

May 18, 2011

**VIA ELECTRONIC DELIVERY**

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street, SW  
Room TWA325  
Washington, DC 20554

**Re: Notice of *Ex Parte* Presentation  
RM-11592; RM-11626; WT Docket No. 11-18**

Dear Ms. Dortch:

Yesterday, Vulcan Wireless LLC (“Vulcan”) representatives Paul Nagle, Paul Kolodzy, Michele Farquhar, and Scott Wills (by telephone) met with Tom Peters, Ziad Sleem, Nicole McGinnis, Peter Trachtenberg, Paul Murray, Nese Guendelsberger, and Jennifer Flynn of the Wireless Telecommunications Bureau regarding Vulcan’s concerns as a Lower 700 MHz A Block licensee, as described in the attached hand-out. Specifically, the Vulcan representatives highlighted the need for an immediate freeze on any new applications for licenses of TV broadcast stations on Channel 51. The parties also described: (1) the benefits of nationwide 700 MHz interoperability, as detailed in the attachment; and (2) the two conditions proposed in Vulcan’s reply comments regarding the AT&T-Qualcomm transaction pending before the Commission. The Vulcan representatives also discussed the attached declaration of Kristin Rinne, AT&T Services, Inc., that was filed in WT Docket No. 11-18.

Pursuant to Section 1.1206(b) of the Commission’s rules, I am filing this notice electronically in the above-referenced dockets. Please contact me directly with any questions.

Respectfully submitted,

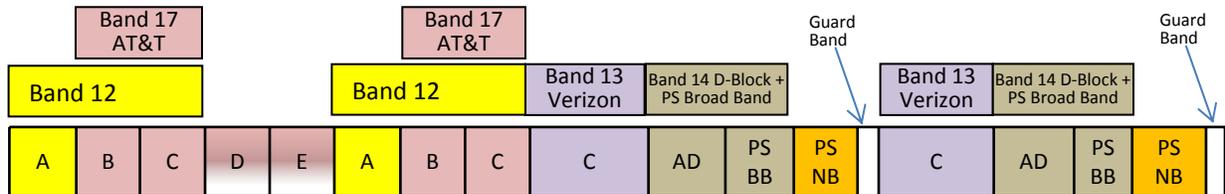
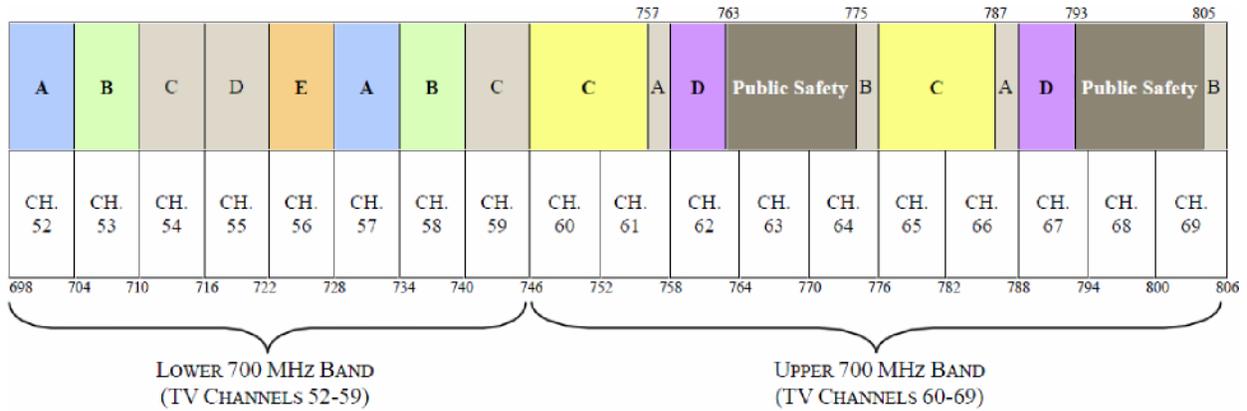
*/s/ Michele C. Farquhar*

Michele C. Farquhar  
Counsel to Vulcan Wireless LLC

Partner  
[michele.farquhar@hoganlovells.com](mailto:michele.farquhar@hoganlovells.com)  
D 1+ 202 637 5663

cc: Tom Peters  
Ziad Sleem  
Nicole McGinnis  
Peter Trachtenberg  
Paul Murray  
Nese Guendelsberger  
Jennifer Flynn

