

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Petitions Regarding the Use of Signal Boosters)	WT Docket No. 10-4
and Other Signal Amplification Techniques Used)	
with Wireless Services)	

COMMENTS OF NEXTIVITY, INC.

Nextivity, Inc.

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Nextivity, Inc. (“Nextivity”) respectfully submits these comments in response to the Federal Communications Commission’s (“Commission”) request for comment on petitions regarding the use of signal boosters and other signal amplification techniques used with wireless services.¹

Nextivity is a leading developer of indoor coverage solutions and their underlying software and silicon technology.² The company’s indoor coverage systems for residential and business users (Cel-Fi) leverage advanced signal processing and intelligent antenna design to optimize the experience of wireless subscribers and increase RF network capacity within the building, working in harmony with the cellular macro network. Nextivity’s products are available in

¹ Wireless Telecommunications Bureau Seeks Comment on Petitions Regarding the Use of Signal Boosters and Other Signal Amplification Techniques used with Wireless Services, WT Docket No. 10-4, released January 6, 2010.

² See www.nextivityinc.com

markets worldwide and more than 30 operators, including leading U.S. service providers, are conducting trials.

I. INTRODUCTION

Nextivity welcomes this opportunity to comment on the Petitions for Rulemaking and Petitions for Declaratory Ruling regarding the proper use of signal boosters on frequencies licensed under Parts 22, 24, 27 and 90 of the Commission's Rules. As stated in the Public Notice, signal boosters can help expand reliable wireless service to unserved or weak signal areas for the benefit of consumers, wireless service providers, and public safety users.³ The Commission's 1996 rulemaking authorizing Class A and Class B signal boosters has resulted in improvements to wireless coverage in environments such as inside large buildings, and are in some cases required by local law in certain types of buildings in order to ensure sufficient communications by public safety personnel.⁴

However, some signal boosters also have the potential to effect the network operations and cause interference to a variety of communication services if installed improperly – or if deployed without the knowledge and approval of the relevant commercial mobile radio service (CMRS) licensee. As adoption of signal boosters has grown and has spread beyond CMRS licensees, there is an increasing need to ensure that such interference is eliminated or minimized. Consequently, Nextivity supports rules that allow the use of signal boosters, subject to stringent installation requirements and prior coordination with affected CMRS licensees.

Further, we do not believe that voluntary measures are sufficient to ensure protection of CMRS licensees' interests, nor do we believe that the Commission should develop new technical standards to govern the

³ Id.

⁴ Report and Order In the Matter of Amendment of Parts 2 and 15 of the Commission's Rules to Re-regulate the Equipment Authorization Requirements for Digital Devices, ET Docket 95-19, FCC 96-208, adopted May 9, 1996.

operation of signal boosters. In line with these views, Nextivity also presents responses to the five Petitions indicated in the Commission's Public Notice.

II. DISCUSSION

It is a commonly accepted fact that achieving perfect, ubiquitous cellular signal coverage is virtually impossible given the inherently changeable nature of the radiocommunication environment. This is especially true for the indoor location, where degradation of wireless signals is the result of Radio Frequency (RF) path loss due to architectural and construction elements such as windows, walls, foundations and floors. According to studies, a 95% probability of outdoor coverage results in a 64% probability of indoor coverage; which leaves 46% of homes with indoor coverage problems.⁵ Some operators report that 35-45% of subscriber homes in 3G networks have 'spotty' indoor coverage.

In addition, especially with the advent of advanced broadband services, coverage is no longer the only important aspect to consider – the quality of the coverage (or the Signal to Noise Ratio) has become equally important. Over the past three years, we have seen prodigious growth in the use of mobile data services and the trend is expected to continue. The Pew Research Center found that in April 2009 nearly one-fifth of Americans used mobile devices to access the Internet,⁶ and Cisco forecasts that mobile data traffic will grow at 131% per year through 2013.⁷ Furthermore, users are increasingly accessing their wireless data devices at home. Informa Telecoms & Media reported that worldwide mobile data traffic in the home was estimated at 40% in 2007 and it is expected to grow to 58% by 2013⁸. To support the

⁵ Analysys Mason, Swisscom Innovations

⁶ Wireless Internet Use, July 202, 2009, www.pewinternet.org/Reports/2009/12-Wireless-Internet-Use.aspx

⁷ See Cisco (2009b), "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update," 29 January 2009

⁸ <http://www.telecoms.com/5335/mobile-data-usage-gets-comfortable-at-home>

growing data traffic requires not only basic coverage to be present, but also requires the quality of the coverage to be good enough to ensure that the subscriber has a true broadband experience.

