

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

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

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**COMMENTS OF AT&T INC.**

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## TABLE OF CONTENTS

	Page
I. INTRODUCTION AND EXECUTIVE SUMMARY.....	2
II. SETTLED COMMISSION LAW PROHIBITS THE OPERATION OF SIGNAL BOOSTERS BY END USERS WITHOUT A LICENSE OR CARRIER AUTHORIZATION.....	3
A. Signal Boosters Are Transmitters That May Not Be Operated Without a License Under Section 301 of the Communications Act and Must Be Under Licensee Control .....	3
B. In an Unbroken Line of Precedent, the FCC Consistently Has Enforced the Prohibition on End User Operation of Signal Boosters Without a License or Carrier Authorization.....	6
C. Arguments By Petitioners that FCC Precedent in this Area Is Uncertain Are Without Merit.....	8
1. The “Blanket Licensing Rule” – Section 22.3 – Does Not Confer Upon Individual Wireless Customers the Same Spectrum Usage Rights as The Licensee. ....	8
2. The Ongoing Preserving the Open Internet Proceeding Provides No Support for Wilson’s Claim that Individual Wireless Customers Possess the Same Spectrum Use Rights as Licensees .....	11
III. THE COMMISSION SHOULD AFFIRM THAT IT IS UNLAWFUL TO MARKET AND SELL SIGNAL BOOSTERS THAT MAY NOT LAWFULLY BE OPERATED.....	14
1. Signal Booster Manufacturers Do Not Comply with Licensing Requirements Imposed to Control Interference.....	17
2. CMRS Manufacturers Have Not Completed Required Elements of the Equipment Authorization Process By Which CMRS Licensees Discharge Their Interference Control Obligations. ....	17
3. CMRS Booster Manufacturers’ Marketing and Sales Practices Violate Commission Rules. ....	19
IV. SIGNAL BOOSTERS CAN AND DO INTERFERE WITH LICENSED SERVICES.....	24
A. Booster Interference May Be Triggered in Multiple Scenarios and Is More Prevalent with Mobile and Broadband Boosters. ....	26
B. The Harmful Interference Caused by Signal Boosters Severely Threatens Public Safety.....	27
C. AT&T’s Experience Demonstrates How the Harmful Interference Caused by Signal Boosters Hurts Everyday Wireless Consumers and Their Wireless Providers.....	29

**TABLE OF CONTENTS**  
(continued)

	<b>Page</b>
V. THE COMMISSION SHOULD CREATE AN ACCELERATED DOCKET PROCEDURE TO ADDRESS COMPLAINTS AGAINST MANUFACTURERS REGARDING EQUIPMENT INVOLVED IN MULTIPLE INTERFERENCE INCIDENTS .....	32
VI. CONCLUSION.....	36



## I. INTRODUCTION AND EXECUTIVE SUMMARY

Interference from signal boosters<sup>4</sup> – which regularly block calls and degrade service on public safety and commercial wireless networks – is a significant and growing problem that warrants immediate Commission attention.<sup>5</sup> Consumers purchase signal boosters in a “self help” attempt to amplify wireless signals and/or extend wireless coverage.<sup>6</sup> But due to the fact that the spectrum resource is shared and wireless networks dynamically manage the use of available resources to maximize the experience of all users, the introduction of an uncontrolled transmitter – such as a signal booster – may improve the experience of a single user by blocking or impairing thousands of calls by other consumers. Booster manufacturers urge the Commission to adopt a regime in which the individual’s right to optimize his or her own signal reception is paramount. In contrast, AT&T submits that such a result would run counter to longstanding

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<sup>4</sup> For purposes of the instant comments, AT&T follows the Commission’s decision to define the term “signal booster” to “include all manner of amplifiers, repeaters, boosters, distributed antenna systems, and in-building radiation systems that serve to amplify CMRS device signals, Part 90 device signals, or extend the coverage area of CMRS providers or Part 90 service licensees.” *Public Notice* at n.1.

<sup>5</sup> The problem of signal booster interference has grown significantly since CTIA filed its White Paper in May of 2006. Since that time, AT&T met with FCC staff to discuss the issue on numerous occasions, including multiple visits with staff of the Office of Engineering and Technology, the Wireless Telecommunications Bureau, the Enforcement Bureau, the Public Safety and Homeland Security Bureau, and the Consumer and Governmental Affairs Bureau. At the FCC’s request, AT&T has provided extensive documentation of the interference problem, including providing briefings by AT&T’s technical experts and business people from the affected markets as well as participating in CTIA industry delegations to the FCC on the signal booster interference issue. Much of the information AT&T provided to staff was packaged in an omnibus filing, which is attached hereto as Exhibit A. AT&T submits that the record of the harm that interference from boosters has caused has been extensively documented and the FCC must now address and resolve this issue.

<sup>6</sup> AT&T’s principal concern is with signal boosters marketed and sold directly to consumers. AT&T has had successful experiences with signal boosters used in engineered systems, such as in-building systems, where installation has been coordinated with AT&T.

Commission policy and the Commission's core mission of maximizing efficient use of the nation's shared spectrum resources to benefit all Americans.