# 700 MHz Plan for Commercial Services



## Activity Timeline for 700 MHz Band Class - Pre and Post Auction 73

December 2007	January 24, 2008	March 18, 2008	April 5 - 9, 2008	June 16 - 20, 2008	September 18 - 22, 2008	September 2009 (still pending)	December 2010
<ul style="list-style-type: none"> <li>The 3GPP Standard Body had only used Band Class 12 to develop standards for all Lower 700 MHz A, B &amp; C spectrum blocks. No other band class had ever been used in 3GPP to set standards for any deployed wireless technology governing those spectrum blocks.</li> </ul>	<ul style="list-style-type: none"> <li>Auction 73 opens</li> </ul>	<ul style="list-style-type: none"> <li>Auction 73 closes</li> </ul>	<ul style="list-style-type: none"> <li>Motorola submits paper to 3GPP to evaluate the need for a new Band 17. It eliminates the Lower 700 MHz A Block and only includes Blocks B and C, which orphans A Block, significantly curtails manufacturer support for A Block and eliminates interoperability</li> </ul>	<ul style="list-style-type: none"> <li>Ericsson presents discussion paper arguing against Band 17 and raises concerns "which goes against economies of scales and may lead to market fragmentation".</li> <li>AT&amp;T presents discussion paper arguing in favor of Band 17.</li> <li>Ericsson eventually withdraws their protests, clearing the path for Band 17.</li> </ul>	<ul style="list-style-type: none"> <li>(6 months after the close of Auction 73)– 3GPP ratifies Release 8 with new Band Classes for LTE:</li> <li>Bands include:                             <ul style="list-style-type: none"> <li>17-Lower B/C (primarily for AT&amp;T owned Spectrum)</li> <li>13-Upper C (exclusively for Verizon Spectrum Block)</li> <li>12-Lower A/B/C (loosing support from AT&amp;T for B &amp; C)</li> <li>14 - for Upper D &amp; Public Safety Broadband</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>700 MHz Block A Good Faith Purchasers Alliance Petitions for Rulemaking on Interoperability</li> </ul>	<ul style="list-style-type: none"> <li>3GPP modifies Releases 8 &amp; 9 to include 1 MHz Guard Band within Band 12 to address potential interference issues and gains some limited manufacturer support.</li> </ul>

## **Need for Licensing Freeze on Channel 51**

The FCC should grant the CTIA-RCA Petition for Rulemaking and Request for Licensing Freezes to prohibit future licensing of TV broadcast stations on Channel 51, implement a freeze on the acceptance, processing and grant of applications for broadcast facilities on Channel 51, and accelerate clearance of Channel 51 in order to minimize interference to 700 MHz A Block licensees.

## **Benefits of Nationwide Interoperability**

**Prerequisite to Competition.** An interoperability requirement in the AT&T-Qualcomm proceeding will ensure that AT&T, which will hold the vast majority of Lower 700 MHz spectrum and disproportionate influence over the vendor ecosystem, will not hold the vendor community captive, to the detriment of A Block licensees.

**Economies of Scale.** The 700 MHz band is unique in that it does not match other international allocations, so no global economies of scale can be leveraged. This makes it more difficult for smaller providers when the biggest U.S. holders of the spectrum use the standards bodies to facilitate creating equipment that only works for their portions of the band, thus orphaning bands of smaller providers. As a result, Lower A Block holders face far higher costs than those associated with other spectrum bands.

**Time to Market.** In first serving the needs of the two unique band classes that are dominated by AT&T and VZW, the Lower A Block holders are significantly disadvantaged through the lack of access to new devices and delays in the development of standards, chip sets, and equipment. For example, VZW had its LTE network deployed covering 100+ million US POPs before Band Class 12 was even fully ratified in the LTE standards body. Furthermore, VZW never integrated Band Class 12 into its LTE roll out plans even though it is the largest A Block spectrum holder, further hampering needed ecosystem support and leaving questions about VZW's plans for the Band Class. An interoperability requirement is therefore needed to create a competitive marketplace and a robust ecosystem, much like a number portability requirement was needed to ensure that customers could have meaningful choices.

**Prerequisite to Data Roaming.** Without an interoperability requirement, VZW and AT&T can easily use the standards body process to render the FCC's new data roaming requirements technically infeasible.

