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July 30, 2010

Chairman Julius Genachowski
The Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

The Honorable Henry A. Waxman, Chairman
Committee on Energy and Commerce
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Genachowski and Representative Waxman:

In reference to FCC Chairman Genachowski's letter of July 20, 2010, and the answers to the questions attached to that letter, I would like to respectfully offer a different viewpoint on a few of the answers that were provided. Let me say, in advance, that the area of public safety communications and its requirements is one of the most misunderstood aspects of wireless communications in government, and many people tend to equate the use of commercial networks and their operation with public safety requirements. This is understandable as cell phones have been used in the United States since 1981 and today there are more than 280 million people in the United States and more than 5 billion around the world who use commercial networks for voice, text, data, and video services.

There also seems to be a belief that broadband wireless networks will be able to fully replace conventional and digital channelized voice services in the future. While this is partly correct, the reality is that voice services over broadband will NOT provide the ability for units in the field to communicate directly with each other without the assistance of a cell site or main radio site. The specifications for LTE¹ (Long Term Evolution) do not include the ability for units to communicate without the use of a cell site. LTE is a global standard that is being developed by the 3GPP and it is designed primarily to provide high-speed data and video services. While voice in the form of VoIP or "One Voice"² as it is being referred to in the commercial community will, at some point, be viable over LTE networks, the specification does not include the ability for field units to talk directly with each other. The chances of this type of provision being added into a global specification that will be implemented over multiple portions of the spectrum with multiple, varying offsets between cell site transmissions and device transmissions when there is no demand for this type of service from commercial network operators is very slim.

Therefore, it is important to realize that channelized communications networks will be needed for many years to come. Today they provide an important element in the overall

¹ 3GPP <http://www.3gpp.org/LTE>

² <http://www.3gpp.org/Industry-backs-VoLTE-initiative>

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communications plans for the public safety community. Channelized spectrum already allocated in the 700-MHz band for public safety³ includes channels that are set aside for public safety today use as part of the overall interoperability solution. Some of these channels have been set aside for nationwide first responder voice networks and some are for nationwide interoperability channels for use at the scene of an incident and for command-and-control functions that do not require the use of cell sites. There are also interoperable channels for state and regional systems, and typically, each mobile device will be equipped with the local channels used for day-to-day operations as well as all of the regional, state, and national common channels. The band plan currently being implemented across the United States is key to solving public safety's interoperability issues.

Broadband is a major requirement for nationwide interoperability, which is one reason the public safety community is asking both Congress and the FCC to reallocate the D Block to public safety,⁴ but without interoperable voice systems in place as well, broadband will only solve some of the problems. The FCC was forward thinking in its allocation of the 700-MHz channelized spectrum, which is already in use in many areas of the nation, and many other systems are being planned and funds allocated on a monthly basis. If the public safety community loses the ability to operate on these channels, it will negate all of the good that will be accomplished by allocating broadband spectrum for public safety use.

I have, in the footnotes below, referenced a filing⁵ I submitted to the FCC on the subject of public safety voice communications and I ask that both of you consider not only these comments but those in filings by the State of Delaware, Maryland, Ohio, and soon many others.

If you have any questions or would like to discuss this matter in more detail, I will make myself available to you, and I am sure many members of the public safety community will as well. My specific responses to Representative Waxman's questions to the FCC Chairman and his answers follow this letter.

Respectfully submitted,



Andrew M. Seybold
CEO and Principal Consultant

³ <http://www.fcc.gov/pshs/docs/public-safety-spectrum/700mhz-chart-segments.pdf>

⁴ <http://andrewseybold.com/1803-mr-seybold-goes-to-washington>

⁵ <http://fjallfoss.fcc.gov/ecfs/comment/view?id=6015694461>

Andrew Seybold's Comments on FCC Chairman Genachowski's Response to Questions Asked by Representative Waxman

Question 1: 1. Please provide a list of the top four vendors of public safety narrowband equipment and their respective market shares. If the FCC does not track this information independently, please use public references to provide these details.

