

ARCC C-Notes

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RF Global Warming and Pollution

RF Global Warming

Recently OFCOM (the British FCC) raised the noise floor criteria used to calculate coverage areas for Low Band VHF from -104dBm (1.41 uV) to -92dBm (5.63 uV). This recognizes the increase in human-generated noise in the radio spectrum.

Try this at home – and in your car:

- Set your receiver to an unused frequency, Analog FM mode,
- Disconnect the antenna,
- Set for carrier squelch (disable tone or DCS squelch),
- Set the squelch to just close – receiver at its most “sensitive” setting,
- Reconnect the antenna.

Unless you live in far outer East Sloblovia I bet you a candy bar that the squelch opens and you hear a bunch of crap! If you are in your car, start it. More QRN (AKA Crap)!

Go for a drive and experience the tidal flow of RF pollution, assuming that your car isn't flooding your radio with the sounds of square waves and their melodious harmonics.

What is causing all this QRN?

- Unshielded switching supplies are a major source. Cell phone and other wall wart chargers lead the pack.
- Hand-held consumer grade electronics: games, tablets and the like.
- Low end flat-screen displays, both PC and TV.
- Unshielded or unsuppressed interconnecting cables.
- Improperly installed or services commercial controllers and instrumentation. Gas stations are a biggie here.
- Most “electronics” sold by big-box stores: CF and LED bulbs and ballasts.

Is there a (practical) solution?

I'm going to be realistic and predict probably not – it's all a part of the cost of “going green” and companies willing to load their pockets with all that other green gained from maxing their profits with shoddily made and uncertified electronics.

Isn't the FCC going to help?

HA!

So, what does this have to do with repeater coordination?

More than you might imagine. That slick new radio you picked up at Dayton is advertised to have a receiver sensitivity of 0.18 uV which is equivalent to -122 dBm. As soon as you hook it to a decent antenna you are going to lose over 20 dB of effective sensitivity simply because the crap level is 22 dB stronger than the weakest signals you “could” receive.

When I calculate coverage for a repeater I need effective receive sensitivity criteria for the mobile unit. Traditionally I use 0.5 uV (-113 dBm) to divide between “prime” and “fringe” coverage and, of course, received crap for choosing that level rather than using advertised receiver sensitivity. Thinking about it I should probably rethink that level – up to 0.75 uV (-109 dBm) or higher.

More Reading:

<http://www.southgatearc.org/news/2016/november/ofcom-raise-lo-band-vhf-noise-floor-by-12db.htm>

<http://www.arrl.org/news/noisy-electronics-have-increased-hf-vhf-noise-floors-in-uk-rsgb-reports-say>

<http://www.ee.co.za/article/radio-amateurs-serious-rising-rf-noise-floor.html>

<http://www.ee.co.za/article/radio-amateurs-serious-rising-rf-noise-floor.html>

<http://hackaday.com/2016/06/21/fcc-to-investigate-raised-rf-noise-floor/>

<https://interferencetechnology.com/fcc-respond-increased-noise-floor-concerns/>

<http://www.radioworld.com/headlines/0045/can-radio-get-noise-floor-issues-under-control/317371>

RF (Self) Pollution – Source One

Recently I received an E-Mail from an ARCC member and frequent contributor who writes:

“I would like to bring to your attention to an ongoing problem that has been present for about the past two years. There is someone going around on the local repeaters with all types of foul and abusive language, cursing on top of people, jamming their conversations, jamming nets, playing Echo Boxes, etc. This is a real problem.

One night I had two FCC agents out and we were listening for this guy but he didn't show up. Here in the South Jersey and Philadelphia area the commission has had complaints about this from other repeater operators. At this point best we can determine, the source is coming from the area of Cross Keys Road and the Atlantic City Expressway. We also have other suspects in that area as well as the Sicklerville area.

So Feel Free to Discuss It with your Members if they are having the same problem.

We now have an RDF unit installed in a vehicle to get the exact location of the sources. I think it is more than one involved. This is a real problem. Perhaps other repeater operators have had this and didn't know what to do.”

Why is this a Problem?

First, it is “jamming”, intentionally creating (harmful) disruptive which is, of course prohibited by law. This action is also usually accompanied by failure to identify, also illegal.

Second, It is disruptive and doesn't contribute and could possible contribute to injury or loss of life in an emergency situation.

Why do they do it?

Intoxication – drug or alcohol

Psychological disorders: a need for recognition or attention

A grudge or interpersonal issue

What to Do?

1. Ignore them! But record their actions – full details; date time, frequency audio recording.
2. Report them to the FCC, providing the recordings, dates, times, frequencies, name and call of witnesses.
3. Find them If you have DF capabilities BUT DO NOT CONTACT OR APPROACH! Record a successful DF session.
 - a. Provide FULL DF information to the FCC
 - b. If actions occur on a repeater, send a registered letter banning them without discussion with cc to FCC
 - c. If REALLY a problem attempt to get an Order of Restraint issued by a Judge and served by Law Enforcement

More Reading

<http://www.arrl.org/news/fcc-levies-25-000-fine-on-california-radio-amateur-for-deliberate-interference>

<http://www.arrl.org/news/fcc-alleges-deliberate-interference-failure-to-identify-in-proposing-substantial-fines-for-two-radio>

<http://www.eham.net/articles/14858>

RF (Self) Pollution – Source Two

I KNOW I'm going to hear about this one but it is self-inflicted: REPEATERS

- “Chatty Cathy” repeaters – go ding-dong and announce the hour, half hour, quarter hour, temperature, humidity, horse odds, meeting minutes and hours . . . or whatever. WHY? We ALL have watches these days, even if built into a cell phone. And, it STILL doesn't stop “kerchunkers”.
This serves NO purpose at all and may be, marginally, considered broadcasting.
- Repeaters connected to active reflectors but with no local listeners. WHY? This one is just plain stupid and easily addressed by any half decent controller: no local user to “keep alive”? Then sound a local warning and drop the link if no local user responds. With no local user listening there can be little doubt that this is broadcasting, a waste of bandwidth and in violation of the spirit of amateur radio: the sharing of frequencies. A repeater that is constantly keyed up does not release the frequency for other users or uses. Repeater pairs are coordinated specifically to permit re-use of frequencies – SHARING!

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