

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Service Rules for the 698-746, 747-762)	
and 777-792 MHz Bands)	WT Docket No. 06-150
)	
Implementing a Nationwide, Broad-)	
band, Interoperable Public Safety)	PS Docket No. 06-229
Network in the 700 MHz Band)	

To: The Commission

COMMENTS IN THE ABOVE DOCKETS

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COMMENTS FROM STAGG NEWMAN

I. INTRODUCTION

In the *Third Further Notice of Proposed Rulemaking, FCC 08-230*¹, paragraph 15, the Commission seeks comments all of the tentative conclusions and proposals presented in the Third Further Notice, and in particular “on whether these proposals will lead to a successful auction and, more importantly, a successful partnership or partnerships that will fulfill the Commission’s goal of making interoperable broadband wireless service available to public safety entities across the Nation.” The Commission in the 3rd FNPRM has advanced the cause of this laudable goal by not leaving all of the tough questions to the negotiation of the Network Sharing Agreement. However the 3rd FNPRM actually raised more technical questions than it answers. The FCC also has not yet either done its own economic analysis nor received in any of the filings the economic analysis needed to make the proper decisions necessary to enable a successful action and more importantly the partnership. So the Commission has much more work to be done before a Report and Order can be written. This filing identifies some of the key technical issues that are either not answered or answered incorrectly.

The following sections will address issues and problems in the following areas:

- Interoperability
- Performance Requirements
- Pricing

II. INTEROPERABILITY

In paragraph 106, 3rd FNPRM and in the proposed rules (27.1305) and in the proposed NSA contract (Technical Requirements – Interoperability), the FCC now makes it clear that the D Block licensee(s) is responsible for providing interoperable applications, i.e. retail services, for voice, data, and video, so that different first responders can *communicate*. However the FCC never addresses how this interoperability will be achieved as the only interoperability issues addressed at the technical level is the Radio Access Network Interface where the FCC requires either LTE or WiMAX. Interoperability at the applications level is a difficult and complex task, particularly for data applications of which there are a vast number and video for which there are many competing alternatives.

Interoperability at the applications level must be addressed in the business model articulated by the Commission, more so if there are to be multiple D Block licensees. The

¹ *Third Further Notice of Proposed Rulemaking*, WT Docket No. 06-150, PS Docket No. 06-229, Sept. 25, 2008.

FCC requirement on roaming for first responders (paragraph 110, 3rd FNPRM) makes this omission particularly glaring.

What the FCC has done is analogous to stating the Morse Code will be used to encode an alphabet, i.e. how to transmit letters, but not require the users of the code to agree upon a language, i.e. English or French or German. Therefore no meaningful communications could take place. For useful *communications* the FCC must address the larger interoperability issues at the applications and services level.

Ericsson identifies this issue in its most recent filing² in Section III.D.3 and suggests one path forward to the Commission to consider.

III. PERFORMANCE REQUIREMENTS

A. Coverage

The Commission continues to define coverage in terms of POPS. The approach does not address the needs of a public safety agency. An agency needs to know whether the coverage is adequate in the jurisdiction that the agency serves. So a D block licensee could meet the Commission standards by covering where people live but not where they work or drive or play. The Commission should consider taking an approach to coverage for public safety similar to that currently used by land mobile radio systems (e.g. in 95% of a geographic area in the areas where a vehicle can drive, an agent should be able to make a call or session 95 % of time). In my prior filing the NC State design³ gives an example of this approach.

B. Capacity allocation

The Commission is to be commended for recognizing the a single system that optimizes using the 2 x 10 MHz channels is likely preferable to separating the frequency for public safety and commercial use. The Commission then attempts to describe this capacity allocation in terms of language that does not make technical sense in a digital wireless broadband IP based system as the language in the 3rd FNPRM is the language of circuit switched dedicated channels or trunked radio systems. For example the Commission states the following⁴ (emphasis added)

“Under this proposal, public safety users will still be guaranteed unconditionally preemptive access to 10 megahertz of capacity at all times, but the shared wireless broadband network may flexibly and dynamically assign *frequencies* from either the D Block or public safety spectrum to provide that capacity. Second, we propose to

² Ericsson Comments, 3rd FNPRM, WT 06-150, Nov. 3, 2008.

³ Appendix A, Stagg Newman Comments, WT 06-150, June 20, 2008

⁴ 3 FNPRM, paragraph 5, page 5.

revise the rules governing public safety priority access to D Block spectrum capacity in emergencies. Our proposed revisions include: (1) specifying in detail the circumstances that trigger public safety priority access to commercial spectrum capacity; (2) providing that, in this context, “priority access” means only that a public safety user would be assigned the next available *channel* within the commercial spectrum over a commercial user, and does not include a right to preempt any ongoing commercial calls being carried over commercial spectrum capacity

In a 3G or 4G wireless broadband system, neither frequencies nor channels are assigned to individual users, so the proposed requirements for capacity allocation must be re-written to make sense for the technology of today and the future.