No Comments

Question 2: Have proprietary solutions affected interoperability, innovation, cost or competition in the market for public safety communications equipment?

a. How would the greater use of open standards affect these factors?

b. What steps should the FCC take, if any, to encourage the use of open standards in public safety communications?

As mentioned in my letter, the use of channelized spectrum for voice services is not supported by current and future commercial standards. The premise for commercial networks is that each customer must be in range of a communications tower in order to use the system. Commercial standards do not include the capability for units to communicate with each other in the field when outside network coverage, and they do not provide the ability to relieve network congestion by switching to a non-network channel in order to communicate over short distances.

The issue of P-25 versus Tetra can be debated, but BOTH P-25 and Tetra are designed for channelized voice systems and both support communications via a communications tower and without a tower. Both are designed primarily for use by public safety. Further, many Land Mobile Radio users have moved to cellular systems since they do not require one-to-many or point-to-point device communications so the total available market has become significantly smaller. Commercial vendors are able to build products that sell for less simply because of the larger quantities. As you are aware, Apple recently sold more than 3 million iPads into the market at prices that vary from \$400 to \$900 per unit. It is the number of units sold, not the technology that sets the price of devices. The more devices a vendor builds, the less it pays for parts and materials, which means it can charge less for the devices.

Finally, I would like to point out that in addition to the difference in quantities involved, public safety radios must also be built for many different portions of the spectrum. Today's public safety channels occupy slivers of spectrum in the 30-50 MHz band, 150-174 MHz band, 450 MHz band, 700 MHz band, 800 MHz band, and some of the larger departments are sharing TV spectrum in the 470-512 MHz band. Each vendor, therefore, builds fewer radios for each band. One reason for the difference in pricing between P-25 radios and Tetra radios is that in Europe there is a common frequency band for Tetra public safety systems, therefore the vendors can build a common radio with a much larger market, which puts pressure on the device pricing.

Question 3: Please provide information on whether the public safety interoperable voice network, governed by Project 25, has achieved true interoperability.

a. Has interoperability been hindered by a lack of competition in equipment and device availability?

b. To the extent that interoperability has been hindered, please provide specific examples.

I would like to respectfully disagree with the FCC Chairman's response to this question. In reality, and given the budget constraints of states, cities, and counties, the public safety community, on its own, has made major strides toward voice interoperability in recent years. There was certainly a delay in the process while public safety waited for actions from the FCC and the Department of Homeland Security, but once it became clear that the first steps toward interoperability would have to come directly from within the public safety community, much has been accomplished.

As mentioned above, in the 700-MHz channelized spectrum, channels have been set aside for nationwide, statewide, and regional interoperability channels. Further, these types of channels are already designated for the VHF, UHF, and 800-MHz public safety allocations. A number of newer statewide systems have come online in the past two years and more are in the planning and development stages. There is more work to be done, some of which is hindered by the public safety channels being spread out over a vast amount of spectrum and because there are not enough channels in any one portion of the assigned spectrum to permit true interoperability. The best chance public safety has is to work toward the consolidation of systems in the 700-MHz and 800-MHz bands that are close enough to each other to permit all of the channels to be built into a single radio. It is also important to recognize that in many spectrum-starved areas of the country, 700-MHz radio frequencies have only been available for one year as public safety awaited the digital television transition last June.

Further, where Land Mobile Radio systems are not able to communicate with each other, the public safety community has been implementing and installing IP bridges so channels on different portions of the spectrum can be linked together to provide interoperability on an as-needed basis. This is not the best way to provide interoperability since each of these connections requires two or more channels to be tied together and the number of units per channel becomes an operational issue, but it is currently being deployed as a workaround.

Finally, many departments are solving SOME of their interoperability issues by installing two or more radios in each vehicle. This costs more money and is not an efficient use of resources, but it does provide for interoperability at least on a regional level. When addressing the issue of voice interoperability, some vendors are also designing and selling handheld radios that have capabilities across multiple portions of the spectrum. However, these radios, built in small quantities, are expensive and will most likely only be used by command personnel at an incident.

