Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of: Amendment of Parts 1 and 22 of the Commission's Rules with Regard to the Cellular Service, Including Changes in Licensing of Unserved Areas	)	WT Docket No. 12-40

REPLY COMMENTS OF
THE NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL

The National Public Safety Telecommunications Council (NPSTC) submits these Reply Comments in response to the Commission's Further Notice of Proposed Rulemaking in the above-captioned proceeding concerning proposed changes to the rules for the cellular service.[1] NPSTC appreciates the Commission's concern regarding the protection of 800 MHz band public safety systems from cellular interference and provides recommendations in these Reply Comments to help address that concern.

[1] Report and Order and Further Notice of Proposed Rulemaking, WT Docket No. 12-40, Released November 10, 2014.

The National Public Safety Telecommunications Council

The National Public Safety Telecommunications Council is a federation of public safety organizations whose mission is to improve public safety communications and interoperability through collaborative leadership. NPSTC pursues the role of resource and advocate for public safety organizations in the United States on matters relating to public safety telecommunications. NPSTC has promoted implementation of the Public Safety Wireless Advisory Committee (PSWAC) and the 700 MHz Public Safety National Coordination Committee (NCC) recommendations. NPSTC explores technologies and public policy involving public safety telecommunications, analyzes the ramifications of particular issues and submits comments to governmental bodies with the objective of furthering public safety telecommunications worldwide. NPSTC serves as a standing forum for the exchange of ideas and information for effective public safety telecommunications.

The following 16 organizations participate in NPSTC:

American Association of State Highway and Transportation Officials
American Radio Relay League
Association of Fish and Wildlife Agencies
Association of Public-Safety Communications Officials-International
Forestry Conservation Communications Association
International Association of Chiefs of Police
International Association of Emergency Managers
International Association of Fire Chiefs
International Municipal Signal Association
National Association of State Chief Information Officers
National Association of State Emergency Medical Services Officials
National Association of State Foresters
National Association of State Technology Directors
National Council of Statewide Interoperability Coordinators
National Emergency Number Association
National Sheriffs' Association

Several federal agencies are liaison members of NPSTC. These include the Department of Homeland Security (the Federal Emergency Management Agency, the Office of Emergency Communications, the Office for Interoperability and Compatibility, and the SAFECOM Program); Department of Commerce (National Telecommunications and Information Administration); Department of the Interior; and the Department of Justice (National Institute of Justice, CommTech Program). In addition, Public Safety Europe is also a liaison member. NPSTC has relationships with associate members, the Canadian Interoperability Technology Interest Group (CITIG) and the Utilities Telecom Council (UTC), and affiliate members: the Alliance for Telecommunications Industry Solutions (ATIS), Open Mobile Alliance (OMA), Telecommunications Industry Association (TIA), and TETRA Critical Communications Association (TCCA).

NPSTC Recommendations

In the Further Notice of Proposed Rulemaking (FNPRM), the Commission addresses multiple technical issues surrounding power limits for 800 MHz band cellular systems and the potential for interference to public safety operations in adjacent spectrum. Central to the discussion are proposals to increase power levels in rural areas, to implement power spectral density (PSD) limits and/or to incorporate power flux density (PFD) limits in the vicinity of cellular base stations. Questions are also on the table whether power limits should be applied per emission or channel, per transmitter, per sector, or for the entire cellular base station, and whether power limits should be based on average or peak values.

In response to the FNPRM, Pericle Communications Company, a consulting engineering firm, and Shulman, Rogers, Gandal, Pordy & Ecker, P.A., a law firm, submitted joint comments that provide information, analysis and recommendations that address minimizing interference to 800 MHz public safety systems from cellular operations.[2] Pericle's comments include a description on the types of interference, information regarding interference situations involving more than a single cellular system, and recommendations based on experience gained in providing consulting services to the City of Oakland, California, which experienced interference to its 800 MHz trunked radio network from 800 MHz band cellular operations. NPSTC supports many of Pericle's recommendations, as addressed in the remainder of these Reply Comments.

NPSTC recommends the Commission take the following steps in this proceeding. The Commission should adopt a PFD limit to help control the ground-level signal in the vicinity of cellular towers. While NPSTC does not have a specific PFD value to recommend, the PFD limit should be sufficient to minimize the risk of interference to public safety mobiles and portables in the vicinity of cellular base stations.

In its comments, Pericle notes that "eliminating the possibility of interference in the worst-case public safety jurisdiction would require such a low PFD limit that a large number of existing cell sites would not comply…" [3] Accordingly, it recommends the current interference reporting and mitigation process contained in Parts 22.970-22.973 of the cellular service rules remain in place. NPSTC supports that recommendation. Whatever PFD limit ultimately is adopted, the key issue is that public safety operations must be protected from interference. Further, should interference situations occur despite technical rules adopted in this proceeding, cellular operators need to work

[2] Comments of Pericle Communications Company and Shulman, Rogers, Pordy & Ecker, P.A., in WT Docket No. 12-40, January 21, 2015.
[3] Comments of Pericle at page 21.

cooperatively and expeditiously with impacted public safety entities to eliminate the interference. If there are multiple carriers' signals contributing to the interference, multiple cellular licensees would need to be involved in the interference resolution.

Even when steps are taken to mitigate interference after-the-fact, public safety can incur significant unfunded costs in the process of working with a cellular licensee to investigate and resolve the situation. Accordingly, NPSTC supports amending Part 22 of the rules to specify that cellular licensees be held responsible for legitimate costs incurred by Part 90 licensees in the process of interference abatement. To the extent more liberal cellular power levels are adopted, it is likely that interference situations to public safety licensees will increase, making recovery of legitimate costs incurred even more critical.

Measurement standards such as TIA-603-D developed with legacy operations in mind were normally developed under the assumption that interfering signals would have a peak-to-average ratio of one. In practice, newer generation cellular technology signals such as LTE have high peak-to-average ratios. The semiconductors in receivers likely react to peak power, not average power, when intermodulation (IM) products are created. Therefore, peak-to-average power ratio of interfering signals should be considered when specifying both the environment and the method to test for compliance.

In conjunction with adoption of PFD limits in the instant proceeding, Pericle recommends that the Commission pursue receiver standards in ET Docket No. 13-101. NPSTC supports improvements in receiver interference rejection, if such improvements can be accomplished at reasonable costs, without negatively impacting other critical performance factors or the size and weight of portable radios.

Public safety mobiles and portables are designed to withstand the rigors of harsh public safety operational environments. It is not unusual for such equipment to remain in service for 7 years or more. Therefore, replacing the imbedded base of receivers is a multi-year process, even if receiver improvements are pursued.

Conclusion

NPSTC appreciates the Commission including consideration of interference to public safety as it addresses changes to the cellular technical rules. NPSTC supports the technical recommendations made in the comments of engineering consultant Pericle Communications. These recommendations include adopting PFD limits for cellular base stations, using peak vs. average power limits, holding cellular licensees responsible for legitimate costs of interference mitigation incurred by public safety licensees and considering the potential for improved receiver standards that could help mitigate interference over the long-term.

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