

**Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 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
_____)	

**SPRINT NEXTEL CORPORATION
COMMENTS ON MOBILE BROADBAND MEASUREMENT**

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**SPRINT NEXTEL CORPORATION
COMMENTS ON MOBILE BROADBAND MEASUREMENT**

Sprint Nextel Corporation (“Sprint”) respectfully submits these comments on the Commission’s Consumer Task Force Public Notice seeking comment on the measurement of mobile broadband network performance and coverage.¹ Sprint supports the Commission’s goal of ensuring that consumers are equipped to make informed decisions about their choice of mobile broadband providers. Carriers and third parties are already providing substantial information to consumers, however, that allow them to make informed choices. Moreover, given the numerous technical difficulties associated with measuring mobile broadband speeds, any Commission program would need to be carefully qualified and could face significant concerns surrounding privacy and network usage. Accordingly, the Commission should consider providing data on the types of applications and services available at particular speeds rather than attempting to provide additional testing information.

¹ 2009 Consumer Information and Disclosure; Truth-in-Billing and Billing Format; IP-Enabled Services; Comment Sought on Measurement of Mobile Broadband Network Performance and Coverage, , CG Docket No. 09-158; CC Docket No. 98-170; WC Docket No. 04-36, Public Notice, DA- 10-998 (rel. June 1, 2010).

I. SUMMARY AND INTRODUCTION

Through its website, brochures, advertisements and other materials, Sprint provides consumers with a large array of information and tools with which to evaluate whether or not Sprint is the best mobile broadband provider for their respective needs. Sprint regularly confirms the accuracy of its mobile broadband speed and coverage representations through a combination of field tests and independent, third party testing results. In addition to the materials that Sprint provides, mobile broadband consumers increasingly have access to independent speed and coverage tests and reviews published by an ever growing and sophisticated high tech consumer press.

Measurement of broadband speeds is difficult in the best of circumstances, but measurement of mobile broadband speeds is particularly problematic. A myriad of factors can affect mobile broadband network performance from data session to data session, including the location of the user and his or her distance from the nearest tower, the number of users accessing the tower at any moment in time, the types of handsets or devices used, the types of activities conducted (e.g., large vs. small file transfers), varying radio frequency conditions, and other factors that can make a significant difference in the performance and speeds achieved. Given these issues, and the many disclaimers that would be needed to be provided with any attempt to identify more granular information than is already provided by carriers and third parties, the Commission should first work to understand what information would be most useful to consumers.

Specifically, the Commission should consider whether it would be more useful for consumers to be provided information on the types of applications and services that could be used on different networks given their performance characteristics. In any data

compilations or online databases that the Commission ultimately makes available to the public, it should make clear to consumers the significant challenges associated with testing and compiling complete and accurate data on mobile broadband performance and coverage, and inform consumers that their observed speeds and performance may vary considerably from the Commission's published results.

II. SPRINT PROVIDES A BROAD ARRAY OF MOBILE BROADBAND NETWORK PERFORMANCE AND COVERAGE INFORMATION

Sprint provides its customers with a wide array of tools to determine mobile broadband network coverage and data rates. For example, the Sprint Coverage Tool² provides customers with interactive coverage maps showing detailed coverage information for Sprint's mobile voice and data networks. Sprint's Coverage Tool maps provide high confidence estimates of our coverage areas when using devices under optimal conditions.³ Using the Sprint Coverage Tool, a consumer can enter an address, city/state or zip code and view coverage maps as close as an exact house address to as broad as the entire United States. The Sprint Coverage Tool permits customers to identify, for any geographic area, whether coverage will be on Sprint's 3G or 4G networks or via roaming, to identify the average range and peak download and upload speeds customers can expect on each of the mobile data networks, and to identify the services available in each geographic area.⁴

² The Sprint Coverage Tool is available at <http://coverage.sprint.com/IMPACT.jsp?language=EN>.

³ See, http://shop.sprint.com/en/coverage/support/important_coverage_info_popup.shtml

⁴ The Sprint coverage tool does not yet identify average and peak 4G speeds or specific services available in 4G areas. However, Sprint is making that information available through other sources such as publicly available fact sheets for 4G products. See, e.g. <http://www2.sprint.com/mr/cmastaticfiles/non-landing//documents/PressKit/HTC-EVO-4G-Fact-Sheet.pdf>.

Sprint's Coverage Tool and other informational materials also caution customers about the speed variations that they can expect when using Sprint mobile broadband. For example, a link on Sprint's Coverage Tool webpage explains that estimating wireless coverage and signal strength is not an exact science. Sprint explains that there are gaps in coverage within Sprint's estimated coverage areas that, along with other factors both within and beyond Sprint's control such as LEC backhaul problems, network problems, hardware, software, signal strength, wireless device capabilities, structures, buildings, weather, geography, and topography, can result in dropped and blocked connections, slower data speeds, or otherwise impact the quality of services.⁵ Notwithstanding these limitations, however, Sprint's Coverage Tool provides Sprint's customers with detailed information regarding the service coverage.