Question 4: *Does the current structure of the public safety equipment market hinder efforts to achieve interoperability for a broadband public safety network? If so, please provide a description of possible steps the Commission might take to remedy this action.*

The FCC Chairman's answer to this question does not reflect an understanding of the differences between broadband networks and channelized communications. Once again I refer you to the attached filing with the FCC. The issue of the D Block and its reallocation is of vital importance to public safety, especially if the Commission believes that some form of voice communications will be used on this network in the future. Broadband communications in the form of LTE will not support communications between field units that are out of the range of a tower or that need smaller talk groups during an incident. During the recent Santa Barbara fires, the communications system that was set up for fire personnel made use of 18 command-and-control channels and 78 dedicated channels for operations in the mountains above Santa Barbara, and all of the commercial networks. These allocations were for fire personnel only and do not include the channels needed by law enforcement for its own operations that included massive evacuations, coordinating road closures, and crowd control. LTE is simply not designed to provide the level of communications vital to the public safety community on a daily basis.

It is my belief, and that of many expert LTE design engineers, that LTE will not incorporate standards to provide for peer-to-multi-peer communications because this is not a requirement for commercial operators. Therefore, separate channelized voice communications will be an ongoing public safety requirement for many years to come. Once again I request that you read the attached, which I filed with the FCC and that also appeared on my website and in several other publications.

Question 5: *Section 101(b) of the staff discussion draft sets forth criteria for the Commission to consider in establishing rules for interoperability. How should this list be revised to ensure that interoperability is achieved in the broadband network, unlike the "failure" that occurred in the narrowband network? What technical and operational framework might be more appropriate to ensure interoperability on a future nationwide wireless public safety broadband network?*

My only comment on this response is that I believe the public safety community, through representation, should be an integral part of the process. The public safety community has come together over the issues concerning the allocation of the D Block and is solidified in its desire to make this network truly interoperable from day one. It is imperative, in my view, that public safety be empowered to work with all of the stakeholders to help ensure that the result is a fully interoperable and seamless network.

Question 6: *Can interoperability requirements applied to the wireless public safety broadband network be utilized to promote interoperability between narrowband and broadband networks?*

Again, I respectfully disagree with the FCC Chairman. Broadband networks including today's 3G networks and the upcoming LTE networks do not support all of the various types of voice communications that are a daily requirement for public safety. Certainly, in a few years, SOME public safety voice traffic will be able to be migrated over to broadband, depending on how the multi-cast element is implemented within the standards organization and the variations of the multi-cast capabilities.

For example, in major cities, dispatch channels are usually assigned by district or geographic areas, with perhaps a few more for citywide operation. The FCC has set guidelines as to the number of units that can be handled on a single dispatch channel for channelized voice and it should probably do the same for broadband dispatch as well.

It is also important to recognize that LTE and broadband still have not addressed some of the most basic and fundamental public safety communications issues that preclude exclusive use of broadband for all public safety communications. As but one example, LTE and the 3GPP standards still do not permit a public safety user to be instantly granted access to a radio frequency when needed. Contemporary land mobile radio systems are designed to instantly grant access to a user when an emergency is declared. LTE, conversely, provides priority access or places the user at the head of the line for access when available. This topic and broadband challenge was discussed in detail at the recent House Sub-Committee hearing presided over by Representative Richardson.

I believe that broadband voice, once it becomes available, should be first used for non-mission critical communications and administrative and cross-jurisdiction communications, and later, if it proves to be reliable, for dispatch. But again, broadband voice will not meet the needs of public safety for day-to-day and emergency scene-of-the-incident communications.

Attached:

"Incident Communications," by Andrew M. Seybold,
<http://fjallfoss.fcc.gov/ecfs/comment/view?id=6015694461>