Rather than repudiating its successful exclusive-use licensing and licensee control regime, AT&T urges the Commission to issue a Public Notice reminding the public that operation of a signal booster on CMRS exclusive-use spectrum requires a license or licensee consent. The Commission should aggressively enforce its own settled precedent prohibiting unauthorized end-user operation of such equipment. The Commission also should affirm – consistent with CTIA's Petition – that it is unlawful to market and sell signal boosters that may not lawfully be operated, and enforce this prohibition against manufacturers. Additionally, the Commission should create an "accelerated docket" that provides wireless licensees with a clear and effective process for securing FCC enforcement action against equipment manufacturers that sell and market equipment in contravention of FCC rules, resulting in multiple harmful interference events. Taken together, these actions will best safeguard the integrity of wireless networks and the high-quality, reliable wireless communications American consumers currently enjoy. The importance of protecting wireless networks from interference will only increase as signal boosters, wireless microphones, "magic" femtocells, and other potentially interfering devices continue to proliferate.

## **II. SETTLED COMMISSION LAW PROHIBITS THE OPERATION OF SIGNAL BOOSTERS BY END USERS WITHOUT A LICENSE OR CARRIER AUTHORIZATION.**

### **A. Signal Boosters Are Transmitters That May Not Be Operated Without a License Under Section 301 of the Communications Act and Must Be Under Licensee Control.**

Section 301 broadly prohibits any person from using or operating an RF transmitting device at any location within the United States "except under and in accordance with . . . a

license.”<sup>7</sup> In implementing Section 301, the Commission has promulgated regulations that: (1) give a CMRS licensee exclusive use of its licensed frequencies; (2) make a CMRS provider the licensee of all transmitting devices on its spectrum; and (3) require a CMRS licensee to maintain control over all devices operating on its network. Specifically, the Commission’s rules require an FCC license or other authorization to operate a station within the cellular and PCS services. 47 C.F.R. § 1.903(a) (“Stations in the Wireless Radio Services must be used and operated only . . . with a valid authorization granted by the Commission.”); 47 C.F.R. § 22.3 (“Stations in the Public Mobile Services must be used and operated only in accordance with the rules in this part and with a valid authorization granted by the FCC under the provisions of this part”).

The Commission’s rules also make a CMRS provider the licensee of all transmitting devices operating within its spectrum, including all devices used by end user customers. Indeed, a subscriber’s authority to operate a device stems directly from the “authorization held by the licensee providing service to them.” 47 C.F.R. § 1.903(c); 47 C.F.R. § 22.3(b) (same). And while the FCC rules give CMRS licensees “blanket” authority to operate a variety of transmitters in their spectrum – including signal boosters – the rules exclude end-user subscribers from this authorization. 47 C.F.R. § 22.165 (“A licensee may operate additional transmitters at additional locations on the same channel or channel block as its existing system without obtaining prior Commission approval.”); 47 C.F.R. § 24.11(b) (“Blanket licenses are granted for each market and frequency block.”).<sup>8</sup> Issuance of a CMRS license also imposes spectrum stewardship

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<sup>7</sup> See 47 U.S.C. § 301; see also *U.S. v. Neset*, 235 F.3d 415, 416 (8th Cir. 2000) (recognizing that, under Section 301, “it is unlawful to transmit radio signals within the United States without a license”).

<sup>8</sup> See also *Amendment of Part 22 of the Commission’s Rules to Delete Section 22.119 and Permit the Concurrent Use of Transmitters in Common Carrier and Non-common Carrier Service*, Report and Order, 9 FCC Rcd 6513, ¶ 60 (1994) (prohibiting the alteration of cellular phones to emulate Electronic Serial Numbers of other phones – without receiving the permission

obligations on the license holder. Commission rules obligate licensees to prevent network interference caused by devices on their networks: “Station licensees are responsible for the proper operation and maintenance of their stations, and for compliance with FCC rules.” 47 C.F.R. § 22.305.

By these licensing and licensee-control requirements, the Commission discharges its core duty under the Communications Act to prevent interference and manage the airwaves in the public interest. The period before the federal government undertook centralized, coordinated regulation of radio spectrum “has been described as one in which chaos rode the air waves, pandemonium filled every loud-speaker and the twentieth century Tower of Babel was made in the image of the antenna towers of some thousand broadcasters who, like the Kilkenny cats, were about to eat each other up.”<sup>9</sup> For this reason, Congress adopted Section 301, directing the FCC to “maintain the control of the United States over *all* channels of radio transmission” and providing for the use of the radio spectrum only with proper FCC authorization. The requirement that transmitters on CMRS spectrum – including signal boosters – be operated with a license or under licensee control ensures that, consistent with the original Congressional vision, the airwaves efficiently may be shared by millions of wireless users rather than devolving into a “Tower of Babel.”

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of the relevant cellular licensee – because such altered phones are not authorized by the carrier and “would therefore not fall within the licensee’s blanket license, and thus would be unlicensed transmitters in violation of Section 301 of the Act”).

<sup>9</sup> *In re Deregulation of Radio*, Notice of Inquiry and Proposed Rulemaking, 73 F.C.C. 2d 457, ¶ 6 (1979) (quotation omitted).