Customers using mobile broadband connection cards, a Sprint mobile phone as a modem, or a Sprint mobile phone as a hotspot on Sprint's mobile network can also access Sprint's mobile broadband speed test to measure their broadband connection.⁶ This test provides users of Sprint's mobile networks with their current mobile broadband upload and download speeds as well as latency results. The Sprint speed test page also has a frequently asked questions section that provides consumers with a checklist of best practices that consumers can use in the event they observe slow mobile broadband speed test results.

⁵ See, http://shop.sprint.com/en/coverage/support/important_coverage_info_popup.shtml

⁶ Available at <http://www.sprint.com/landings/speedtest/?ECID=vanity:speedtest> .

III. SPRINT'S PERFORMANCE AND COVERAGE INFORMATION USES A COMBINATION OF FIELD TESTING, RF MODELING, AND INDEPENDENT THIRD PARTY VERIFICATION

To ensure that Sprint customers receive the most relevant information possible and to comply with state and federal truth in advertising requirements (as well as industry best practices), Sprint employs state of the art methodology to substantiate and ensure the accuracy of its network performance and coverage claims. Sprint's published speeds are based on a combination of direct field testing including fixed tests, mobile tests, and independent third-party drive testing, rigorous radio frequency modeling of tower sites, and vendor and industry consensus information concerning the data rates available using Sprint's mobile network technologies.

To test the speed and coverage of its 3G and 4G networks, Sprint deploys a geographically diverse population of fixed probes that provide measurements and feedback on network performance to Sprint. Sprint uses these measurements to ensure that Sprint's networks are performing within published speed ranges for each geographic area. Sprint also purchases independent, third party studies providing network performance and coverage information including, for example, mobile measurement and received signal strength information developed by a leading industry research firm. This data is used to update and verify Sprint's coverage maps, speed claims and other consumer tools. Further, as Sprint explained in its initial comments in this proceeding, Sprint also verifies its coverage tools against user perceptions. When issues are discovered, for example through trouble tickets generated by customers, Sprint investigates the issues and updates its coverage tools as may be required.⁷

⁷ See Comments of Sprint Nextel Corporation, CG Docket No. 09-158, CC Docket No. 98-170, WC Docket No. 04-36, at 13 (filed October 13, 2009).

IV. MOBILE BROADBAND CONSUMERS HAVE ACCESS TO INDEPENDENT, THIRD PARTY INFORMATION COMPARING THE SPEED AND COVERAGE OF WIRELESS BROADBAND NETWORK PROVIDERS

In addition to the information about speed and coverage provided by Sprint, wireless broadband consumers also now have a wealth of information about the speed, reliability, and coverage of mobile broadband providers through the ever expanding universe of magazines, websites, and blogs devoted to providing consumer advice in tech and communications products. As just one example, last year the high tech blog site Gizmodo conducted and published an independent, “coast to coast” 3G data speed test comparing the performance of the three largest major mobile broadband providers.⁸ Gizmodo provided its testers with connection cards from Sprint, AT&T and Verizon and performed multiple tests from multiple locations in eight major markets, testing and reporting both download and upload bandwidth results for each carrier. Gizmodo reported the speed test results for each market and carrier as well as a national average speed for each carrier.

PC World also now conducts annual 3G network tests comparing the performance of the major U.S. mobile broadband carriers and makes the results of those tests publically available.⁹ In its 2010 test, PC World hired testing consultant Novarum Inc. to measure network performance from more than twenty fixed locations in each of the following cities: Baltimore, Boston, Chicago, Denver, New Orleans, New York City, Orlando (Florida), Phoenix, Portland (Oregon), San Diego, San Francisco, San Jose, and

⁸ Available at <http://gizmodo.com/5111989/the-definitive-coast-to-coast-3g-data-test>

⁹ Available at http://www.pcworld.com/article/167391/a_day_in_the_life_of_3g.html; http://www.pcworld.com/article/189592/atandt_roars_back_in_pcworlds_second_3g_wireless_performance_test.html

Seattle. Novarum ran 5443 individual tests from 283 testing locations. At each location, Novarum measured download speed, upload speed, and reliability for each provider's 3G service. PC World then compiled, analyzed, and published the results along with detailed explanations of what the test revealed and what shortcomings consumers should keep in mind when reviewing the results.

V. THE COMMISSION SHOULD DETERMINE WHAT INFORMATION CONCERNING MOBILE BROADBAND SPEEDS AND COVERAGE IS MOST RELEVANT TO CONSUMERS PRIOR TO MEASURING AND PUBLISHING DATA AND SHOULD ALSO INFORM CONSUMERS THAT THEIR OBSERVED SPEEDS MAY VARY CONSIDERABLY FROM THE COMMISSION'S DATA

Given the robust retail competition for mobile broadband and the widespread availability of company provided and third-party information, additional Commission data collection would appear superfluous. If the Commission begins collecting and publishing such data, including data obtained through the use of crowdsourcing, however, it must address a number of critical issues. First, the Commission must ensure that any privacy and other legal and network burden issues can be adequately resolved. Secondly, the Commission must ensure that the data it provides is useful and not in any way misleading to consumers.

