

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

In the Matter of)	
)	
Consumer Information and Disclosure)	CG Docket No. 09-158
)	
Truth-in-Billing and Billing Format)	CC Docket No. 98-170
)	
IP-Enabled Services)	WC Docket No. 04-36

**T-MOBILE USA, INC.
COMMENTS – MOBILE BROADBAND MEASUREMENT**

I. INTRODUCTION

T-Mobile USA, Inc. (“T-Mobile”) provides these comments in response to the Commission’s Public Notice seeking information about the measurement of mobile broadband network and service performance.¹ T-Mobile is an industry leader in delivering mobile broadband services, recently announcing the roll-out of its HSPA+ service to more than 25 major metropolitan areas in the United States² and covering 185 million people by the end of the year.

T-Mobile fully supports the Commission’s goal of improving consumers’ broadband service experiences, and has always strived to make sure that consumers have sufficient information regarding the quality and availability of its broadband services to empower them to

¹ See *Comment Sought on Measurement of Mobile Broadband Network Performance and Coverage*, Public Notice, DA No. 10-988, CG Docket No. 09-158, CC Docket No. 98-170, WC Docket No. 04-36 (rel. June 1, 2010) (“Public Notice”).

² See, e.g., Walter S. Mossberg, *Carriers Go to Battle Over Faster Networks*, Wall Street Journal (June 30, 2010) available at <http://ptech.allthingsd.com/20100630/carriers-go-to-battle-over-faster-networks/> (last visited July 7, 2010).

make more educated decisions.³ Measuring the speed and other network performance metrics of mobile broadband services, however, is exponentially more challenging than taking similar measurements in the fixed broadband context. T-Mobile and others are in the midst of deploying next generation mobile broadband networks and services, and due to the nascent state of both the networks and speed measuring techniques, it is premature to require mobile broadband providers to provide to consumers the detailed network speed information contemplated in the Public Notice.

The Commission should also be cautious of any reliance on user-generated data gathering techniques such as “crowdsourcing” because, not only are there significant complexities involved in measuring mobile broadband performance, it is unlikely such techniques will produce a truly representative sample of a provider’s broadband service. Further, the data obtained through the use of crowdsourcing could significantly impact consumer perception about the reported speeds if they are not made aware of the difficulties associated with gathering accurate data. Rather, for now, the Commission should continue to collaborate informally with service providers and third party measurement companies, which today provide valuable information to consumers regarding availability and quality of service, and allow all stakeholders in the wireless community time to develop collaborative industry standards for statistically reliable measurement techniques for mobile broadband services.

³ See T-Mobile 3G FAQs, <http://support.t-mobile.com/doc/tm23715.xml> (last visited July 7, 2010) (“T-Mobile 3G FAQs”); T-Mobile Personal Coverage Check, <http://www.t-mobile.com/coverage/pcc.aspx> (last visited July 7, 2010) (“T-Mobile Personal Coverage Check”).

II. DISCUSSION

A. T-Mobile Today Provides Extensive Service and Coverage Information to Consumers.

As the Commission recognized in its National Broadband Plan, “[w]ireless broadband is poised to become a key platform for innovation in the United States over the next decade.”⁴ The rate of mobile broadband use, in particular, is expected to increase significantly over the next several years.⁵ Because the mobile broadband marketplace is so competitive at the retail level, T-Mobile can effectively compete only if it supplies consumers with the information necessary to help them make informed decisions about T-Mobile’s products and services.⁶

In fact, mobile providers already are responding to consumer demand for information regarding their broadband services, including information about coverage, signal quality, and average and peak data rates. For example, T-Mobile was the first carrier to offer “Personal Coverage Check,” an application that provides consumers with street-level coverage and other service information at any U.S. address or location, on its website and in retail stores.⁷ T-Mobile has expanded the Personal Coverage Check to include information about its broadband offerings, including a useful comparative description of network speeds that a customer might expect in a

⁴ See Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 75 (Mar. 16, 2010) (“National Broadband Plan”).