C. Reliability and Robustness.

The Commission still has not taken a technically meaningful approach to reliability and robustness requirements. Any approach to reliability and robustness must take a systemic approach that looks at the end-to-end network system and/or a customer based approach. Stating requirements just for individual terrestrial elements as the Commission does leads to two types of mistakes. First the system may not meet the end-to-end performance needed by the user. Second individual components of the system may be too costly as systemic redundancy may be more cost effective than a highly reliable individual component.

For example in 3rd FNPRM the Commission repeats the 99.7% reliability requirement that makes has no grounding in reality⁵:

- Sufficient signal coverage to ensure reliable operation throughout the service area consistent with typical public safety communications systems (*i.e.*, 99.7 percent or better reliability).

The 99.7% requirement as noted by Cyren Call in its Petition for Partial Reconsideration and Clarification in these proceedings dated Sept. 24, 2007, is not well defined and not consistent with any known industry standard. Rather than taking an equipment based approach the Commission should take a service based approach from the end-user standpoint by stating availability requirements and mean-time-to service restoral requirements. This allows an operator to provide high availability by either covering an area with signals from multiple cell sites and/or by hardening particular cell sites. The former frequently results in higher reliability.

D. Service Requirements for the Shared Wireless Broadband Network.

⁵ 3rd FNPRM, paragraph 95

The Commission is to be commended for attempting to write services for the shared wireless broadband network in the proposed 27.1305⁶ and similar rules elsewhere. Unfortunately the rules have not been written from a modern wireless broadband and state of the art applications perspective. We will just give one of the many examples of the inconsistencies that can be found in this section.

In Table 1 on page 170, the requirement states that the SWBN must support speeds of >256 Kbps for file transfer but <16 Kbps for email. However today many emails contain large files as attachments. So the first two lines in the table are inconsistent.

Therefore the rules for the SWBN need to be carefully reviewed and rewritten from a 3G/4G and modern IT applications perspective.

Again the FCC needs to rewrite these tables with an understanding of both the current state of technology and the current state of applications.

IV. PRICING

The FCC's proposal for fixed price for all public safety users of \$48.50 per month as a base rate for all public safety user for voice and data does not reflect the many varied uses of a broadband network nor the affordability of many public safety agencies. The Commission states⁷:

Generally, the service rates charged by these carriers apply nationwide, thus providing a useful model for establishing a nationwide, fixed rate schedule for public safety users of the shared wireless broadband network. Based on our survey, the average discounted service charge is approximately \$48.50 per month, which thus may serve as an appropriate amount. In sum, we seek comment on our tentative conclusions that we should set a specific service fee for public safety users and that such fee be based on rates charged to government users of existing wireless voice and data services. We also seek comment on whether a rate of \$48.50 per user per month as the base rate that will be charged to all public safety users is reasonable.

This paragraph implies the \$48.50 covers both voice and data services where the data service is for Internet access for a data modem for a PC. However the accompanying analysis is for data only services so the Commission either is assuming voice is provided for no incremental charge or the basic service excludes voice.

⁶ 3rd FNPRM, p 166 and following

⁷ 3rd FNPRM, Paragraph 392.

Moreover in the data world, one size does *not* fit all. Data usage is primarily determined by the user's data applications and the subscriber device. For example many public safety agencies today have only text oriented devices. Such devices would typically consume less than 5 Megabytes per month. On commercial networks, Blackberry™ users typically consume 50 Megabytes per month. Laptop data card users typically consume 500 Megabytes to 1 Gigabyte per month. And a user with a reasonable quality video device could easily consume over a gigabyte in a single session. To charge all public safety users the same basic rate when they will be accessing many different applications with many different types of devices does not reflect the engineering economics of modern data communications.

VI. CONCLUSION

The decisions made by the FCC in this rulemaking will determine for decades to come if thousands of state and local public safety agencies will have the state-of-the-art communications needed to save lives and guard our infrastructure. To reach effective decisions the FCC must:

- understand public safety's requirements
- understand the technology issues
- understand the economic issues
- and understand the implications of pending industry changes

In the Third Further Notice of Proposed Rulemaking, the FCC advanced the discussion forward. Nevertheless as shown above and as the record demonstrates, the FCC must still gain considerably more technical and economic understanding before an order can be written that can lead to the building of the wireless broadband infrastructure that our first responders so critically need. The FCC should either take advantage of the economic downturn to hire the technologists and economists needed or create a fact-finding council of reputable technologists and economists representing the myriad stakeholders, including public safety, the manufacturers, and network operators. The FCC should charge this council with providing objective input on these complex issues.

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