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Re: ET Docket 03-104 Broadband over Power Lines

Commissioners:

I don't apologize **THIS IS MY PASSION**. You, The Commission have a responsibility to get out and **see, understand and listen** to the spectrum and licensed services you are sworn to protect. Feel free to **contact me**, either at home or work. See the Beta testing from Japan and Europe, read their reports, these reports both indicate strong interference through the entire spectrum rendering it unusable.

The proposals presented to you may be much better written than most of the non-professional commentary against them. Remember this, the spin artists who present these are extremely well paid to do so in the warmest, fuzziest, most innocuous language possible. The people who are commenting against this have careers and families and can't devote the enormous amount of time to trim their language and thoughts into that type of prose. They are frightened of the careening juggernaut of spectrum grabs and tired of high noise floors generated by the extent which existing radiators exceed their allowed mandate.

It would be much better if power companies were to run fiber optic cables down their existing right of way! More bandwidth, faster, more lightning-proof and ZERO EMISSIONS AND SUSCEPTABILITY! As well as freeing the LF spectrum currently used by unlicensed equipment.

The amount of interference that this service has the potential to generate is staggering in the extreme. The fact it is even under consideration is a frightening testament to the amount of money behind the proposal. We, who are among Military, (Comm. Powell : I worked for your Dad at TACSAT, 235 Sig. Det.)Fire Departments, State Police, Emergency Management, Homeland Security, Maritime Radio, Radio Amateurs, and short-wave listeners that use the affected spectrum can't support the high paying jobs at representative law firms and lobbying organizations that these interests present to legislators and commissioners. Therefore, it seems that we don't count.

Changes to part 15 and FCC A, B, CISPR and other emissions standards are needed to more accurately measure **real** emissions. Current FCC limits being based on a 'receiver' mentality, the instantaneous power present at a given bandwidth. Thus **peak storage and hold** within **bandwidth** and **duration** will more accurately measure the offending signals that substantially exceed limits for a short duration at that portion of spectrum. Consider a bit stream running through a data line; the instant power running through a small chunk of the spectrum present is small or non-existent, however the presence of a bit or frame that occupies that spectrum chunk **still interferes** with whatever is there. If it is unusable for that duration it remains unusable.

If this seems at once too esoteric and too simple, ask any fireman about what happened to their VHF radio when a LAN or WI-FI network is installed in their station, The squelch opens up and strange buzzing or just noise is heard. In a lot of instances, the noise is so severe that even a fully tightened squelch (5-15 microvolts) can't cut it off; consider the potential for deadly and life-threatening harmful interference here. This is fact. Call almost any fire department and ask any municipal fire departments who use carrier VHF(most still do).

10 and 100 Base-T Ethernet systems, while accepted under current rules, have already interfered so severely that extraordinary measures have to be taken to quiet them down. Most of these networks are installed by 'low bid' operations and extremely few are run with shielded wire, shielded wire costs more, more money in the low-bid operator's pocket, and when pursued to mitigate these problems, they vanish. Thus I can generally hear the interference generated by most networks blocks away, remember this is **baseband** 10-100 base T and it's radiating harmonic energy well into the VHF and low UHF spectrum.

I currently live in a condominium, I can dial from 20KHz to 2GHz and hear high level radiated emissions through the entire spectrum. The 900MHz band has such a high noise floor now from spread-spectrum devices that I can no longer see images from a 100 watt NTSC transmitter 7 miles distant. Many years ago I operated Moon-bounce (Seeing and hearing your own signals almost 3 seconds later!), tropo-scatter and other weak signal modes on this band. I doubt if the noise floor present now will allow this. I can no longer set the squelch on my VHF and UHF receivers at maximum (5-15uV)and drive through town without high interference levels opening the squelch. I have to use tone squelch, even with this degree of filtering, noise levels are so high that even this arrangement opens squelch randomly.

Emissions **currently** on the HF bands are very high. The nature of this band is that **ANY emissions** must be extremely carefully managed because interference radiated from 3-30MHz **will propagate globally**, ask Hams who routinely talk using less than 100mW ERP around the world. Emissions from power lines are currently extremely and unacceptably high, this will climb when carrier current devices bypass the inductive blocking effects of transformers. We should consider the effects to our geographic and maritime neighbors, who use these HF frequencies for public safety, rescue, navigation and communications, as well as broadcasting.

The damage potential that a lightning strike will cause when propagating through and destroying the required coupling networks, thereby exposing any equipment 'downstream' to Mega-Volt level spikes. The **"unbalancing"** of the claimed **balanced RF/data network** during **lines down situations** and the potential for massive RF radiation from this, generally emergency situation and the strong potential for **interference** to **emergency 1st responders' communications** hasn't been addressed at all.

Other things to consider which may help, while the commercial industry has sought to increase power and bandwidth to send a given amount of information down the line, the Amateur community has worked for years to become more spectrally efficient, as well as power effective. The universal constant is more power = more noise, we can mitigate it, supress it, but it's still there, interfering with other services. I have already outlined the RF pollution of the 900MHz band, you may wish to consider increasing the remaining primary allocation ham bands as a kind of National Park to be used as a quiet baseline to judge the spectral noise/power/information bandwidth efficiency of new services.

Sincerely

Matthew E. Squire