

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

Re:

Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz
Band, GN Docket 12-354;

Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other
Providers of Mobile Data Services, WT Docket 05-265;

Protecting and Promoting the Open Internet, GN Docket 14-28;

Framework for Broadband Internet Service, GN Docket 10-127

Comment of MFRConsulting

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**Assessment of the CTIA Report - Mobile Broadband Spectrum: A Vital
Resource for the U.S. Economy**

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Introduction

CTIA-The Wireless Association® recently announced the publication of a report issued by the Brattle Group and prepared on its behalf, on the subject of the value of Mobile Broadband Spectrum.¹ The findings of this report are significant. They have important implications for the most desirable future allocations and re-allocations of scarce spectrum to generate the greatest value for the US economy and society and uphold the public interest.

This document assesses the credibility of the methodology employed in this report for the CTIA. It assesses the extent to which its findings are valid and should be included as constructive inputs in debates about spectrum policy and for the purpose of reaching decisions about frequency allocations, given that several parties including but not limited to the CTIA's own members are presenting claims that they deserve either more dedicated or licensed spectrum, and/or additional access to spectrum on a shared basis subject to specified rules.

It is possible that the CTIA may include this report in a filing to the Commission, although as of now whether such a filing has been or will be made is unknown. Nevertheless the report is an element of the CTIA's messaging about spectrum that whether filed or not is relevant to the Commission's deliberations and internal analyses in several Dockets.

Summary

The findings of the report sponsored by the CTIA on the value of mobile broadband spectrum, and the much greater value, or social welfare value, generated by its uses, are based on an illogical and flawed methodology. As a consequence, the report's findings are unjustified and make no useful contribution to the formulation of spectrum policy, or rules, for the allocation and assignment of spectrum between different constituencies that will generate the greatest value for the US economy and society.

There is widespread agreement that mobile services make a sizeable contribution to the economic health and socio-political development of the US, and the world. The technology and capabilities of cellular networks have achieved remarkable advances over the past three decades, that have also concurrently seen a fundamental transformation and progression from the narrowband circuit-switched to the broadband, Internet Protocol (IP) era. Nevertheless, given the multiple diverse constituencies, uses, and purposes to which scarce spectrum resources are being and will be exploited, it behooves major participants, including the CTIA and its members, to present information and analyses that represent

¹ C. Bazelon and G. McHenry, <http://www.ctia.org/docs/default-source/default-document->

honest endeavors to shed light and provide guidance on critical technical and business issues.

The resolution of these issues involves sometimes complementary and sometimes conflicting interests. The scarcity of spectrum means that conflicts will arise among legitimate interests, with claims on access to spectrum to meet their commercial and other purposes. The goal of this REPORT should be to deliver estimates, or forecasts, based on a credible methodology and the best available information and evidence of the value, actually and potentially generated by uses of licensed spectrum for mobile communications services, both in absolute terms and relative to alternative allocations of spectrum. Unfortunately, the REPORT does not achieve its goal that requires meeting a standard of objective, fact-based analysis.

The endorsement of this REPORT by the CTIA is yet another example of its data and evidence-averse “research,” which it has persistently published and exploited for years despite compelling contradictory evidence, made known to the CTIA and the author of the REPORT, yet never rebutted, in presenting a spurious spectrum efficiency metric and a misleading statistic (so-called “wireless-only” households) that exaggerate the value created by mobile operators, and support misleading claims of the allegedly superior performance of its largest members compared to other operators in the US and globally².

Methodology

The methodology used to arrive at the results presented in this REPORT includes the following steps:

1. The "value" of mobile spectrum is defined as the price operators are prepared to pay for licenses (as Oscar Wilde said or has one of his characters say, "A cynic is a man who knows the price of everything and the value of nothing.")
2. The prices or values of all the spectrum currently allocated and assigned in various bands are derived in terms of \$ per MHz-POP from the prices paid in the most recent AWS-3 auction completed in January 2015 (not what was paid originally to acquire licenses which historically ranged from zero upwards). Historical prices paid for licenses in different bands are adjusted, taking account of the results of the AWS-3 auction and several other considerations, e.g., whether a band is internationally harmonized, and therefore likely to be less costly to deploy a network in this band than in one that is not. Then the total "value" of this spectrum summed across all bands, based on the price of each one (645.5 MHz of currently allocated and licensed spectrum in bands from 700 MHz up to 2.5 GHz) is calculated as almost \$500 billion.

² Martyn Roetter, “The Top Ten Myths Major Broadband Providers Use Against Net Neutrality,” Bloomberg BNA Daily Report for Executives, July 30, 2014.

3. Various economic studies are cited that indicate that the annual consumer surplus created by users of spectrum is equal to the value of the spectrum used³.