⁵ See, e.g., Comments of 3G Americas - NBP Public Notice #6, GN Docket Nos. 09-47, 09-51, 09-137, at 4-5 (filed Oct. 23, 2009) (predicting that mobile broadband subscriptions worldwide will increase exponentially from less than 10 million subscribers in 2007 to more than 2 billion subscribers in 2014); National Broadband Plan at 76-77 (“By 2014, Cisco projects wireless networks in North America will carry some 740 petabytes per month, a greater than 40-fold increase.”).

⁶ See Reply Comments of T-Mobile, CG Docket No. 09-158, CC Docket No. 98-170, WC Docket No. 04-36, at 1-2, 22 (Oct. 28, 2009).

⁷ See T-Mobile Personal Coverage Check.

particular area.⁸ And, although the actual data transfer rates consumers obtain vary considerably based on browser capabilities, terrain, weather, distance from base stations, number of users in the sector, time of day, and other vagaries of radio-based services, T-Mobile also posts average expected speeds for data services on its website.⁹ According to a recent Commission survey, consumers are satisfied generally with their mobile broadband speeds.¹⁰

B. Providing Meaningful Mobile Broadband Information to Consumers Is a Complex Task that the Industry Is Addressing.

Mobility – the factor that makes mobile broadband service attractive to so many users – is also what makes the service’s characteristics so difficult to describe to consumers in other than general terms. T-Mobile and other mobile broadband providers work diligently to make useful and relevant information available to consumers. However, providing such information with regard to mobile broadband speeds or other performance metrics involves a wide variety of constantly changing factors that are not present for wired broadband services.

Specifically, the speed and other performance metrics of mobile broadband, like other mobile services, are affected by the geographic location of the user. For example, broadband quality of service, throughput, and availability can be affected by the distance between the user and the nearest base station, and by terrain and any intervening obstacles. A measurement at a

⁸ For a given street address, the Personal Coverage Check indicates potential network speed on a comparative scale as “very fast mobile web,” “fast mobile web,” and “mobile web,” and cautions consumers that their service can be affected by their equipment, specific location and obstructions, traffic volume, outages, technical limitations, signal strength, weather and other conditions.

⁹ See T-Mobile 3G FAQs.

¹⁰ See John Horrigan and Ellen Satterwhite, *Americans’ Perspectives On Online Collection Speeds For Home and Mobile Devices*, at 4 (June 1, 2010), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-298516A1.pdf (last visited July 7, 2010) (reporting that 71 percent of consumers are very satisfied or somewhat satisfied with the speed of Internet access from their cell phones).

specific location at one particular point in time may change based on any number of other changing factors in the surrounding environment. For instance, the number of users sharing the network in the surrounding operating area and the shifting traffic volume created by that use can affect mobile broadband speed performance. Mobile service quality and availability at a location also can vary depending on whether the user is outside or inside a structure, the nature of that structure, and weather and other environmental factors.

The speed with which customers can download or access information also depends on the technical capabilities of their personal devices and even whether the device is located in a case or pocket. As Apple discussed in a recent news release, “gripping almost any mobile phone in certain ways will reduce its reception by 1 [one] or more bars.”¹¹ In addition, mobile broadband providers rely on a variety of network facilities (*e.g.*, different types of backhaul and middle mile facilities with varying throughput rates) that can affect the mobile broadband speeds available to end users.

The circumstances described above are just some of the many factors that must be considered when attempting to provide meaningful mobile broadband information to the public. Importantly, data on network performance is only relevant and helpful to users of that information if it is collected and reported in a statistically accurate and reliable manner. For example, throughput speeds for mobile broadband services are often lower in urban areas than in rural areas due in part to spectrum capacity, network congestion, and the number of structures in cities. Comparing the average mobile broadband speeds of a provider whose network is located primarily in urban areas to those of a provider whose network primarily includes more rural

¹¹ See Press Release, Apple, *Letter from Apple Regarding iPhone 4* (July 2, 2010), available at <http://www.apple.com/pr/library/2010/07/02appleletter.html> (last visited July 7, 2010).

areas may create a false impression that one provider is “faster” or “better” than the other, even though the networks are built to the same technical standards. Such an “apple-to-oranges” comparison would not accurately reflect the providers or their services, and would be of limited or no use to consumers, the Commission, and the industry. Comparative measurements, no matter how accurate, reliable, or granular, would be beneficial to consumers only if the testing circumstances are virtually identical across all service providers and consider the multitude of elements that could affect service.

