

**Testimony of Mark C. Kelley
Chief Technical Officer of Leap Wireless International, Inc.**

Mr. Chairman and Members of the Commerce Committee:

Thank you for the opportunity to appear before you today. I am Mark C. Kelley, Chief Technical Officer for Leap Wireless International, a San Diego-based wireless communication carrier. Leap provides wireless service under our Cricket Communications brand in over 20 markets, including markets in Nevada, Louisiana, Tennessee, Oregon, Georgia, North Carolina, California and many other markets across the US. We are a new, and we believe quite innovative, carrier.

All of you are familiar with AT&T, Verizon, Cingular and the other large wireless carriers. You may also be familiar with the leading industry trade organization, CTIA, but you most likely have never heard of Leap. We provide unlimited local mobile phone use for a very low fixed monthly price. Our customers' average bill is about half the national average for mobile phone bills. However, our subscribers use their Cricket mobile phones far more on average than other wireless carriers – 1,100 minutes per month, compared with an industry average 300 minutes. Clearly we are more of a landline replacement than a classic mobile phone company. We provide this service using only 10 to 15 MHz of spectrum – total.

Our message to this committee is very simple. First, we believe the committee needs to understand the facts about 3G services, and the spectrum required to deliver those services. Second, we believe that the best use of scarce wireless spectrum is to have a holistic approach that focuses on competition-driven innovation and efficient spectrum use.

Let me first speak about technology. First generation mobile services were essentially putting two-way analog FM radios in small, mobile packages. This technology served its purpose and is still in use today. Second generation mobile technology was essentially a digital version of first generation. This “generational” shift provided higher capacity, security and the ability to transmit digital data directly. This dominant digital technology takes several flavors – European created GSM technology and US created TDMA and CDMA technology.

We are now at the point of another technology shift to Third Generation technology. The primary driver of this shift is to desire provide higher data speeds, and when possible, higher voice capacity. The overall requirements of 3G services are universal: to provide 144 Kbps data speed for vehicular speed service and up to 2000 Kbps for fixed applications; speeds comparable with landline broadband services. While there were several quite different technical approaches to meet second-generation requirements – which were quite different around the world – there is one fundamental approach to third generation – CDMA technology pioneered here in the U.S.

There are two flavors of this 3G CDMA technology. One flavor is an evolutionary growth for carriers who currently use US CDMA as their second-generation technology, such as Leap, Verizon, Sprint and others. That flavor is called cdma2000. cdma2000 will be rolled out in several phases.

The first phase of this third-generation technology will provide over 144 Kbps data rate (high speed wireless data) for vehicular speed applications. At the same time, this technology will nearly double the amount of voice phone calls that can be carried across a fixed amount of spectrum. That is to say, it nearly double today's voice capacity. Leap and several other carriers will be deploying this first phase of 3G technology later this year, using our existing spectrum.

I'd like to take a moment to discuss voice capacity. Carriers using the US developed CDMA second-generation digital technology enjoy a three to four times voice capacity advantage over those using GSM technology – assuming the same amount of spectrum. Stated differently, a carrier using GSM technology needs three or four times the amount of spectrum to carry the same amount of calls as does a 2G CDMA carrier. This “voice capacity” gap will continue to increase as we follow our different technology paths. Indeed, after rolling out the first phase of 3G the capacity gap will be more like ten times the voice capacity.

The second phase of cdma2000 is focused on high mobile data speed. It will provide fixed data speeds of up to 2,400 Kbps – over 100 times faster than is available today. This technology will likely spur rapid wireless broadband data penetration where it is deployed. We at Leap plan to deploy this second phase of 3G early next year in several markets. We will be deploying these two phases of 3G in our existing spectrum, which as I mentioned is primarily bands of 10 MHz and 15 MHz total.

The reason we are able to deploy 3G technology here in the United States during the next 12 months is due to the technology path we have chosen – cdma2000 – which was developed here in the U.S., precisely to address the capacity needs that U.S. engineers knew would exist in this country.

There is another flavor of CDMA technology that will be used for 3G called WCDMA. WCDMA stands for Wideband CDMA, so called because of the wide channels that it uses. Unlike cdma2000, WCDMA requires large new swaths of virgin spectrum to launch even a single channel.

