

Before the
Federal Communications Commission
Washington DC 20554

In the Matter of)	
)	
Amendment of Parts 2, 15, 80, 90, 97, and 101)	
of the Commission’s Rules Regarding)	
Implementation of the Final Acts of the World)	ET Docket No. 15-99
Radiocommunication Conference (Geneva,)	
2012)(WRC-12), Other Allocation Issues, and)	
Related Rule Updates)	

COMMENTS OF THE UTILITIES TELECOM COUNCIL

The Utilities Telecom Council (“UTC”) hereby files the following comments in response to the Commission’s Notice of Proposed Rulemaking in the above-referenced proceeding.¹ UTC is specifically concerned with the Commission’s proposals for allowing amateur operations in the 135.7-137.8 kHz band, which UTC and utilities across the country have opposed because these frequencies are used for power line carrier (PLC) systems.² UTC remains concerned about the potential for interference from this allocation, and it supports the Commission’s decision to take a “measured and deliberate approach to the introduction of licensed amateur operations into the band,” under which “Amateurs will not be able to use their allocation status to force unlicensed PLC operations out of the band, and utilities will have no cause to abandon or incur large costs to modify existing PLC systems.”³

More specifically, UTC agrees with the Commission’s decision to defer from authorizing

¹ Amendment of Parts 2, 15, 80, 90, 97, and 101 of the Commission’s Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2012)(WRC-12), Other Allocation Issues, and Related Rule Updates, ET Docket No. 15-99, *Report and Order, Order and Notice of Proposed Rulemaking*, 30 FCC Rcd 4183, FCC 15-50 (rel. April 27, 2015) (“NPRM” or “WRC-12 Notice”).

² *Id.* at 4243-4247, ¶¶167-180. *See also* Comments of the Utilities Telecom Council in ET Docket No. 12-338 (filed Feb. 25, 2013), and *see* Reply Comments of the Utilities Telecom Council and the Edison Electric Institute in ET Docket No. 12-338 (filed Mar. 27, 2013).

³ *Id.* at 4196, ¶26.

amateur operations in the 135.7-137.8 kHz band until the rules for their operation are developed through the WRC-12 Notice.⁴ UTC also agrees with the Commission's proposal to avoid interference by establishing a separation distance between PLC and Amateur operations.⁵ This separation distance should be supplemented by a limit on output power and antenna height, as well. Finally, UTC urges the Commission to elevate the status of PLC systems relative to Amateur operations. This is appropriate given the relative importance of PLC systems and the experimental nature of the proposed Amateur operations in the band. In addition, it will not affect the allocation for amateur operations; but will help to ensure that PLC systems won't be affected by the allocation.

I. Introduction and Background

UTC is the international association for the telecom and information technology interests of electric, gas and water utilities and other critical infrastructure industries in the United States and in many other countries throughout the world. Its members own and operate extensive communications systems that they use to monitor and control the delivery of essential services to the public at large. Owing to the importance of these services, the underlying communications systems are designed, built and maintained to standards that far exceed those of commercial communications networks in terms of reliability and resiliency. Any failure of these systems can impact utility safety, security and operational reliability, as well as public safety and national security.

PLC systems are a mainstay of utility protective relaying. The PLC systems must be able to instantly isolate a fault on the electric grid; otherwise the fault may cascade and widespread

⁴ *Id.*

⁵ *See Id.* at 4243, ¶168 (stating that “the cornerstone of the technical rules we are proposing is physical separation between amateur stations and the transmission lines upon which PLC systems may be present.”)

outages and damage could occur. The Northeast Blackout in 2003 was a good example of PLC systems and other teleprotection systems in action; they prevented that fault from cascading further into other parts of the country. Interference to PLC systems could prevent them from actuating in time to isolate such a fault. PLC systems continue to be widely used by utilities, as both a primary and secondary means of protecting the electric grid. Moreover, there are over fifty utilities in the United States that have PLC systems with transmitters operating in the 135.7-137.8 kHz band. Clearly, the importance of these systems cannot be overemphasized, and the Amateur allocation could have a potential significant impact on utilities nationwide.

UTC and other utilities have opposed Amateur use of frequencies used by PLC systems. These comments on the record in this and previous proceedings have explained that the risk of interference to and from PLC systems should preclude Commission authorization of these frequencies by Amateur operations. They also distinguished the United States from other countries that have adopted an allocation of these frequencies for Amateur operations. Despite this widespread opposition, the Commission decided to implement a secondary allocation for Amateur use of the frequencies in the 135.7-137.8 kHz band. It reasoned that coexistence between PLC and Amateur operations was possible, and that adopting the WRC-07 allocation “both serves the public interest and promotes fundamental Commission spectrum management goals.”⁶ However, it stated that “Amateur use will be governed by any future service rules that specify when, how, and under what conditions we will permit amateur use of the 135.7-137.8 kHz band.”⁷

In its NPRM, the Commission proposes to also allocate the 472-479 kHz band (630 meter

⁶ *Id.* at 4196, ¶27.