**911 and Public Safety Interoperability.** Some 911 calls could fail without an interoperability requirement. The 700 MHz spectrum provides a different footprint than other bands currently used for mobile. In a geographic (likely rural) location only served by a 700 MHz footprint, it is possible that a phone operating on the Lower 700 MHz A Block could only reach a Lower 700 MHz B and C Block tower but not be able to communicate due to differing standards or a lack of interoperability. In addition, commercial interoperability should offer cost savings for public safety. The Congressional Research Service predicts that carriers with common radio interfaces are expected to put the cost of public safety radios within the same price range as commercial high-end mobile devices (\$500). By contrast, non-interoperable radios for 700 MHz narrowband networks cost \$3,000 and up each.

**Jobs and Deployment.** Smaller wireless carriers and new entrants hold all of the A Block licenses beyond the top 25 markets, which are held by VZW. Whether they are competitive providers or the only provider, A Block licensees bring jobs and economic opportunities to their communities. The President's broadband deployment goal of reaching 98% of Americans cannot be met without the participation of all wireless carriers.

**Less \$ Needed for USF Subsidy in Rural Areas.** The cost needed to serve these areas will only go up and ultimately be paid for through USF.

**More \$ at Future Auctions/Diversity.** A major reason for the success of recent auctions is multiple bidders. Multiple bidders/entrants provide an opportunity for marketplace diversity and auction competition. These entities will not bid if they can simply be driven out of the marketplace through standards bodies practices. The overall pool of auction monies will be reduced and the larger carriers will see less competition for markets, further reducing revenues. (Note: Auction 92 includes Lower A Block licenses in Texas and West Virginia.)

**DECLARATION OF KRISTIN S. RINNE,  
SENIOR VICE PRESIDENT – ARCHITECTURE & PLANNING  
AT&T SERVICES, INC.**

1. My name is Kristin S. Rinne. I am Senior Vice President – Architecture and Planning. I am responsible for IT and network architecture and planning for AT&T. My additional responsibilities include the wireless network infrastructure and device technology for new wireless products and services.

2. Prior to my current position, I served as Cingular’s Chief Technology Officer with similar responsibilities. Earlier, I served as Vice President–Technology and Product Realization, in which capacity I was responsible for new product development from a technology standpoint, handset certification, and infrastructure vendor coordination. Prior to joining Cingular, I was Vice President–Technology Strategy for SBC Wireless, and I also worked for Southwestern Bell Mobile Systems as Managing Director–Operations. I have over 30 years experience in telecommunications.

3. This declaration discusses how AT&T’s acquisition of Qualcomm’s Lower 700 MHz D and E block spectrum (“Qualcomm Spectrum”) will enable AT&T to use this underutilized spectrum more effectively to provide a more robust wireless broadband service over AT&T’s LTE network.

4. AT&T will be able to make a higher and better use of the Qualcomm Spectrum than Qualcomm has been able to make of it. In his Declaration, David Wise, Senior Vice President, Finance & Strategy for Qualcomm, stated that Qualcomm’s FLO TV service entailed an intense and costly effort to utilize the Qualcomm Spectrum for a one-way, broadcast-type, subscription service in which content was available via a pre-determined master schedule, and

that Qualcomm concluded that the business model was not viable, leading it to agree to sell the spectrum.

5. AT&T will be able to make more effective use of the Qualcomm Spectrum by using supplemental downlink technology (also referred to as carrier aggregation technology) to bond it with blocks in other spectrum bands that AT&T will use in its nationwide LTE network. AT&T plans to commence deployment of that network beginning in the middle of 2011. This transaction will permit AT&T subsequently to supplement the capacity on the LTE network by combining the Qualcomm Spectrum with the AWS spectrum used in the LTE network. The transaction also will enable AT&T to combine the Qualcomm Spectrum with other spectrum AT&T may use in its LTE network, including 1900 MHz and 850 MHz spectrum. (As I discuss below, AT&T has no plans to bond the Qualcomm Spectrum with Lower 700 MHz B and C block spectrum due to self-interference concerns within a device.)

6. AT&T plans to deploy the Qualcomm Spectrum as supplemental downlink to its nationwide LTE network using carrier aggregation technology. Supplemental downlink technology will allow AT&T to use Qualcomm's unpaired 700 MHz spectrum in conjunction with AT&T's paired spectrum, thereby permitting substantial capacity gains. The technology facilitates the bonding of non-contiguous spectrum onto a single wider channel, which permits carriers to address the asymmetry of data flows between downlink and uplink channels. That asymmetry exists because wireless broadband users most often require far more downlink than uplink capacity. Such asymmetric flow results, for example, from the consumption of video and other data-heavy media content with mostly one-sided data flows.