The need to meet customer expectations and improve the quality of the services delivered by CMRS providers have led to a rise in the use of “signal boosters.” The most efficient way to solve the issue of coverage holes in a wireless network is to “bring the coverage to where it is needed.” In other words, mass deployments of small wireless transceivers in buildings afford CMRS providers the ideal tool to address a real customer need.

However, traditional signal boosters (both wideband and band select) have been the source of numerous difficulties for CMRS providers over the years.⁹ Specifically, they inject noise into the cellular network and can thus limit the capacity and quality of service of a wireless network.

Nextivity believes that today it is possible to deploy small, INTELLIGENT signal boosters on a widespread basis to provide coverage where subscribers need it without adversely affecting wide area network performance. Studies have shown that with the right technology, such as Cel-Fi, the overall network capacity is dramatically improved – depending on the Cel-Fi penetration rate, network capacity gains approaching 700% are possible - while at the same time solving the issue of bringing good quality coverage where it is needed.¹⁰ Nextivity’s Cel-Fi systems, for example, are carrier-grade devices that are designed to eliminate in-building dead zones and protect the integrity of the wireless network, while increasing the effective RF capacity of each base station. They can more than triple the data rates experienced by wireless subscribers in their homes.

⁹ See generally, In the Matter of Petition for Declaratory Ruling Regarding the Unlawful Sale and Use of Cellular Jammers and Wireless Boosters and Repeaters, Petition for Declaratory Ruling, CTIA, The Wireless Association, filed November 2, 2007 (CTIA Petition).

¹⁰ See Signals Research Group, “The Case for Cel-Fi, Engineering and financial impact for a UMTS network and LTE applications,” December 2008.

Therefore, Nextivity respectfully requests that the use of signal boosters be allowed subject to the following specific criteria:

- Any signal booster device must be approved for use on a CMRS provider's network by the CMRS provider.
- Any signal booster device must include mechanisms to monitor the path loss between the base station and the booster and ensure that the signal booster gain is at least 30dB less than this path loss.
- Any signal booster device that is self installed by subscribers shall boost only the signals from one CMRS provider.
- All wideband, multi-operator signal boosters shall be installed by trained personnel only under controlled circumstances. Band-select, CMRS provider specific boosters that have approval for deployment from the CMRS licensee may be installed by end-users.
- Any signal booster device shall include oscillation detection and mitigation algorithms.

We believe that formalizing the above mentioned requirements will create an environment wherein innovation can flourish and the real needs of CMRS providers and their customers can be met.

III. RESPONSES TO INDIVIDUAL PETITIONS

In addition to the general comments above, Nextivity would like to provide the following response to the individual petitions that are the subject of the Public Notice.

Comments on Bird Technologies Petition for Rulemaking

On August 18, 2005 Bird Technologies Inc. (Bird Technologies) filed a Petition for Rulemaking seeking to amend section 90.219 of the Commission's rules to outline specific technologies and operational

requirements for the use of signal boosters as used by Part 90 licensees.¹¹ Nextivity supports Bird Technologies' petition that signal boosters should only be used with the full knowledge of licensees. We propose that this request be taken further and that the smart booster manufacturer must demonstrate as part of the certification process that it has obtained the approval of relevant CMRS licensees in the area(s) in which the equipment will be used.

We also support the request that consumers be made aware of this issue by informing them that only authorized signal boosters may be used.

Comment on CTIA Petition for Declaratory Ruling

On November 2, 2007 CTIA, the Wireless Association (CTIA) filed a Petition for Declaratory Ruling regarding the proper use of signal boosters for CMRS licensees. CTIA's petition noted that harmful interference may be caused to CMRS networks by unauthorized or improperly installed signal booster devices.¹² We fully support the CTIA Petition for Declaratory ruling, and agree that all signal boosters must be approved by the CMRS licensee prior to any commercial sale.

Comment on Jack Daniel Company Petition for Declaratory Ruling

On September 25, 2008, Jack Daniel DBA (Jack Daniel Company) filed a Petition for Declaratory Ruling asking the FCC to clarify its rules with respect to signal boosters.¹³ Specifically the petition sought clarification of the operational and technical limits that are applicable to Part 90 wideband signal boosters

¹¹ Wireless Telecommunications Bureau Seeks Comment on Petitions Regarding the Use of Signal Boosters and Other Signal Amplification Techniques used with Wireless Services, WT Docket No. 10-4, released January 6, 2010.