**B. In an Unbroken Line of Precedent, the FCC Consistently Has Enforced the Prohibition on End User Operation of Signal Boosters Without a License or Carrier Authorization.**

The FCC has been enforcing its prohibition on end user operation of signal boosters without a license or licensee consent – embodied in rules adopted by notice and comment rulemaking – for years. AT&T has identified six instances, dating back to 2008, in which the FCC has issued nearly identical Warning Letters related to unauthorized signal booster operation by end users.<sup>10</sup> These Warning Letters state that a “licensee’s authority to install a [signal booster] does not permit a subscriber to install a [signal booster], unless that subscriber has received explicit authorization from the licensee to do so.”<sup>11</sup> In these cases, the Commission further warned the end-user subscriber that “operation” of the radio transmitting equipment – such as a signal booster – without a valid radio station authorization constituted a violation of Section 301.<sup>12</sup>

AT&T believes that many more such warnings have been issued, but the nature of the FCC’s enforcement procedures is such that the letters are not routinely made available to the public in the ordinary course. In false advertising litigation AT&T brought against signal

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<sup>10</sup> “Warning for Unlicensed Radio Operation,” FCC Case No. EB-09-DT-0375 (Dec. 8, 2009); “Notice of Unlicensed Operation,” FCC Case No. EB-08-NF-0029 (Aug. 20, 2008); “Notice of Unlicensed Operation,” FCC Case No. EB-08-LA-0295 (Oct. 24, 2008); “Warning Notice,” FCC Case No. EB-08-MA-0201 (Nov. 17, 2008); “Warning Notice,” FCC Case No. EB-08-MA-0198 (Nov. 20, 2008); “Notice of Unlicensed Operation,” FCC Case No. EB-09-MA-0195 (Dec. 3, 2009).

<sup>11</sup> “Warning for Unlicensed Radio Operation,” FCC Case No. EB-09-DT-0375 (Dec. 8, 2009); *see* “Notice of Unlicensed Operation,” FCC Case No. EB-08-NF-0029 (Aug. 20, 2008) (A “licensee’s authority to install a BDA does not, without further authorization from the licensee, permit a subscriber to install a BDA.”); “Notice of Unlicensed Operation,” FCC Case No. EB-08-LA-0295 (Oct. 24, 2008) (same); “Warning Notice,” FCC Case No. EB-08-MA-0201 (Nov. 17, 2008) (same); “Notice of Unlicensed Operation,” FCC Case No. EB-09-MA-0195 (Dec. 3, 2009).

<sup>12</sup> *Id.*

booster manufacturer Digital Antenna in the Federal District Court for the Southern District of Florida, FCC Field Agent Michael Mattern testified that warning letters concerning unauthorized operation of signal boosters are based on a template prepared by FCC legal counsel in Washington and are issued “frequently.” *See* Transcript of Hearing on Motions, Testimony of FCC Field Agent Michael Mattern, at 21, 42, AT&T Mobility, LLC. v. Digital Antenna, Inc., Case No. 09-60639-CV-PAS (Sept. 11, 2009) (“Mattern Testimony”). Agent Mattern further testified that he and another FCC Field Agent issued three warning letters relating to unauthorized booster operation at a single boat show in Fort Lauderdale, Florida.<sup>13</sup>

When directly challenged on the validity of its rules and its authority to enforce them, the FCC has unequivocally affirmed its enforcement actions. For example, where signal booster manufacturer Digital Antenna took the position, in response to an FCC Letter of Inquiry, that signal boosters may be operated without a license or consent of the licensee, the Commission flatly rejected Digital’s position. In a Notice of Apparent Liability Letter that followed Digital’s LOI response, the Commission affirmed its position that signal boosters “may only be used by licensed cellular/PCS providers or by end user customers with the express authorization of the licensed provider.”<sup>14</sup> And most recently, in the *Public Notice* initializing this proceeding, the Commission again confirmed that “signal boosters are treated as licensed transmitting devices” and that “section 1.903 established that stations in wireless services may only be operated with an FCC authorization (*i.e.*, license).”<sup>15</sup>

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<sup>13</sup> Mattern Testimony at 22.

<sup>14</sup> *See Digital Antenna, Inc., Sunrise, Florida*, Notice of Apparent Liability for Forfeiture and Order, DA 08-1093, ¶ 4 (May 12, 2008) (“*Digital Antenna NAL*”).

<sup>15</sup> *Public Notice* at 2.

**C. Arguments By Petitioners that FCC Precedent in this Area Is Uncertain Are Without Merit.**

Given this clear statutory and regulatory precedent, AT&T is baffled by certain parties' challenges to the FCC's current authority to enforce Section 301 and the implementing regulations in the instant proceedings. These challenges are premised on a number of novel constructions of FCC precedent in support of the theory that operation of signal boosters does not require a license or licensee consent. None of these arguments have any merit.

