

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matters of)
)
Service Rules for the 746–764 and)
776–794 MHz Bands, and)
Revisions to Part 27 of the) WT Docket No. 99–168
Commission’s Rules)
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and)
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The Development of Operational,)
Technical and Spectrum Requirements)
For Meeting Federal, State and Local) WT Docket No. 96–86
Public Safety Agency Communication)
Requirements Through the Year 2010)
)

To: The Commission

**EX PARTE COMMUNICATION OF THE FEDERAL LAW ENFORCEMENT
WIRELESS USERS GROUP**

Filed by: The Federal Law Enforcement Wireless Users Group

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**EX PARTE COMMENTS OF THE FEDERAL LAW ENFORCEMENT
WIRELESS USERS GROUP**

1. The Federal Law Enforcement Wireless Users Group (FLEWUG) respectfully submits the following ex parte comments regarding the Commission’s Notice of Proposed Rulemaking *In the Matter of Service Rules for the 746–764 and 776–794 MHz Bands, and Revisions to Part 27 of the Commission’s Rules* (Notice)¹ and its First Report and Order *In the Matter of the Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010* (1st R&O).² In these documents, the Commission directly addresses a number of issues, such as private wireless service providers in the 746–764 and 776–794 Megahertz (MHz) bands and systems emissions and interference standards that greatly interest the FLEWUG. The FLEWUG continues to take an active role in wireless communications issues with direct impact on its constituency, and on federal, state and local public safety agencies generally. Through these ex

¹ See *In the Matter of Service Rules for the 746–764 and 776–794 MHz Bands, and Revisions to Part 27 of the Commission’s Rules*, WT Docket No. 99–168, FCC 99–97 (rel. June 3, 1999).

² See *In the Matter of the Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010*, WT Docket No. 96–86, FCC 98–191 (rel. September 29, 1998).

parte comments, the FLEWUG hopes to bring the benefits of its perceptions to the Commission as it decides the matters raised in the Notice and the 1st R&O.

I. STATEMENT OF INTEREST

2. The FLEWUG consists of law enforcement and public safety officials from throughout the Federal Government.³ An important aspect of the FLEWUG's mission is to develop a plan for an intergovernmental, shared-use public safety wireless communications network. The objective of this is to enable public safety agencies at all levels of government to respond to emergency situations in a coordinated, effective manner, thereby significantly increasing their potential ability to protect life and property. Building on the findings of the Public Safety Wireless Advisory Committee (PSWAC), the FLEWUG has made spectrum a priority, and has undertaken several spectrum-related activities to include making direct contributions to this and other Commission proceedings bearing on public safety spectrum. Any development affecting public safety communications, particularly those related to use and management of the 24 MHz of recently reallocated spectrum in the 764-776 and 794-806 MHz bands ("The 700 MHz Band"), directly and significantly interests the FLEWUG.

3. The FLEWUG is pleased to offer these ex parte comments in regard to the Notice and the 1st R&O. These dockets affect public safety's possible participation within the 700 MHz band, and the results of this proceeding could affect public safety's ability to receive additional needed spectrum in the future. As an entity working on behalf of public safety, the program determined that it would best serve the interests of the community by reserving comments for specific public safety issues raised by other commenters. The FLEWUG offers these ex parte comments to do so.

³ The FLEWUG consists of law enforcement and public safety officials from the Department of the Treasury, Department of Justice, Department of the Interior, Department of Agriculture, Department of Defense, Department of Health and Human Services, United States Postal Service, United States Postal Inspection Service, National Telecommunications and Information Administration, Federal Emergency Management Agency, Internal Revenue Service, Federal Bureau of Investigation, United States Secret Service, United States Coast Guard, United States Capitol Police, Drug Enforcement Administration, United States Park Police, Immigration and Naturalization Service, United States Customs Service, Bureau of Alcohol, Tobacco, and Firearms, United States Mint, National Communications System, Defense Information Systems Agency, National Security Agency, Federal Law Enforcement Training Center, Bureau of Engraving and Printing, United States Marshals Service, National Institute of Standards and Technology, United States Forest Service, United States Fish and Wildlife Service, Bureau of Prisons.

4. The FLEWUG will address the following areas in its ex parte comments filed on the Notice and 1st R&O: proposed channel plans for the recently reallocated public safety spectrum in the 746–764 and 776–794 MHz bands, the establishment of guard bands adjacent to public safety spectrum to prevent interference, and the establishment and adoption of technical standards governing interoperability.