4. The total consumer surplus, or contribution to social welfare, is then calculated as a Net Present Value (NPV), assuming discount rates of 5% and 10% applied to an annual surplus equal to the spectrum value. This calculation yields NPVs of 10-20 times the annual consumer surplus, i.e., 10 -20 times the spectrum value, or \$ 5-10 trillion⁴. This huge sum is contrasted with a calculation by another source, using a different methodology, of the total surplus (consumer surplus plus producer profits) from unlicensed wireless spectrum of (only) \$222 billion.⁵

There is a logical flaw in this methodology. It implicitly assumes that decisions taken by mobile operators at one and several points in time, under very different circumstances (financial climate, state of technology, perceptions of market demand, regulations, auction rules, competitive dynamics, management priorities of individual major operators etc.,) that influence how much they are prepared to pay for licenses offered at these times somehow determine the surplus value that customers will generate from use of the services provided over networks deployed in this spectrum during a period of many years. In other words, highly contingent prices paid by mobile operators for one asset, at one or several times, are used as the basis for estimating the value that is created by customers under very different and varying conditions. The empirical regularity of the three studies cited in Table 3 of the one-to-one relationship between the consumer surplus generated from mobile broadband services and the value of the spectrum that enables the services is evidence of limited correlation at best, but not of a mechanism that will produce the same ratio regardless of the extent to which conditions may change. Moreover two of these studies were published in 2003 and 2004 well before the explosion in mobile broadband, and even the most recent study was published in 2009, before the initial commercial launch of LTE services.

In reference to the AWS-3 auction, the REPORT says, "...results from this auction represent new information that requires a significant upward revision to all spectrum price expectations." It goes on to explain that these auction results include prices that were two to three times pre-auction expectations.

Are we to assume that decisions taken by a specific set of bidders (excluding for example the #3 mobile operator, Sprint, that chose not to participate) in a specific set of contingent circumstances, in late 2014/early 2015, miraculously increase the consumer surplus attributable to licensed spectrum by a factor of 2 to 3, or in this case by \$2.5 - 6.7 trillion, compared to the result that a Report written pre-auction would have found? If the perception of the value of one asset can change so substantially and rapidly why should the value of all activities dependent on that asset but that also depend on many other inputs and factors necessarily change in lockstep?

³ Table 3, REPORT, *ibid*.

⁴ Table 3, REPORT, *ibid*.

⁵ Footnote 36, REPORT, *ibid*.

Another criticism of the REPORT is that while it refers to the allegedly much lower value of unlicensed spectrum, it makes no mention of the significant amount of traffic involving mobile devices or subscribers to mobile networks that is off-loaded to Wi-Fi.⁶ This proportion may not be the same as the proportion of the total value that users of mobile devices generate (it may be higher or lower), since the mix of applications and services accessed via Wi-Fi may not correspond exactly to those accessed via licensed spectrum. Nevertheless, the proportion of traffic is a credible proxy for the proportion of value in light of the current information available to this author. Notably the new “App Economy,” which is cited as an example of a significant new source of wireless-enabled value in terms of employment and revenues⁷, involves the use of unlicensed wireless connections to a substantial extent. Unlicensed spectrum will also be significant in the forecast Internet of Things⁸ on which many optimistic expectations for revenues rest and rely.

The proportion of total “mobile” traffic that is off-loaded is generally believed to be significant. If it is 50% or more, then since the same proportion of the consumer surplus associated with mobile users should be credited to unlicensed spectrum, the finding or suggestion supported by the REPORT that spectrum licensed to mobile operators is the source of more value than other uses of scarce spectrum is discredited for this reason alone.⁹

Conclusion

The findings of the CTIA-sponsored report, “*Mobile Broadband Spectrum: A Vital Resource for the U.S. Economy*” are invalid. They are derived from a methodology that illogically ties the total value created over several years by a plethora of activities by consumers to the contingent fluctuating values of spectrum as defined by the prices that mobile operators are prepared to pay for licenses at a specific point in time and stage in the development of mobile markets, technologies and competitive dynamics. Moreover the methodology fails to take into account the roles of other productive, value-generating uses of spectrum that are complementary as well as competitive to licensed spectrum.

⁶ <http://ipcarrier.blogspot.com/2014/06/wi-fi-offload-will-represent-52-of.html>

⁷ Page 22, REPORT, *ibid*.

⁸ Page 23, REPORT, *ibid*; <http://searchconsumerization.techtarget.com/tip/The-best-choice-for-enterprise-LoT-networking-is-Wi-Fi>

⁹ Traffic off-loaded via Wi-Fi is usually although not always transmitted over a fixed broadband link. A useful and unbiased analysis would identify and evaluate the intrinsic complementarity between licensed and unlicensed spectrum and investment in fixed facilities, instead of making exaggerated claims to justify maximum demands for licensed spectrum for one category of players, however important it undoubtedly is, at the possible undesirable expense of others.

The messages presented by the CTIA built on these findings are being delivered as propaganda¹⁰, with the goal of securing the allocation of as much spectrum as possible to its members, without due regard for the legitimate interests and needs of other constituencies that deliver and use wireless-based services. Furthermore, the CTIA does not give proper consideration to the public interest, despite the obligations of the holders of licensed spectrum as stewards of scarce public resources.

¹⁰ Licensed Spectrum for Commercial Wireless Networks Generates More Than \$400 Billion in Annual Economic Activity for America, *ibid.*