**1. The "Blanket Licensing Rule" – Section 22.3 – Does Not Confer Upon Individual Wireless Customers the Same Spectrum Usage Rights as The Licensee.**

Petitioner Wilson Electronics ("Wilson") arrives at a novel and unsupported construction of Section 22.3 only by wrenching the rule from its context and ignoring its purpose. Wilson reads into Section 22.3 of the FCC's rules authority for end users to operate any device of their choosing over a licensed carrier's spectrum – without licensee consent – so long as the end user takes service from the carrier.<sup>16</sup> Wilson's reading is based on taking these words from Section 22.3(b) in isolation: "[a]uthority for subscribers to operate mobile or fixed stations in Public Mobile Services . . . is included in the authorization held by the licensee providing service to them."<sup>17</sup> Even taken in isolation, the text of Section 22.3 does not support Wilson's position because the signal boosters it sells are broadband devices which operate across frequencies, regardless of who is licensed to use them.<sup>18</sup> If the blanket licensing rule authorized a subscriber

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<sup>16</sup> Wilson Petition at 8, n.24; *see also* Letter from Russell Lukas, Counsel to Wilson Electronics, Inc., to P. Michele Ellison, Chief, Enforcement Bureau, FCC, WT Docket No. 10-4, at 3 (filed Jan. 13, 2010) ("Wilson Letter").

<sup>17</sup> 47 C.F.R. § 22.3(b).

<sup>18</sup> *See infra* Section IV.A. (explaining that broadband signal boosters boost a range of frequencies, rather than targeting a specific frequency and boosting that frequency alone. Thus,

to operate any equipment of its choosing on its carrier's network (*e.g.*, AT&T's network), it still would not allow the subscriber to operate on adjacent frequencies licensed to a competing carrier (*e.g.*, T-Mobile or a public safety entity). But this is precisely how Wilson's broadband signal boosters operate,<sup>19</sup> interfering with both CMRS and public safety networks.<sup>20</sup> Additionally, unlike traditional end-user devices, signal boosters transmit in both the uplink and the downlink, thereby increasing the potential for harmful interference

But Section 22.3 was not adopted in isolation and is properly construed within the context of CMRS exclusive-use licensing and licensee control.<sup>21</sup> Within this framework, CMRS

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when a non-AT&T cell phone user operates a broadband booster on another carrier's nearby frequency, harmful interference may be generated on AT&T's licensed spectrum.).

<sup>19</sup> Indeed, the interference incident which gave rise to a December 8<sup>th</sup> Warning Letter that Wilson challenged in a January 13, 2010 letter to the FCC involved interference to AT&T's network by a signal booster being used to amplify frequencies licensed to another CMRS provider. *See* Wilson Letter (opposing FCC enforcement action against One Call Now, a company operating a signal booster that was the subject of December 8, 2009 Warning Letter in Case # EB-09-DT-0375 and that created interference to the AT&T network in the course of attempting to amplify another CMRS provider's signals using a Wilson broadband signal booster).

<sup>20</sup> Broadband signal booster interference to public safety licensees is a well-documented phenomenon. *See* Transcript of Hearing on Motions, Testimony of Gary Gray, Assistant Telecommunications Manager and Radio Systems Manager for the City of Fort Lauderdale, at 49-52, *AT&T Mobility, LLC. v. Digital Antenna, Inc.*, Case No. 09-60639-CV-PAS (Sept. 11, 2009) (describing interference to public safety radios resulting from a signal booster on the yacht "Pipe Dream"); *see also* Comments of Jason Matthews, Lake County, Florida, Sheriff's Office, WT Docket No. 10-4, at 1 (filed Jan. 15, 2010); Comments of Tracy Roberts, Cobb County, Georgia, E911 Radio System Manager, WT Docket No. 10-4, at 2 (filed Jan. 19, 2010) ("Cobb County Comments"); Comments of Gregory Bunting, St. Lucie County, FL, Public Safety Department, WT Docket No. 10-4, at 1 (filed Jan. 20, 2010).

<sup>21</sup> Where the Commission has carved out exceptions to the CMRS exclusive use structure, the exceptions have been the product of a rulemaking. Indeed, the Part 15 rules – which permit limited use of extremely low power devices in exclusive use spectrum – were adopted following a rulemaking. *See, e.g., Revision of Part 15 of the Rules Regarding the Operation of Radio Frequency Devices Without an Individual License*, First Report and Order, 4 FCC Rcd 3493 (1989). Permitting signal boosters – which transmit at higher power levels than Part 15 devices – to transmit on exclusive use spectrum would necessarily require rule changes.

licensees have exclusive use of their licensed frequencies, 47 C.F.R. §§ 1.903(a), 22.3, act as the licensee of all transmitting devices on their spectrum, 47 C.F.R. §§ 1.903(c), 22.3(b), and are required to maintain control over all devices operating on their networks. 47 C.F.R. § 22.305. In this context, Section 22.3 performs a streamlining function, allowing millions of end users to operate mobile stations – principally wireless handsets – without individual licenses because they are authorized under the carrier’s license and subject to the carrier’s operational control.

The FCC confirmed this construction in its *Biennial Review* proceeding. In the *Biennial Review*, the Commission stated that, “[i]n 1980, the Commission abolished licensing of individual mobile units in most public land mobile services. The Commission reasoned that individual land mobile units served by a base station are associated with the blanket authorization of that station, and thus subject to that licensee’s exercise of effective operational control.”<sup>22</sup> Accordingly, the Commission affirmed that ensuring licensee control of a device – consistent with FCC rules – was part-and-parcel of taking advantage of blanket licensing. The Commission’s 1980 order adopting the blanket licensing rule is even more clear on this point. Adopted at a time when the overall number of CMRS end users was relatively small, the order describes the process by which individual end users might seek to take advantage of blanket licensing. The order provided that, in order to take advantage of blanket licensing, a subscriber must “provide evidence to the carrier that the subscriber’s mobile unit is compatible with the carrier’s mobile system,” “use only those mobile units which the carrier has agreed to serve,”

