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July 11, 2012

0855

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

Dear Chairman Genachowski:

With the enactment of P.L. 112-96 earlier this year, Congress took a notable but incremental step in an effort to free up additional spectrum to meet the growing demand of wireless broadband. As I have stated before, I believe more can and must be done to meet the future needs of all spectrum users and properly address existing spectrum challenges. This includes a comprehensive spectrum inventory, more strategic and long-term planning of spectrum resources, and greater collaboration between the Federal Communications Commission (FCC) and the National Telecommunications and Information Administration (NTIA). In addition, we must also continually promote more investment in infrastructure and foster greater technical innovation.

While increasing wireless network capacity depends on a combination of spectrum, technology, and topology[1], we must focus a majority of our attention on encouraging technical innovation given the existing constraints with the other areas and how technical advancements will address them. For example, while still in the laboratory, quantum entanglement[2] and the recently reported "twisted" waves[3], hold amazing potential to significantly—even possibly infinitely—increase capacity without any additional spectrum. Also, dynamic spectrum access and cognitive radio can considerably improve utilization by more aggressive spectrum sharing.

We are still a little ways off from these emerging technologies being in the marketplace and the escalating demand for spectrum presents significant challenges to industry, as well as the FCC and NTIA that manage this vital, yet finite resource. As more entities use spectrum to provide services, the ecosystem becomes more crowded and efforts among users to peacefully coexist become more difficult. As a result, disputes among licensees regarding potential harmful interference of new uses for spectrum that could disrupt existing services are occurring with greater frequency.

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[1] Real Wireless Ltd., "Report for Ofcom 4G Capacity Gains – Final Report." January 27, 2011, page 115, http://stakeholders.ofcom.org.uk/binaries/research/technology-research/2011/4g/4GCapacityGainsFinalReport.pdf

[2] Eric Bland, "Beam me up, Scotty, Scientists Teleport Info 10 Miles," DiscoveryNews, June 7, 2010, http://news.discovery.com/tech/teleportation-quantum-mechanics.html

[3] Steve McCaskill, "Twisted Signals Could Increase Spectrum Capacity 'Infinitely'" TechWeek Europe, March 2, 2012, http://www.techweekeurope.co.uk/news/twisted-signals-could-increase-spectrum-capacity-infinitely-64366

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The conflict between LightSquared and the Global Positioning System (GPS) community, which is just one example in series of interference disputes over the past decade, is very disconcerting because it involves two very important services—wireless broadband and GPS. Given the significant benefits both technologies provide to millions of Americans and businesses, presenting an "either-or" scenario undermines innovation, the introduction of new services, and consumer choice. However, in February, the FCC proposed to "suspend indefinitely" LightSquared's underlying Ancillary Terrestrial Component (ATC) authorization[4] and seemingly proffered no counsel on what possible alternative solutions exist to satisfactorily resolve the interference dispute that exists between the parties, such as additional modifications to LightSquared's proposed terrestrial network to mitigate interference, retrofitting GPS devices over time, or recommending alternative spectrum LightSquared could exchange its current licenses for.

In addition, though it is one application out of many, NTIA concluded in a letter "there is no practical way at this time to mitigate the inference that LightSquared's proposed network would cause to personal/general navigation GPS receivers."[5] However, one of the requirements of Part 15 of the FCC rules, which many of these personal GPS devices operate under, is that "interference must be accepted that may be caused by the operation of an authorized radio station, by another intentional or unintentional radiator…"[6]

As I have written you in the past, I believe one of the problems contributing to this interference dispute, and previous ones, is the lack of clear receiver performance guidelines. Improving the interference immunity of device receivers will make devices more reliable, free up more spectrum, and help avoid future interference disputes. Given the increasing demand and heterogeneous nature of the spectrum ecosystem, it is the responsibility of the FCC, NTIA, and industry to ensure the use of more interference-robust receivers as suggested by a 2003 NTIA report on receiver spectrum standards[7].

While the FCC and NTIA have proposed some additional action, it is my hope there will be a more detailed plan by both agencies to address various issues related to this dispute in the broader context. For example, how should government and stakeholders deal with situations, such as this recent case, in which a large number of users of spectrum may be affected by changes to adjacent spectrum licenses, and what is government doing to ensure that future users are fully aware of the potential for conflicts with current users and developing a process for resolving them? Also, what band assessments are agencies performing to determine where similar conflicts like this one may exist and what changes are necessary in order to accommodate future repurposing in adjacent bands to ensure proper protections? Lastly, since addressing receiver performance has been a constant recommendation over the past several years, what steps can government take to encourage the improvement of current receivers, while accounting for the costs and related concerns of users?

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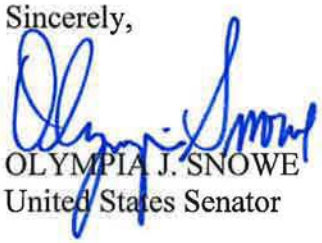
[4] DA 12-214, February 15, 2012
[5] DoC Assistant Secretary Lawrence Strickling to FCC Chairman Julius Genachowski, February 14, 2012
[6] 47 CFR 15.5.b
[7] U.S. Department of Commerce, *RECEIVER SPECTRUM STANDARDS Phase 1 - Summary of Research into Existing Standards* (NTIA Report 03-404), November 2003

As you know, we must constantly drive toward better technology and more efficient use of spectrum to ensure continued growth. As Thomas Edison once replied when asked how he felt about his repeated failings to design a light bulb, he stated "I have not failed. I've just found 10,000 ways that won't work." If we are to maintain this nation's leadership in innovation and technology then we must not retreat from working through difficult problems in order to achieve results that benefit our economy and enhance innovation. This includes maintaining a resolute goal of achieving harmonious coexistence of different services in adjacent bands. It will also require additional steps toward comprehensive spectrum policy reform. That is the only way we will be able to ensure the long-term health, wealth creating potential, and efficient use of spectrum.

Sincerely,



OLYMPIA J. SNOWE
United States Senator

cc: Commissioner Robert M. McDowell
Commissioner Mignon Clyburn
Commissioner Jessica Rosenworcel
Commissioner Ajit Pai
Assistant Secretary Lawrence Strickling, Department of Commerce