOU, ARRL WEB, 8/17/2012 - S

Lawmakers Cont.

datations for the ARRL Executive Committee to review and consider at its October 12 meeting. The full Board is expected to take up the issue at its January 2020 meeting. – ARRL Letter, 9/19/2019 - S

Satellite Cont.

Part 5 Experimental authorizations for satellites intended to operate in amateur allocations by non-amateur sponsors should be discouraged, absent a compelling show of need, ARRL told the FCC. AMSAT's comments reflected many of the same concerns that ARRL had expressed. -- Thanks to Ray Soifer, W2RS, for his assistance. – ARRL Letter, 8/22/2019 - S