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<sup>22</sup> *Amendment of Part 22 of the Commission's Rules to Benefit the Consumers of Air-Ground Telecommunications Services, Biennial Regulatory Review - Amendment of Parts 1, 22, and 90 of the Commission's Rules*, Notice of Proposed Rule Making, 18 FCC Rcd 8380, ¶ 26 (2003) (citing *Amendment of Sections of Part 21 (now Part 22) of the Commission's Rules to Modify Individual Radio Licensing Procedures in the Domestic Public Radio Services (now Public Mobile Radio Services)*, Report and Order, FCC 80-153, 77 F.C.C. 2d 84 (1980) (“1980 Individual Radio Licensing Order”)).

and “furnish the type accepted number to the carrier.”<sup>23</sup> Pursuant to this process, the subscriber secured carrier consent to operate its device under blanket licensing by demonstrating that the carrier could control the device, consistent with its obligations as a licensee.

Wilson’s construction of the blanket licensing rule also fails because it is not subject to any limiting principle. Under Wilson’s construction, where the blanket licensing rule allows each individual customer to step into the shoes of the licensee with respect to spectrum usage rights, any customer may not only operate a signal booster but also a cellular base station. A base station is, of course, a “fixed station” as that term is used in Part 22. The problem with such a construction is that it runs counter to the basic tenets of the Commission’s exclusive-use licensing regime. Operating network infrastructure on exclusive-use frequencies is the province of the licensee and a right generally purchased at auction at considerable expense. Moreover, Wilson’s construction would lead to widespread and debilitating interference. The Commission should reject Wilson’s construction as inconsistent with its most basic rules and policies, including the very rule Wilson relies on to support its position.

**2. The Ongoing *Preserving the Open Internet* Proceeding Provides No Support for Wilson’s Claim that Individual Wireless Customers Possess the Same Spectrum Use Rights as Licensees.**

The Commission should reject Wilson’s reliance on rules not yet adopted – and which may never be adopted – in support of its position that signal booster operation does not require a license or licensee consent. Wilson cites the Commission’s ongoing *Preserving the Open Internet* proceeding to support its novel construction of the Communications Act and the Commission’s rules: “It seems likely that the Commission will codify open network principles

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<sup>23</sup> *1980 Individual Radio Licensing Order*, ¶ 7 (emphasis added). The Commission further concluded that “[s]ubscribers who elect to furnish their own mobile units will be responsible for the proper installation and maintenance of their respective mobile units.” *Id.*

that will prevent broadband providers from prohibiting users from attaching non-harmful devices to their networks and require them to be transparent about their network management practice.”<sup>24</sup>

As an initial matter, any rules that may be adopted in the *Preserving the Open Internet NPRM* are not currently in effect. Even if the Commission adopts rules in that proceeding, there is no way to predict if the content of the rules would harm or help Wilson’s position. In fact, the record being developed in that proceeding – particularly in the context of reasonable network management – emphasizes the need for licensee control over wireless devices to ensure effective network management and prevention of harmful interference. The FCC itself acknowledged that “wireless networks must be designed to deal with . . . *interference from other devices*.”<sup>25</sup>

Similarly, AT&T explained that “active data sessions and calls must be carefully managed to sustain the level of service quality (and mobility) that customers have come to expect.”<sup>26</sup> AT&T then cautioned that the “Commission has recognized that the interference created by the plethora of wireless devices now in use is one of the most significant interference challenges that has ever been faced” and that “available bandwidth can fluctuate because of interference from transmitters in the area – wireless microphones, for example, or unauthorized wireless boosters or repeaters.”<sup>27</sup> If wireless providers lack the power to manage their networks and control the devices on their networks, they will be unable to address the significant performance challenges caused by harmful interference.

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<sup>24</sup> Wilson Petition at 10.

<sup>25</sup> *Preserving the Open Internet*, Notice of Proposed Rulemaking, GN Docket No. 09-191, WT Docket No. 07-52, FCC No. 09-93, ¶ 172 (rel. Oct. 22, 2009) (emphasis added).

<sup>26</sup> Comments of AT&T Inc., GN Docket No. 09-191, at 161 (filed Jan. 14, 2010).

<sup>27</sup> *Id.* (explaining that “an increase of just three decibels in interference can affect the network enough to require compensatory measures that increase network costs by 400 percent”).

Moreover, the single example of wireless “open network policies” that Wilson refers to – the “open platform” conditions attached to the C Block in the 700 MHz auction – actually undercuts Wilson’s conclusion that end users – and not CMRS licensees – possess ultimate control and authority over what devices may operate on a CMRS network.<sup>28</sup> Even in adopting the C Block “open platform” condition on the C Block spectrum in the 700 MHz auction, the Commission recognized the importance of the licensee-driven approval process and refused to allow signal boosters on a C Block licensee’s network without licensee consent. Specifically, the Commission concluded that a C Block licensee “could exclude devices such as signal boosters and repeaters to the extent they are inconsistent with the technical or operational parameters of the network.”<sup>29</sup> The Commission also emphasized that C Block licensees should “continue to use their own certification standards and processes to approve use of devices . . . on their networks.”<sup>30</sup> Additionally, the Commission recognized that even the C Block licensee needs to “maintain network control features that permit dynamic management of network operations, including the management of devices operating on the network, and to restrict use of the network to devices compatible with these network control features.”<sup>31</sup>

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<sup>28</sup> Wilson Petition at 10.