Although the rate of wireless innovation in the past two decades has been remarkable, the challenge of collecting and reporting accurate data is compounded by the fact that mobile broadband networks are relatively new in the marketplace. As noted above, T-Mobile recently completed deploying its HSPA network and is currently rolling out HSPA+ services and Ethernet backhaul in multiple markets across the country. Some providers, however, are still in the process of deploying third generation networks.¹² As a result, measurements may vary among providers. Furthermore, providers recognize that the applications and tools for taking extensive real-time or periodic measurements of mobile broadband use will necessarily consume valuable spectrum capacity that, as the Commission itself has acknowledged, is already severely constrained (particularly in urban areas).¹³ Running those applications also may drain the battery of a consumer’s device more quickly, impede a customer’s simultaneous use of other

¹² See National Broadband Plan at 77-78.

¹³ See, e.g., *id.* at 77 (“The growth of wireless broadband will be constrained if government does not make spectrum available to enable network expansion and technology upgrades. If the U.S. does not address this situation promptly, scarcity of mobile broadband could mean higher prices, poor service quality, an inability for the U.S. to compete internationally, depressed demand and, ultimately, a drag on innovation.”); see also *id.* at 84 (recommending making 500 MHz of additional spectrum available for broadband use within the next 10 years).

applications, or affect the reliability and accuracy of the gathered data. Thus, the Commission's attempt to help consumers by providing them with additional data about mobile broadband services could inadvertently impair consumers' use and enjoyment of those services depending on the data collection technique used.

In addition, the Commission should be wary of relying on user-generated data gathering techniques such as crowdsourcing.¹⁴ Standard crowdsourcing methods rely on users voluntarily providing information online (*e.g.*, through downloading a measurement application on their smartphones), and it is difficult to ensure that a representative sample of a provider's broadband use will be captured accurately.¹⁵ As previously explained, measuring mobile broadband performance is especially complex given the myriad factors that affect wireless services. It would be extremely difficult, if not impossible, to monitor and take into account all the technical and environmental conditions at the time of the crowdsourced measurement to ensure the data is reliable and relevant.

C. The Commission Should Continue To Work Informally with the Wireless Broadband Industry To Refine Network Performance and Coverage Measurements.

For the reasons stated above, it is no trivial task to create effective and statistically reliable tools to measure mobile broadband performance. But T-Mobile's experience is that the mobile industry has worked hard to develop new, better, and more efficient ways of evaluating and measuring mobile broadband use and performance. In fact, providers have tremendous

¹⁴ See Public Notice at 2-3.

¹⁵ See, *e.g.*, Anil Singh, Aakash Taneja, and George Mangalaraj, *Creating Online Surveys: Some Wisdom from the Trenches Tutorial*, 52 IEEE Transactions on Professional Communication 197, 200 (June 2009) (explaining that web-based survey techniques pose difficult challenges in ensuring the quality of the data gathered).

incentives to continue to do so – both to satisfy consumers’ demand for information about broadband services, and to help providers better understand and meet the service needs of their customers, increase the operational efficiencies of their networks, and stay competitive in the mobile broadband marketplace.

The industry’s ongoing efforts to develop consumer-friendly metrics, the complexities involved in determining the appropriate analytical methodologies for such metrics, and consumers’ general satisfaction with their mobile broadband services all counsel against the adoption of requirements for gathering and reporting mobile broadband speeds at this time. Rather, the Commission should continue to collaborate informally with service providers and third party measurement companies on the development of performance metrics and guidelines for statistically reliable measurement techniques for mobile broadband services.

III. CONCLUSION

T-Mobile urges the Commission to refrain from imposing requirements on the wireless industry for the collection and reporting of performance data for mobile broadband services at this time.

Respectfully submitted,

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