II. THE USE OF GUARD BANDS

5. The FLEWUG is concerned about interference between new public safety users and preexisting commercial users on the recently reallocated 24 MHz in the 700 MHz band. As the demand for spectrum increases exponentially as a result of the development and proliferation of commercial broadband wireless data technologies, numerous commercial wireless services have indicated a desire to operate such services on bands adjacent to the public safety spectrum that are now occupied by analog television broadcasters.⁴ Lucent Technologies has stated that the 700 MHz band is particularly suited for fixed and mobile communications because it affords good building penetration and is not subject to loss from naturally occurring barriers.⁵ Unless adequate protection is required, the FLEWUG is concerned that public safety providers will be faced with interference problems similar to those experienced by the City of San Diego, which has stated that it has already experienced interference from commercial users on the nearby 800 MHz band.⁶

6. At the request of the Public Safety National Coordination Committee (NCC) Steering Committee, the National Telecommunications and Information Administration (NTIA), an advisory member of FLEWUG, has investigated ways to prevent commercial spectrum users from interfering with public safety operations in the 700 MHz band. Although the FLEWUG will not endorse a specific band plan proposal, it generally believes that the use of guard or buffer bands,

⁴ See e.g. ex parte comments, WT Docket No. 99–168: Bell Atlantic, US West, Yahoo, and Microsoft (November 1999).

⁵ See Lucent Technologies ex parte comments, WT Docket No. 99–168 (November 1999).

⁶ See City of San Diego ex parte comments, WT Docket No. 99–168 (November 1999).

which has been advocated by a number of other parties, may prevent interference on the recently allocated public safety channels from commercial users using adjacent bands.

7. The FLEWUG asserts that establishing receiver interference protection limits and adjacent band emission limits in the 764–776 and 794–806 MHz bands will minimize interference.⁷ The FLEWUG advocates that the interference protection limit for public safety receivers should be 6 decibels (dB) below the noise power level of the receiver. This position is based on a 1dB degradation in the receiver noise level. This conservative approach is warranted because the services to be allocated in the spectrum adjacent to the public safety spectrum and their associated technical characteristics are unknown. Also interruptions to public safety communications, for even a short time or to a limited extent, can jeopardize the lives and property of the public and the public safety providers.

8. Based on the interference protection limits for public safety receivers, the characteristics assumed for the adjacent band transmitters, and the interference scenarios considered, the FLEWUG recommends the following attenuation values to protect public safety receivers in the 764-776 and 794-806 MHz bands:

- 1) For transmitters with power levels above 1 Watt: $65 + 10 \text{ Log (Power)}$;
- 2) For transmitters with power levels below 1 Watt: 65 dBc (dB relative to the carrier).⁸

9. In addition, the FLEWUG has examined the band plans proposed by Motorola, Inc.⁹ (Motorola) and FreeSpace Communications, Inc.¹⁰ (FreeSpace) to minimize potential interference from adjacent band operations.

10. To avoid interference Motorola has suggested creating a transition region between public safety users and commercial users by allocating four 1.5 MHz band segments adjacent to the 764–

⁷ See FLEWUG letter to Kathleen Wallman, NCC Chair, and accompanying recommendations regarding receiver protection limits, adjacent band emission limits, and examination of proposed band plans, November 17, 1999 (as revised, December 9, 1999) (ATTACHED).

⁸ *Ibid.*

⁹ See Motorola, Inc., ex parte presentations, WT Docket No. 99–168 (October 11, 1999; November 12, 1999).

776 and 794-806 MHz bands for private land mobile radio (PLMR) service. The Personal Communications Industry Association (PCIA) has expressed support for this concept citing a shortage of available PLMR spectrum.¹¹ Various public safety entities nationwide have expressed the belief that the location of similar services, including PLMR users, adjacent to the public safety services bands, would tend to minimize interference.¹² As a part of its plan, Motorola suggests auctioning the transition regions to a band manager who would then redistribute the spectrum to private users on a contractual basis. Motorola contends that band managers would address interference issues through frequency coordination; and that economies of scale would develop and result in lower equipment prices for public safety users.

11. The FLEWUG agrees with Motorola that there may be potential benefits from allocating PLMR or other like services adjacent to the bands allocated for public safety. Allocating compatible services adjacent to public safety bands would minimize the potential for interference to the public safety receivers. Interference to public safety receivers could be managed effectively through a coordination process. This approach would create a region over which mobile and fixed commercial transmitters could attenuate adjacent band emissions to a level adequate to protect public safety receivers. Instead of establishing a guard band in which spectrum would remain vacant to protect public safety receivers, this approach would make efficient use of spectrum.