7. I expect that AT&T, as well as other carriers in the United States and around the world, increasingly will turn to supplemental downlink as they attempt to efficiently manage

their spectrum to help meet consumers' increasing demand for wireless broadband services.

AT&T has experienced an incredible 3,000 percent increase in mobile broadband use over the last three years. During the third quarter of 2010, AT&T activated more than 8 million postpaid integrated devices, the most quarterly activations ever.

8. AT&T plans to move aggressively to integrate the Qualcomm Spectrum into its LTE network after the relevant 3GPP standards are released. AT&T expects the LTE Advanced standard (3GPP LTE Release 10), which includes the standard for basic supplemental downlink technology, to be released this year. However, the performance requirement specifications for each individual carrier supplemental downlink scenarios need to be developed subsequently by 3GPP. AT&T expects that the Lower 700 MHz D and E blocks will be incorporated into the LTE Advanced standard with 3GPP LTE Release 11, expected in 2012. After the standards are released, manufacturers will need to design, test and build chipsets, devices, base station and other network equipment utilizing the standards for these new spectrum blocks. Thereafter, AT&T will need time to test and certify handsets and other equipment and to begin to incorporate them into AT&T's network. I estimate that AT&T would be able to deploy handsets and equipment incorporating the Qualcomm Spectrum as early as 2014. Prompt approval of the AT&T/Qualcomm transaction would avoid any potential delay in putting this spectrum to a more efficient use.

9. As demonstrated in the Public Interest Statement, AT&T has been a leader in developing and deploying technology and equipment that meet consumers' increasing appetite for data-intensive and high-speed services. AT&T's continued leadership in introducing such technology and equipment requires it to have sufficient spectrum to satisfy the consumer demand for innovative mobile broadband and other wireless devices.

10. AT&T constantly strives to increase the efficiency of its use of spectrum resources to meet this demand. This effort includes adding and expanding cell sites, enhancing backhaul capacity (including deploying fiber and Ethernet), and adding WiFi hotspots and in-building distributed antenna systems. AT&T also is working directly with equipment vendors to address the tremendous growth in data traffic. However, the rapid spread of wireless broadband devices and the growing demand for bandwidth-intensive applications and services are creating a need for additional spectrum.

11. AT&T's deployment of its LTE network is intended to meet the expected increase in consumer consumption of mobile broadband capacity. AT&T will initially roll out LTE using 700 MHz and AWS spectrum. The 700 MHz and AWS spectrum will permit AT&T to roll out LTE in an efficient manner since this spectrum is currently clear of other AT&T services, which operate over AT&T's 850 and 1900 MHz spectrum.

12. However, as noted in the Public Interest Statement, AT&T has a nationwide average of only 27 MHz of 700 MHz and AWS spectrum for its deployment of its LTE network. Also, the spectrum chart AT&T is submitting with the Public Interest Statement shows many areas of the country where AT&T holds no 700 MHz or AWS spectrum.

13. The Qualcomm Spectrum will enable AT&T to expand capacity on its LTE network nationwide. AT&T will acquire the Lower 700 MHz D and E blocks in major metropolitan areas -- New York, Boston, Philadelphia, Los Angeles and San Francisco -- that are areas of high demand for advanced services and where AT&T currently needs -- and will continue to need -- incremental capacity to address growing demand. AT&T will be able to expand the LTE downlink capacity in such areas by as much as an additional 10 MHz, with the remaining 2 MHz available as a guard band.

14. Qualcomm's Lower 700 MHz D block spectrum covers the rest of the nation. In areas where Qualcomm holds only Lower 700 MHz D block spectrum, AT&T will use up to 5 MHz of the spectrum to expand its LTE downlink capacity, with the remaining 1 MHz available as a guard band.

15. Where AT&T currently does not hold 700 MHz or AWS spectrum, AT&T may take steps to clear a portion of its 850 MHz or 1900 MHz spectrum for LTE, as customers begin transitioning to LTE devices. This transaction will enable AT&T to use the Qualcomm Spectrum to expand the downlink capacity on its LTE network in those areas too.