<sup>29</sup> The “open access” conditions liberalized the device approval process for manufacturers that want to get their devices approved for the C Block licensee’s network. *See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Second Report and Order, 22 FCC Rcd 15289, n. 503 (2007) (“700 MHz Second Report and Order”). It is worth noting that even by standards that do not apply here (*i.e.*, Carterfone and 700 MHz C Block), AT&T would be within its discretion not to approve use of signal boosters on its wireless network. *In re the Use of the Carterfone Device in Message Toll Telephone Service*, Decision, 13 F.C.C. 2d 420 (1968).

<sup>30</sup> 700 MHz Second Report and Order, ¶ 223.

<sup>31</sup> *Id.* The Commission did not permit the unauthorized use of signal boosters over the C Block spectrum. Instead, the Commission recognized the need for the CMRS licensee to ensure that any signal boosters are compatible with, and controlled by, the licensee’s network. As noted above, operational control over devices on a carrier’s network becomes even more critical when

### **III. THE COMMISSION SHOULD AFFIRM THAT IT IS UNLAWFUL TO MARKET AND SELL SIGNAL BOOSTERS THAT MAY NOT LAWFULLY BE OPERATED.**

Consistent with the CTIA Petition, the Commission should affirm that the sale and marketing of signal boosters that violate FCC rules – such as rules requiring licensing before operation – is itself unlawful.<sup>32</sup> Enforcement of the Communications Act’s sale and marketing provision – Section 302 – is critical to safeguarding the integrity of the wireless ecosystem. Federal courts have stressed that Congress intended Section 302 to “empower the Commission to deal with the interference problem at its root source—the sale by some manufacturers of equipment and apparatus which do not comply with the Commission’s rules.”<sup>33</sup> Pursuant to this authority, the Commission repeatedly has brought enforcement actions against parties that sell and offer for sale devices that violate the Commission’s interference rules and licensing requirements and introduce such devices into the stream of commerce.<sup>34</sup> Indeed, the Commission has recognized that the “purpose of [Section 302] is to ensure that radio transmitters

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a device – like a signal booster – transmits on both uplink and downlink frequencies instead of on the uplink only, like a mobile phone.

<sup>32</sup> See Telecommunications Act of 1996, Pub. L. No. 104-104, § 302(b), 110 Stat. 56 (1996) (“47 U.S.C. § 302”). The statutory provision discussed above – Section 302 – is codified as 47 U.S.C. § 302a, but the Commission routinely refers to it simply as 47 U.S.C. § 302. The original 47 U.S.C. § 302 – which is unrelated to wireless interference rules – was repealed in 1936 and the space stands empty in the current code.

<sup>33</sup> *Computer Sys. of Am., Inc. v. Data Gen. Corp.*, 921 F.2d 386, 389, n. 5 (1st Cir. 1990) (quoting S.Rep. No. 1276, 1968 U.S. Code Cong. & Admin. News at 2486); see also *Computer Sys. of Am., Inc. v. Data Gen. Corp.*, 1987 WL 9766, at \*5 (D. Mass Mar. 25, 1987) (Congress intended Section 302 to “appl[y] both to the manufacturer at the marketing level and to the user or operator of the equipment.”).

<sup>34</sup> See e.g., *United States v. Szoka*, 260 F.3d 516, 520 (6th Cir. 2001); *United States v. Any and All Radio Station Transmission Equip.*, 29 F. Supp. 2d 393, 394-95 (E.D. Mich. 1998).

and other electronic devices meet certain standards to control interference before they reach the market.”<sup>35</sup>

Because, as explained below, signal booster manufacturers’ current practices with respect to the marketing and sale of signal boosters violate Commission rules, the Commission should “deal with” the signal booster “interference problem at its root source.”<sup>36</sup> The rules in question were promulgated under Section 302(a) of the Communications Act. As background, Section 302(b) prohibits the sale and marketing of devices that “fail to comply with regulations promulgated pursuant to [Section 302(a)].”<sup>37</sup> Section 302(a), in turn, empowers the Commission to adopt regulations that “govern[] the interference potential of devices which in their operation are capable of emitting radio frequency energy by radiation, conduction, or other means in sufficient degree to cause harmful interference to radio communications.”<sup>38</sup> The Commission has implemented 302 and 301 by adopting regulations that: (1) give a CMRS licensee exclusive use of its licensed frequencies<sup>39</sup>; (2) make a CMRS provider the licensee of all (non-Part 15)

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<sup>35</sup> *Hawking Tech., Inc.*, Notice of Apparent Liability for Forfeiture, 22 FCC Rcd 7140, ¶ 2 (2007); *Hawking Tech., Inc.*, Forfeiture Order, 24 FCC Rcd 4252, ¶ 1 (2009) (affirming \$50,000 monetary forfeiture for willful and repeated violations of Section 302(b), involving “marketing external radio frequency power amplifiers in a manner that was inconsistent with the terms of Hawking’s equipment authorization and the requirements of Section 15.204(d) of the Rules”).