WCDMA has been described by its developers as the “world standard” 3G technology. It was developed by Europeans to be put in the new spectrum they auctioned last year. WCDMA is the “evolution path” for European-designed second generation GSM technology.

If you believed some of the press reports and marketing materials you would think that the U.S. is behind Europe because we have not yet cleared out sufficient spectrum so that carriers would be able to deploy this flavor of technology. The glaring irony here is that the U.S. flavor of technology outshines the European flavor no matter how you measure it from a technological

perspective, and yet some here in the U.S. who have chosen the less efficient European path complain that somehow the U.S. will “fall behind” Europe and Asia if we don’t follow their lead.

But the European rush to 3G has, so far anyway, been a disappointment – with frequent reports of new delays in deployment. This is a result that must be avoided. Prudent spectrum management will accomplish goals in the national interest by maximizing efficiency and spurring competition. What matters most is not how much spectrum is made available, but how that spectrum is used.

Technology needs to be tried, tested, improved and made reliable before it is ready for widespread commercial use. And the best technology path is one with a painless evolution from existing standards into new standards without requiring excessive cost and lots of new spectrum. For example, when color TV was introduced there was no need to clear out lots of new spectrum – the technology allowed the color portion fit into the existing spectrum. Additionally, the system was backward compatible so that folks who could not afford a new color TV right away could still use their black and white TV while viewing the same signal. The wireless technology path that Leap and some other US companies are using does the same thing – it permits second and third generation technologies to co-exist in the same band, efficiently.

The ability – and the need – to innovate and compete, to try new businesses and new technology, has made ours the greatest economy in the world. The fact that U.S. engineers developed CDMA in the first place is testimony to that. Businesses will innovate when they need to.

Consider the Internet, where we’ve recently seen great innovation. Now, only the strongest, most innovative, are surviving. The attractive aspect of the Internet for innovation is that the so-called “barriers to entry” are low. A few software engineers, some computers and office space and you’re off to the races.

The same cannot be said of wireless services. The barriers to entry there are high – and in some cases literally insurmountable – because the available spectrum is held primarily by a small set of very large carriers. And when they hold all the spectrum, they can exclude others. This stifles competition, and it stifles innovation.

The FCC has a policy that promotes competition, while also forcing carriers to use spectrum efficiently. That policy is the spectrum cap, which prohibits a single carrier from holding more than one fourth of the total spectrum available for use. The spectrum cap is a good policy. It leaves room for innovators like Leap, and it ensures that carriers use spectrum efficiently.

While some carriers complain about the cap, in fact the current spectrum cap of 45 MHz is an extraordinary amount of spectrum. We at Leap are providing full PCS service, with an average of 1,100 minutes of use per month with 10-15 MHz of spectrum. We could provide unlimited service to every single human being in our service area with about 25 MHz of spectrum. And I’m not sure I’d really know what to do with 45 MHz.

It's true that some foreign carriers have over 60 MHz of spectrum. But beware of analogies to situations that are not analogous. The population density here in the U.S. is around about one-tenth that of Europe. Likewise, relatively inferior wireline service there has led to greater use of wireless as an alternative. When you combine the use of relatively inefficient GSM technology with higher population densities and greater usage, it is clear that foreign carriers would need significantly more spectrum than the their U.S. counterparts.

Does that mean that Leap believes no new spectrum is ever needed for commercial mobile use here in the U.S.? No. We are frustrated by the fact that we are currently not able to offer our innovative Cricket service in our own headquarters – the city of San Diego, and other places in the U.S. We believe that Congress and the FCC should work to make spectrum available, and should ensure that spectrum is used efficiently, by the maximum number of competitors.

However, we are concerned if spectrum management is hastily performed for the purpose of “not falling behind” some imaginary lead held by some other countries, that will make the U.S.’s competitive situation worse, not better. Congress and the FCC should ensure that what spectrum we have is used efficiently.

In summary, I would like to reiterate that the U.S. has a technology lead in wireless; we are not behind anybody. And Congress should be skeptical of any claims that carriers need vast swaths of new spectrum to deploy third generation technology: Leap will deploy 3G services within the next 12 months, using small amounts of spectrum that it already has. Our spectrum policy should focus on innovation through competition, and should encourage the efficient use of this scarce public resource.