Sprint is concerned that in seeking comment on the details of measurement metrics, data gathering methods, user generation of data, etc. the Commission is focusing on the trees rather than the forest. If the Commission's goal is to provide consumers with relevant information to make informed choices about the communications options available to them, then the Commission should work with industry experts and consumer groups to better understand what additional information consumers require that is not already available and that is appropriate for the Commission to collect and provide.

Rather than providing consumers with more numbers, a more useful approach for the Commission may be to provide consumers with a better understanding of what kind of experience consumers can expect from their mobile broadband devices and providers. After seeking consumer input, the Commission could, for example, identify categories of applications and services that consumers want (i.e. “streaming music”) and then identify the range of service speeds and types of devices capable of providing consumers with the experience they seek (i.e. “smartphones or computers with mobile broadband connection cards running on networks with data speeds above _____ mbps”).

To many consumers, it may not matter that one carrier’s network is achieving download speeds of 650 kilobits per second while another is achieving download speeds of 675 kilobits per second, if either speed would be sufficient to perform the consumer’s desired task. In recognition that consumers are often more concerned with what they can do with a service rather than some out of context speed measurement, Sprint, for example, has created a series of videos available on Sprint’s website to explain to consumers what they can do with 4G service from Sprint.¹⁰ These videos explain that Sprint’s 4G network can be used to stream HD movies or connect multiple Wi-Fi enabled devices to the Internet using Sprint’s Overdrive™ 3G/4G mobile hotspot.

That actual broadband speed numbers are not as important to consumers as whether or not a consumer’s experience meets his or her expectations is supported by the recently published results of the Commission’s own survey on consumer broadband speed satisfaction. That survey found that while only 1 in 5 American broadband customers could identify the home download speed to which they subscribed, 9 out of 10

¹⁰ See Sprint’s 4G website at <http://now.sprint.com/nownetwork/4G/?ECID=vanity:4g>

were “very” or “somewhat” satisfied with the speed of service.¹¹ This finding suggests that consumers are focused on whether the service meets their needs (and perhaps other matters like customer services or rates) rather than on comparing one service metric against another in the absence of any context. Sprint does not mean to suggest that the Commission should not collect data regarding mobile broadband network performance, but the Commission should balance the purpose for gathering the data and its usefulness to consumers with the costs, burdens, and complexities associated with its collection in deciding what is actually required.

Should the Commission press forward with measuring and publishing mobile broadband speed and coverage data, the Commission should first and foremost recognize the tremendous challenges involved in producing verifiable, repeatable mobile broadband performance measurements. This difficulty is one of the reasons Sprint provides its customers with average speed and top speed information in conjunction with explicit disclosure that actual speeds will vary based on an extensive list of factors and variables, many of which are outside of Sprint’s control.

The actual speed of mobile broadband service depends upon many variables including, but not limited to, the number of users on any particular site, distance from the site, weather conditions, structures and/or obstructions, topography, frequency band, air interface, device characteristics and condition, RF interference, and mobility just to name a few. A customer’s actual speed will also vary based on many variable conditions within the Sprint network and the Internet as a whole. Actual experienced speeds in any

¹¹ See *Americans’ Perspectives on Online Connection Speeds for Home and Mobile Devices*, Summary of Findings, John Horrigan, Ellen Satterwhite, (rel. June 1, 2010) available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-298516A1.pdf

customer session will vary by the level of upstream and downstream traffic in the network, the applications in use, the speeds and capacities of other network providers, the server performance for the content accessed by the customer and the method of delivering that content, and countless other variables. For this reason Sprint provides its customers with a clear maximum speed that may be achieved under ideal conditions and a range of average speeds that reflect the range customers can typically expect under ordinary usage conditions.

The Commission should similarly ensure that its published broadband speed results provide clear disclosure to consumers about the Commission's testing protocol and methodology and explaining that the speeds a consumer may experience during any given data session may vary considerably from the published results. The Commission should also disclose any relevant assumptions underlying the testing and any anomalies or artifacts that might be introduced as a result of the Commission's testing methods. For example, crowdsourced data collected using a program running on Apple's iOS will collect data from only one network (AT&T). Crowdsourced data collected using an Android application will be collected only from mobile devices operating on the Android platform, but over multiple networks. Neither provides a comprehensive view of what a "typical" customer could necessarily expect. The Commission should disclose the potential for skewed data resulting from such collection issues and any protocol that may be used to compensate for such issues.

VI. CONCLUSION

Sprint supports the Commission's goal of ensuring that mobile broadband consumers have access to accurate and timely information about the mobile broadband services to which they subscribe. Sprint provides consumers with a wide array of accurate and verified

information about Sprint's mobile broadband performance and coverage including detailed maps and verifiable average speed ranges customers can expect. Consumers also can obtain information on the speed and coverage of mobile broadband networks from an ever growing number of third party reviewers and consumer oriented sources. Should the Commission decide to measure and publish its own mobile broadband speed information, the Commission should do so by first identifying what additional information consumers need and then ensuring that the Commission fully discloses the usefulness and accuracy of the Commission's mobile broadband speed and coverage data.

Respectfully submitted,

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