⁷ *Id.* at 4196, ¶26.

band) to the amateur service on a secondary basis, based upon the WRC-12 allocation.⁸ It invites “detailed comment on the technical characteristics of both the PLC systems and the amateur stations,” which “will allow us to set an appropriate separation distance.”⁹ The Commission asks specifically about the tolerance of PLC systems of signals received from other stations transmitting in the same band; and what electric field strength at the location of a transmission line will cause a PLC system operating on that line to malfunction.¹⁰ It asks about the type of malfunctions that would occur; how many PLC systems operate in these bands; and whether the PLC systems can be easily modified to accommodate Amateur operations. Finally, it asks about the voltage and length of the transmission lines over which PLC systems operate, as well as the electric field strengths that are produced in the vicinity of transmission lines by the PLC signals traveling over the transmission lines.¹¹

The FCC asks broader questions about the Commission’s rules should explicitly prohibit utilities from deploying new PLC systems in these bands, and whether utilities are likely to deploy more PLC systems in these bands in the future to meet the communication needs of the smart grid?¹² Meanwhile, it also asks whether utilities would be likely to deploy carrier current systems over distribution lines and operate in the two frequency bands, and whether these systems will be used for tasks critical to the functioning of the electric grid or will they used for non-critical purposes such as metering.¹³

⁸ *Id.* at 4240, ¶159.

⁹ *Id.* at 4243, ¶169.

¹⁰ *Id.* at 4243, ¶170.

¹¹ *Id.*

¹² *Id.* at 4244, ¶¶172-173.

¹³ *Id.* at 4245, ¶173.

The FCC proposes that amateur stations in the 135.7-137.8 kHz band be limited to a maximum EIRP of 1 W,¹⁴ and it proposes that amateur stations in the 472-479 kHz band be limited to a maximum EIRP of 1 W in the portion of Alaska within 800 km of the Russian Federation and will be permitted to transmit at up to 5 W EIRP elsewhere.¹⁵ The Commission also asks whether it should adopt any transmitter power limit in addition to the EIRP limits that it proposes.¹⁶ In terms of the separation distance, the FCC inquires whether a 1 km distance separation would be appropriate, and it proposes to specify the separation distance in terms of the horizontal distance between the transmission line and the amateur station antenna.¹⁷ It also asks for comment on what maximum antenna height, if any, the Commission should adopt for amateur stations in these bands.¹⁸ Finally, the Commission asks if there are any other restrictions, such as limiting licensing to certain classes of Amateur operators, which might also protect against interference.¹⁹

II. The Commission Should Refrain from Permitting Amateur Operations in the 472-479 kHz Band, and It Should Limit Amateur Operations in the 135.7-137.8 kHz Band to Avoid Interference.

UTC opposes the Commission's proposal for a secondary allocation in the 472-479 kHz band for Amateur operations, and urges the Commission to restrict Amateur operations in the 135.7-137.8 kHz band in order to avoid interference between Amateur operations and PLC systems.

¹⁴ *Id.* at 4245, ¶175 (noting that this power restriction was required by footnote RR 5.67A, and which the FCC adopted in the WRC-07 R&O.).

¹⁵ *Id.*

¹⁶ *Id.* at ¶179.

¹⁷ *Id.* at ¶177.

¹⁸ *Id.* at ¶178.

¹⁹ *Id.* at ¶180.

UTC recommends that the Commission should refrain at this time from adopting the allocation of the 472-479 kHz band, because there is simply not sufficient understanding of the potential for interference between Amateur operations and PLC systems. Until greater understanding is gained, it would be reasonable to refrain from adopting an allocation for Amateur operations in the 472-479 kHz band, because the 135.7-137.8 kHz band would provide sufficient opportunity for experimentation by Amateurs, and conversely, utilities need flexibility to be able operate PLC systems between 9-490 kHz.²⁰ Allocating the 472-479 kHz band for Amateur operations at this time would represent an unreasonable risk of interference given the importance of PLC systems, and it would unreasonably discourage utilities from being able to use these frequencies for PLC systems at a time when they are likely need flexibility to expand existing systems.

UTC also supports restrictions on Amateur operations in the 135.7-137.8 kHz band, as proposed by the Commission. Specifically, UTC supports restricting Amateur operations in the 135.7-137.8 kHz band from a distance of at least 1 km from a PLC system operating in the 135.7-137.8 kHz band. UTC also supports restricting Amateur operations to 1 watt EIRP. Finally, UTC recommends restricting the antenna height of Amateur operations to 200 feet or less. UTC believes that 1 km distance separation would protect PLC systems from interference from an Amateur operating with 1 watt EIRP and using an antenna less than 200 feet in height.²¹

III. The Commission Should Elevate the Operating Status of PLC Systems.

PLC systems are unlicensed operations under the Commission's rules.²² As such, they

²⁰ Amateurs could also apply for experimental authority to operate in the 472-479 kHz band.

²¹ NPRM at ¶¶175, 178.