<sup>36</sup> *See Computer Sys. of Am., Inc.*, 921 F.2d at 389, n. 5.

<sup>37</sup> 47 U.S.C. § 302(b) (“No person shall manufacture, import, *sell, offer for sale*, or ship devices or home electronic equipment and systems, or use devices, which fail to comply with regulations promulgated pursuant to this section.”) (emphasis added).

<sup>38</sup> 47 U.S.C. § 302(a).

<sup>39</sup> *See* 47 C.F.R. § 1.903(a) (“Stations in the Wireless Radio Services must be used and operated only . . . with a valid authorization granted by the Commission.”); *see also* 47 C.F.R. § 22.3 (requiring a valid license to operate cellular stations).

transmitting devices on its spectrum, including all devices used by end user customers<sup>40</sup>; and (3) require a CMRS licensee to maintain control over all devices operating on its network.<sup>41</sup> Signal booster manufacturers market and sell equipment in a manner that ensures systematic violation of all of these rules.

Specifically, signal booster manufacturers market and sell devices with knowledge that the devices do not and cannot comply with basic licensing and licensee interference control obligations that apply to any device intended for operation on exclusive-use CMRS spectrum. Nor have these signal boosters completed required elements of the device authorization process by which all CMRS licensees, including AT&T, discharge their duty to prevent interference. Notwithstanding these deficiencies, booster manufacturers knowingly misrepresent to their customers that the devices may legally be operated on CMRS licensees' exclusive-use CMRS frequencies without carrier authorization.<sup>42</sup>

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<sup>40</sup> A subscriber's authority to operate a device stems directly from the "authorization held by the licensee providing service to them." See 47 C.F.R. § 1.903(c); see also 47 C.F.R. § 22.3(b) (same).

<sup>41</sup> As explained above, issuance of a CMRS license imposes spectrum stewardship obligations on the license holder. Commission rules obligate licensees to prevent network interference caused by devices on their networks: "Station licensees are responsible for the proper operation and maintenance of their stations, and for compliance with FCC rules." See 47 C.F.R. § 22.305. Consistent with the interference and exclusive-use licensing rules, CMRS licensees have adopted a certification and testing process that a device must satisfy before it is permitted on a wireless carrier's network. Signal booster manufacturers and retailers generally do not satisfy – or even attempt to satisfy – this process for the use of their signal boosters on CMRS networks. Thus, these companies prevent AT&T and other CMRS licensees from discharging their duty to prevent harmful interference within their licensed spectrum. See 47 C.F.R. § 22.305.

<sup>42</sup> See *infra* Section III.3.

**1. Signal Booster Manufacturers Do Not Comply with Licensing Requirements Imposed to Control Interference.**

Signal boosters are transmitters subject to licensing for interference control purposes, as detailed in Section II. Notwithstanding this fact, signal booster manufacturers continue to market and sell signal boosters to end users not licensed to operate them in exclusive-use cellular and PCS spectrum. Nor have the manufacturers' customers received licensee authorization to operate their signal boosters under a CMRS licensee's blanket authorization. *See* 47 C.F.R. §§ 22.165, 24.11(b). To the contrary, several manufacturers falsely inform their customers that wireless carrier authorization is not required.<sup>43</sup> Because these signal boosters do not satisfy Commission licensing requirements imposed to control interference, the marketing and sale of such equipment is prohibited under Section 302(b).

**2. CMRS Manufacturers Have Not Completed Required Elements of the Equipment Authorization Process By Which CMRS Licensees Discharge Their Interference Control Obligations.**

Booster manufacturers also knowingly and systematically disregard the device approval process by which CMRS licensees, like AT&T, discharge their obligation to prevent harmful interference. Issuance of a CMRS license imposes spectrum stewardship obligations on the license holder. Commission rules obligate licensees to prevent network interference caused by devices on their networks: "Station licensees are responsible for the proper operation and maintenance of their stations, and for compliance with FCC rules." *See* 47 C.F.R. § 22.305. Consistent with the interference and exclusive-use licensing rules, CMRS licensees have adopted certification and testing processes that a device must satisfy before it is permitted on a wireless carrier's network. Signal booster manufacturers have failed to satisfy – or even attempt to satisfy – this process with respect to AT&T's network.

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<sup>43</sup> *See id.*

Although some manufacturers have obtained type-certification from the FCC or a Telecommunication Certification Body (“TCB”), an award of type-certification only signifies that the device performs in the same manner as other devices of its type.<sup>44</sup> Type certification is not the equivalent of a CMRS license or carrier approval of a device for operation on exclusive-use CMRS spectrum. In addition to type certification, a manufacturer must receive approval from the individual spectrum licensee that the device complies with the licensee’s network protocols.

Signal booster manufacturers largely ignore this device authorization process, marketing and selling signal boosters as if the device authorization process does not exist. It is worth pointing out that the booster manufacturers’ failure in this regard does not stem from a lack of knowledge. AT&T repeatedly has demanded – including through individual correspondence with manufacturers – that booster manufacturers stop their sale and marketing of signal boosters because the devices are not approved by AT&T for use on its network and because the devices block and impair AT&T service. Booster manufacturers have ignored AT&T’s demands and thus have prevented AT&T from discharging its duty to prevent harmful interference within its licensed spectrum. *See* 47 C.F.R. § 22.305. Because circumvention of the licensee approval process violates interference control regulations authorized by Section 302(a), the marketing and sale of these signal boosters is prohibited by Section 302(b).