12. The FLEWUG has also evaluated the band plan advanced in recent months by FreeSpace. The FreeSpace Communications network will comprise handsets and modems that transmit data and voice via a wireless link to small antennas mounted on either existing transmission towers or small base stations located on house rooftops throughout a community. The base stations will be linked to the Internet through either wireline digital subscriber lines or other high-speed Internet connections and will have an expected range of 0.5 miles. FreeSpace proposes that, to protect

¹⁰ See FreeSpace Communications, Inc., ex parte presentations, WT Docket No. 99-168 (October 7, 1999; November 15, 1999).

¹¹ See PCIA ex parte presentation, WT Docket No. 99-168 (November 23, 1999).

¹² See, e.g. ex parte comments, WT Docket No. 99-168: Arizona Department of Public Safety, City of Chicago, City of El Cajon, City of Ft. Lauderdale, Maryland State Police, North County Dispatch (Telecordia), (November 1999).

public safety operations in the 764–776 and 794–806 MHz bands, transmitters operating in four 1.5 MHz band segments adjacent to public safety will be required to operate at a peak power spectral density (PSD) that does not exceed 4 milliwatts per kilohertz (mW/kHz).¹³ FreeSpace also proposes that to further minimize interference, the actual power of the transmitter be set dynamically using active power control technology.¹⁴

13. The FLEWUG believes that allocating bands adjacent to the public safety spectrum to a service employing low–power transmitters would be an alternative approach to protect public safety operations. Low–power transmitters should be able to achieve adjacent band emission limits adequate to protect public safety receivers with minimum impact and cost to their system design. Although FreeSpace has amended its plan to include the provision of transmitter locations in a real-time position–oriented database,¹⁵ the FLEWUG remains concerned that the location of these devices and the number of devices in a given geographic area may be unknown, making coordination difficult. Furthermore, based on the anticipated high-density use of fixed and mobile low-power transmitters, the potential adjacent band interference to public safety receivers must take into account the effect of aggregate interference from multiple transmitters. To reduce the effects of aggregate interference, provisions could be adopted to ensure that the aggregate power of the transmitters never exceeded the power limits of a single transmitter. Limitations on the duty cycle of the transmitters could also be adopted.

14. The Association of Public–Safety Communication Officials – International, Inc. (APCO) concluded on November 17 that FreeSpace had not yet submitted sufficient technical data to the record to permit evaluation of the technical feasibility of its proposal.¹⁶ FreeSpace has recently submitted more information about its system via several ex parte presentations during late November 1999. However, some of the information appears to be inconsistent, making a complete and accurate evaluation of the FreeSpace proposal difficult as of yet. As additional

¹³ See FreeSpace Communications ex parte Presentation, *Service rules for 746/764/776–794 MHz Bands*, WT Docket No. 99–168 (November 10 and 12, 1999).

¹⁴ See FreeSpace Communications ex parte memorandum responding to ex parte comments by Motorola, November 11, 1999 (November 15, 1999).

¹⁵ See FreeSpace Communications, Inc., ex parte comments, WT Docket No. 99–168 (November 17, 1999).

¹⁶ See APCO Ex parte comments, Docket No. WT 99–168 (November 16, 1999).

information is forthcoming, the FLEWUG will endeavor to re evaluate the plan and comment accordingly.

III. PROPOSED CHANNEL PLANS

15. The FLEWUG disagrees with the proposed modifications to the channel plan for the public safety spectrum at 764–776 MHz and 794–806 MHz put forward in the Petition for Reconsideration to WT Docket No. 96–86 by Ericsson, Inc.¹⁷ This petition proposes modifications to the channel plan developed as part of the 1st R&O. Ericsson suggests that up to four 6.25 kHz narrowband channels be aggregated to form a 25 kHz channel throughout the public safety spectrum. Ericsson further proposes that to accommodate wideband video and data in this band, the aggregation of 50 kHz channels should be increased from three (150 kHz) to twelve (600 kHz). These, Ericsson argues, would ensure that a full range of broadband technology and equipment would be available to the public safety community.

16. Although the FLEWUG agrees in part with Ericsson that the broadest possible range of equipment should be made available to the public safety community, the FLEWUG does not support the creation of 600 kHz of aggregated channels in the 700 MHz band.