¹² CTIA Petition, page 10.

¹³ See In the Matter of Petition for Declaratory Ruling Regarding the Use of Class B Signal Boosters by Public Safety Entities, Petition for Declaratory Ruling, Jack Daniel DBA Jack Daniel Company, September 25, 2008 page 2.

according to the FCC's rules.¹⁴ Moreover, the petition asserts that the Commission's rules and policies are being misinterpreted in the marketplace.¹⁵ The petition further asked the FCC to declare that it will not regulate wideband signal boosters that would negate efforts by local governments and public safety organizations to enhance wireless coverage by mandating deployments of signal boosters.¹⁶ Nextivity supports the specific points raised in Mr. Daniel's petition that the deployment of signal boosters by local governments and public safety entities not be hamstrung by new Commission rules. This is consistent with our request to allow wideband signal boosters to be deployed with approval from the CMRS licensees on whose frequencies the signal booster will transmit and provided that the installation be performed by a trained professional installer.

Comment on DAS Forum Petition for Rulemaking

On October 23, 2009, the DAS Forum (a membership section of PCIA – The Wireless Infrastructure Association) filed a Petition for Rulemaking in response to the CTIA Petition indicating that a rulemaking was essential to address the marketing, installation and operation of signal boosters used in the Cellular Radiotelephone and Personal Communications Services.¹⁷ The petition specifically asks that the FCC commence a rulemaking to examine the best methods to resolve interference issues without having to develop regulations that will unnecessarily inhibit the sale and installation of signal boosters.¹⁸ Further the petition proposes an Industry Code of Conduct that it believes will adequately guide development of informal rules to address the marketing and use of signal boosters.¹⁹ The petition also advocates that such

¹⁴ Id., page 3.

¹⁵ Id.

¹⁶ Id., page 10.

¹⁷ See In the Matter of Petition for Declaratory Ruling Regarding the Unlawful Sale and Use of Cellular Jammers and Wireless Boosters and Repeaters, Petition for Rulemaking, DAS Forum, October 23, 2009.

¹⁸ Id., page 3.

¹⁹ Id., page 6.

a Code of Conduct be incorporated in or cross-referenced by the Commission's rules.²⁰ Nextivity respectfully disagrees with this filing from the DAS Forum and takes the position that an industry Code of Conduct is not an appropriate means to safeguard the interest of the CMRS licensees and their customers. We do not believe that requiring approval from the CMRS licensee stifles innovation in any way. For example, all mobile phones today are licensed and approved by CMRS licensees and one would be hard pressed to find any industry that innovates at a faster pace.

Comment on Wilson Electronics Petition for Rulemaking

On November 3, 2009, Wilson Electronics (Wilson) filed a Petition for Rulemaking asking the FCC to begin a rulemaking that would amend Part 20 of its rules to establish standards for certification of signal boosters for subscriber use on CMRS networks by developing equipment certification requirements to ensure that signal boosters are available to the public.²¹ We respectfully disagree with this filing from Wilson Electronics. Nextivity contends that a set of standards already exists today that define the behavior required from a signal booster device. In the context of universal mobile telecommunication systems (UMTS) and high speed packet access (HSPA) networks, for example, the 3GPP has established standards, (e.g., 3GPP TS 25.106 and 3GPP TS 25.143) that address the functional requirements that a signal booster must meet. Coupled with our request that all signal boosters be approved by the CMRS licensee, we believe that any signal booster manufacturer will have a clearly defined set of guidelines to deploy signal boosters into the market.

²⁰ Id.

²¹ In the Matter of Amendment of Part 20 of the Commission's Rules to Establish Standards for the Certification of Mobile Power Amplifiers or Handset Amplifiers for use in the Commercial Mobile Radio Services, Petition for Rulemaking, Wilson Electronics, November 3, 2009, page 5.

IV. CONCLUSION

Nextivity believes that wireless signal boosters provide a valuable functionality to network operators and users, including consumers, businesses and the public safety community. By expanding and improving coverage within coverage areas, they ensure that high-quality communications capabilities are available to authorized users. However, improper or unauthorized installation of signal boosting devices can result in interference that can compromise users' ability to access and use wireless networks. Nextivity supports the implementation of rules to ensure that authorized signal boosters are deployed with the approval of the relevant CMRS licensee and that such devices are installed properly so as to prevent interference. Such rules are beneficial to all members of the wireless ecosystem.

Respectfully submitted

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