²² See 47 C.F.R. §15.113.

must accept interference and not cause interference to other licensed operations.²³ Amateurs operating on a secondary basis in the 135.7-137.8 kHz band would be able to cause harmful interference to PLC systems, and would have priority over PLC systems that caused harmful interference to them, such that the PLC system could be forced to shut down if it could not correct the interference to the Amateur operation.²⁴ Such a situation would be untenable for utilities, because it would threaten grid reliability.

Utilities must be able to object to interference caused by Amateur operations. To allow Amateur operations to cause interference and not be responsible for correcting that interference would threaten public safety, contrary to the public interest in electric reliability. As such, the Commission should elevate the status of PLC systems from that standpoint alone.

It is equally important for utilities to be able to defend themselves in the event that an Amateur operator complains about interference from a PLC system. If a utility had to shut down its PLC system because of an interference complaint from an Amateur operator, it would also threaten public safety and electric reliability, as well. As such, the Commission should elevate the status of PLC systems, so that utilities would be able to object and defend themselves in the event of interference to or from an Amateur operator.

It is reasonable and necessary to elevate the status of PLC systems. PLC systems are currently able to operate on an unlicensed basis without affecting grid reliability, because their operations are coordinated with federal government operations in the band. As such, interference with federal government operations is avoided through coordination. However, the introduction of Amateur operations into the 135.7-137.8 kHz without any coordination would introduce the threat of interference to a much greater extent than currently exists. Moreover, the

²³ See 47 C.F.R. §15.5.

²⁴ *Id.*

magnitude of the risk and probability that it would occur would be greater, because there are likely to be a large number of Amateur operations in the band, which would increase the likelihood of interference. Unlike federal operations, these Amateur operations are not discrete and readily identified; but instead can operate on a fixed or mobile basis anywhere in the country. In this regard, UTC agrees with the Commission that any Amateur operations in the band should be limited to fixed operations.²⁵

IV. The Commission Should Require Amateur Operations to Coordinate With PLC Systems.

The Commission should require Amateur operations to coordinate with PLC systems prior to operation. Utilities need to have prior notice before an Amateur commences operation so that they can work together to ensure coexistence from the start – not after interference has occurred. Utilities must ensure that PLC systems won't receive interference and that their PLC interference does not interfere with Amateur operations. Otherwise, safety and operational reliability will be compromised. Coordination of PLC systems with Amateur operations at the outset will help to avoid the potential of interference, and is a reasonable measure that would not impose any undue burden on Amateur operations.

UTC had suggested a form of quasi-coordination as a way of achieving coexistence between PLC systems and Amateur operations.²⁶ It is ready to work with the Commission to develop a process under which Amateur operations could notify utilities about their proposed operations and work together in order to achieve the proper distance separation, power and antenna height, based upon the parameters of the Amateur operations and PLC systems. Such a process could overcome some of the practical difficulties that the Commission has identified,

²⁵ *Id.* at ¶168 (stating “we propose to limit amateur stations to operations at fixed locations only to ensure that this separation distance can be maintained reliably.”)

²⁶ Comments of UTC in ET Docket No. 02-98 at 9 (filed July 29, 2002).

such as the inability of Amateur operators to know whether a power line is a transmission or distribution line and whether a PLC system is operating on that line.²⁷ By coordinating with the utility, the Amateur operator will be able to ensure that the proposed Amateur operation is sufficiently separated in distance from PLC systems, and that it is operating at the right power and antenna height where it would not cause or receive interference to or from PLC systems.

V. CONCLUSION

In order to develop a coexistence mechanism between PLC systems and Amateur operations, UTC agrees with the Commission that it should follow a deliberate and measured approach that places limits on Amateur operations in the 135.7-137.8 kHz band. Until there is sufficient understanding gained in avoiding interference in this band, the Commission should refrain from authorizing Amateur operations in the 472-479 kHz band. More specifically, the Commission should adopt a distance separation requirement of at least 1 km between PLC systems and Amateur operations. It should restrict power to 1 watt EIRP, and it should limit antenna height to 200 feet or less. Finally, it should require that Amateurs coordinate their proposed operations with utilities that operate in the 135.7-137.8 kHz band.

UTC remains concerned that there is the potential for interference between PLC systems and Amateur operations, and it urges the Commission to elevate the status of PLC systems to the same level relative to Amateur operations in the band. This will help to mitigate the potential impact on utilities that operate PLC systems in the band, and it will not affect the allocation for Amateur operations. This is a reasonable request for relief, given the magnitude of the risk and the probability of interference, which is increased by the introduction of Amateur operations in the band.

²⁷ *Id.* at ¶176 (inviting comment on “whether amateur licensees will be able to identify the transmission lines in their locality,” and asking whether the FCC should “require amateurs or ARRL to affirmatively verify the locations of transmission lines with utilities or UTC before an amateur station begins transmitting.”)

UTC appreciates the opportunity to comment on the record, and looks forward to working with the Commission to develop a coexistence mechanism for PLC systems and Amateur operations to share the 135.7-137.8 kHz band.

Respectfully,

Utilities Telecom Council

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Brett Kilbourne
Vice President and Deputy General Counsel
Utilities Telecom Council
1129 20th Street NW
Suite 350
Washington, DC 20036
202-872-0030

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