17. Specifically, the FLEWUG object because the suggested creation of 12 wideband data and video channels in the 700 MHz band could give the impression that public safety wideband data and video requirements can be met through current allocations. On the contrary, creating wideband channels in addition to the current 150 kHz channels in the 700 MHz band displace the critical-function land mobile radio (LMR) and other narrow–band applications for which the current 24 MHz has long been desperately needed.

¹⁷ See Ericsson ex parte meeting notice, Docket No. WT 96–86 (September 13, 1999). See also Letter to Kathleen M.H. Wallman, Esq., NCC Chair (September 14, 1999).

III. INTEROPERABILITY STANDARDS

18. The FLEWUG has adopted, by vote, the ANSI TIA/EIA 102 (Project 25 Phase I) as the digital interoperability standard for radio communications.¹⁸ This standard comprises the American National Standards Institute (ANSI)/Telecommunications Industry Association (TIA)/Electronics Industry Alliance (EIA) 102 BAAA–1998 Frequency Division Multiple Access (FDMA) Common Air Interface (CAI) standard and the ANSI/TIA/EIA102.BABA–1998 Vocoder Description standard.¹⁹ The NCC Technical Subcommittee has also recommended adoption of this standard, which is based on a 12.5 kHz channel.²⁰

19. In an ex parte comments to the Commission, the American Association of State Highway and Transportation Officials (AASHTO), The Forestry–Conservation Communications Association (FCCA), the International Association of Fire Chiefs, Inc. (IAFC), and the International Municipal Signal Association (IMSA) have all suggested that the NCC undertake development of a third interoperability standard in addition to Project 25 and Terrestrial Trunked Radio (TETRA).²¹

20. The FLEWUG opposes development of a third interoperability standard. Project 25 and TETRA each required ten years and direct coordination with public safety users to develop. The proposed NCC role in standards development would require substantial public expenditures at all levels of government, will likely result in a duplication of existing standards development efforts, might result in incompatible standards, and could further delay the use of the 700 MHz band for

¹⁸ See FLEWUG Petition for Reconsideration and Clarification, WT Docket No. 96–86 (December 2, 1998) at Paragraph 33.

¹⁹ *Ibid.*

²⁰ NCC Technology Subcommittee meeting, New York, New York, November 18, 1999.

²¹ See AASHTO, FCCA, IAFC, IMSA ex parte communication, WT Docket No 96–86 (October 8, 1999).

public safety purposes.²² Based on the PSWAC recommendation, an additional 73.5 MHz remains to be allocated to the public safety²³. The FLEWUG maintains that broadband services should be located in this additional spectrum.

21. Moreover, as APCO has observed, no 6.25 kHz equipment is being developed or tested.²⁴ Indeed, an informal survey of equipment manufacturers, which included Motorola, Ericsson, and E. F. Johnson, conducted at a November 18, 1999, meeting of the NCC Technology Subcommittee in New York City, revealed that none of the companies currently has 6.25 kHz equipment available in the U. S. market. Further, although there was some speculation, none of the companies indicated that they anticipated bringing such products to market within the next five years.²⁵

IV. CONCLUSION

22. In summary, the FLEWUG considers guard bands a viable option to protect public safety users in the 764–776 and 794–806 MHz bands from interference. The FLEWUG maintains that adequate adjacent channel protection must be mandated by the Commission to ensure that critical public safety functions are not interfered with at any time, to any extent, or for any duration.

23. The FLEWUG asserts that the Commission should not permit aggregation of spectrum into 600 kHz channels in the 700 MHz band. Any such action would be at the expense of providing general and interoperability spectrum for voice LMR and would create the erroneous impression that the need for wideband spectrum could be met by locating these services in the 700 MHz band, rather than through the allocation of additional spectrum.

²² FLEWUG Petition at Para. 33, *supra*.

²³ *Public Safety Wireless Advisory Committee (PSWAC) Final Report*, September 11, 1996, at p. 3.

²⁴ APCO ex parte comments, WT Docket No. 99–168 (October 28, 1999).

²⁵ NCC Technology Subcommittee meeting, *supra*.

24. Finally, the FLEWUG respectfully urges the Commission to formally adopt TIA/EIA-102 (Project 25) vocoder and CAI interoperability standards for public safety wireless radio communications.

25. The FLEWUG commends the efforts of all commenters to this Notice and R&O and respectfully requests the Commission to carefully consider the FLEWUG's positions herein submitted in light of the comments propounded by others.

Sincerely,

James J. Flyzik

Deputy Assistant Secretary (Information Systems) and
Chief Information Officer, Department of the Treasury, and
Vice Chair, Government Information Technology Services (GITS) Board