16. AT&T has no plans to integrate the Qualcomm Spectrum with its Lower 700 MHz B and C block spectrum since such combination would create an unacceptable level of self-interference within a device if used simultaneously. For example, a customer using a handset would transmit signals using the Lower 700 MHz B and/or C blocks and receive signals using the Lower 700 MHz D and/or E blocks. Because these blocks are adjacent, there is not enough frequency separation between the uplink and downlink to prevent the mobile device transmitter from interfering with its own receiver. The receiver filter would not provide sufficient rejection of the transmitting signal. This signal would cause the receiver to saturate, resulting in gain compression and severe distortion. A guard band between the Lower C and D blocks is not a feasible solution.

17. In areas where AT&T already holds Lower 700 MHz B or C block spectrum, however, AT&T will be able to combine the Qualcomm Spectrum with AWS, 850 MHz or 1900 MHz spectrum as discussed above. The Lower 700 MHz interference concerns discussed above only mean that AT&T cannot use the Qualcomm Spectrum with the Lower 700 MHz B or C block spectrum simultaneously within a handset. In other words, a user still could receive

signals over the Lower 700 MHz D or E blocks and transmit over AWS, 850 MHz or 1900 MHz spectrum in places where AT&T also holds Lower 700 MHz B or C block spectrum.

18. The repurposing of the Lower 700 MHz D and E block spectrum also should significantly reduce the potential for interference with Lower 700 MHz A block devices. The Lower 700 MHz band plan presents unique technical limitations and challenges for all licensees. Even assuming deployment of LTE by carriers on the Lower 700 MHz A, B, and C blocks, and AT&T's bonding of the Lower 700 MHz D and E blocks as supplemental downlink with non-700 MHz spectrum, some technical limitations and challenges will remain. However, if the Lower 700 MHz D and E block spectrum is integrated into AT&T's LTE network and used for supplemental downlink, transmitters using the spectrum will be deployed closer to the ground and at power levels much lower than those permitted under the Commission's rules for broadcast-type services (allowed up to 50 kilowatts). This substantial reduction in transmission power on the Lower 700 MHz D and E blocks will mitigate interference into the Lower 700 MHz A block receive band, thereby advancing the public interest.

19. Of course, this transaction will not resolve all interference issues faced by A block operations. For example, the bulk of the Lower 700 MHz E block licenses (which are immediately adjacent to the A block) would not be affected by this transaction. In addition, Channel 51, which also is adjacent to the Lower 700 MHz A block, continues to be allocated for high power television broadcast and, thus, may interfere with the Lower 700 MHz A block.

20. This transaction will permit AT&T to provide a more robust and competitive LTE network. As a result, consumers will receive a far better LTE service than AT&T would have been able to provide absent this transaction. The addition of the Qualcomm Spectrum to the LTE network will result in trunking efficiency gains and higher downlink peak speeds, a

significant increase in throughput, and lower latencies in the network. Such network improvements will result in tangible improvements in LTE service to customers.

21. For example if 10 MHz of Qualcomm Spectrum is added to a 10 MHz downlink on the LTE network, the network may experience slightly more than a two-fold increase in the capacity available. As a result, AT&T will be able to handle a far larger number of customers using mobile broadband services. Also, user data speeds will increase since peak data rates increase linearly with the bandwidth of the carriers deployed. Thus, where downlink capacity is doubled from 10 MHz to 20 MHz, customers may experience a doubling of peak speed. Such increases in speed may permit the downloading of videos, files and other services in half the time than would have been possible absent this transaction. Customers of online gaming, video clips, streaming video and similar services may note a more seamless video or gaming experience and better resolution as a result of the increased throughput on the downlink. (Actual customer experience will depend on a number of factors, including system peak throughput and capacity, where a user is located, number of users in the area, backhaul capacities, traffic characteristics of users, customer device type and capabilities, local interference, mobility speed, and various factors related to network build and terrain.)

22. All AT&T customers -- including those not receiving services over the Qualcomm Spectrum -- may benefit from this transaction. Because AT&T will have more spectrum it can dedicate to mobile broadband service over its LTE network, this transaction will help relieve the demand on AT&T's spectrum capacity for other, non-LTE services. This will help reduce network congestion and provide a higher quality user experience to all AT&T customers.

23. Finally, in AT&T's Public Interest Statement being submitted today, AT&T notes that several carriers currently offering 4G service do so using spectrum above 1 GHz. AT&T also will use spectrum above 1 GHz to provide 4G service. AT&T will provide 4G speeds through its HSPA+ and LTE networks using a mix of spectrum, including AWS, 850 MHz, 1900 MHz and 700 MHz.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 13, 2011.

Signed: 

Kristin S. Rinne  
Senior Vice President – Architecture and  
Planning  
AT&T Services, Inc.