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<sup>44</sup> *See* 47 C.F.R. § 2.927(b) (“A grant of an equipment authorization signifies that the Commission has determined that the equipment has been shown to be capable of compliance with the applicable technical standards if no unauthorized change is made in the equipment and if the equipment is properly maintained and operated.”).

### **3. CMRS Booster Manufacturers' Marketing and Sales Practices Violate Commission Rules.**

In marketing and selling signal boosters, booster manufacturers make a wide range of false representations regarding the permissible and intended use of their devices in violation of Commission rules. Indeed, for many manufacturers, their principal business is selling and marketing unauthorized signal boosters to purchasers who do not realize that use of such equipment for its intended purpose – to enhance mobile phone coverage on exclusive-use CMRS spectrum – is illegal. At the heart of this marketing is a misrepresentation that is key to the sale transaction: that signal boosters are “FCC approved” for operation on the networks of CMRS carriers like AT&T. As a matter of logic, no meaningful volume of sales – including the two million boosters that Wilson claims to have sold – could occur unless consumers believed this misrepresentation to be true.<sup>45</sup> Booster manufacturers advance this misrepresentation by falsely suggesting in their marketing that type certification is sufficient, in and of itself, to authorize operation of signal boosters on AT&T’s network. As detailed below, misuse of a type-certification in this manner violates FCC rules. *See* 47 C.F.R. § 2.927(c). To prevent future violations, the Commission should confirm that the marketing and sale of these unauthorized signal boosters is prohibited by Section 302(b).

AT&T has uncovered a plethora of misleading marketing materials that signal booster manufacturers use to rope in consumers. In many cases, these materials imply that the manufacturer’s type certification somehow translates into FCC or CMRS licensee consent to use the device without actual approval from the CMRS licensee. Commission rules, however, expressly forbid manufacturers from “convey[ing] the impression” that type certification

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<sup>45</sup> Wilson admits that it sold over two million boosters since 2001, and 150,000 boosters since late 2006. *See* Wilson Petition at 4.

conveys anything more than compliance with a narrowly-scoped technical review. Specifically, Section 2.927(c) provides that:

No person shall, in any advertising matter, brochure, etc., use or make reference to an equipment authorization in a deceptive or misleading manner or convey the impression that such equipment authorization reflects more than a Commission determination that the device or product has been shown to be capable of compliance with the applicable technical standards of the Commission's Rules.<sup>46</sup>

Type-certification is a narrow exercise that does not include a review of compliance with CMRS licensing and licensee interference control obligations.<sup>47</sup>

Nevertheless, booster manufacturers – directly and through their authorized retailers – have published and continue to publish product advertisements in print, on the Internet, and elsewhere that make false claims about signal boosters that mislead present and future customers into believing that: (1) the devices are FCC approved for use on CMRS carriers' networks; and (2) that CMRS licensees have consented to the use of such devices or that no license or further permission is required to operate the devices. The following is a representative sample of the different misrepresentations made by specific manufacturers and their retail agents:

*Misleading Statements that Boosters Are FCC Approved for Use on CMRS Carriers' Networks*

- Wilson – Sells boosters that it falsely claims “fully comply with FCC regulations for cellular devices and are FCC and Industry Canada type accepted.”<sup>48</sup> Wilson's retailer misleads consumers into believing that Wilson's boosters are unequivocally legal:

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<sup>46</sup> See 47 C.F.R. § 2.927(c).

<sup>47</sup> Notably, Digital Antenna conceded this fact in its response to the FCC's NAL against Digital. See Response of Digital Antenna, Inc., In the Matter of Digital Antenna, Inc., Apparent Liability for Forfeiture, File No. EB-07-SE-390, at 6 (filed June 11, 2008) (“An equipment authorization therefore is materially different from a license to operate in a particular spectrum band, for example. Unlike spectrum licenses, an equipment authorization does not entitle the applicant to conduct any activities, exclude others or provide any services. It is merely a confirmation that the specified equipment meets applicable technical standards.”).

Q: Are cellular repeaters legal?

A: Wilson's are and their's is [sic] the only brand we carry. Legal and FCC approved.<sup>49</sup>

- Digital Antenna – In a 2005 “News Release” issued by Digital, and in similar website advertisements on a website of a large Digital retailer, the false claim is made that Digital’s signal boosters “are FCC approved to operate with all U.S. and Canadian carriers including Cingular, AT&T, Verizon, Sprint, Alltel and T-Mobile.”<sup>50</sup> In its 2008 and 2009 product catalogs, Digital falsely claims that its booster is “FCC and IC approved for use with all North American cell phones operating on 850 or 1900 MHz (except Nextel or IDEN).”<sup>51</sup> Digital Antenna’s retailer also falsely claimed that Digital’s booster is “the only amplifier FCC approved to amplify all cell carriers in the US” and “can be used with digital cellular phones that operate using CDMA, TDMA, PCS, GSM 850, GSM 1900 and AMPS.”<sup>52</sup>
- Spotwave – Misleads consumers that its boosters are “approved by FCC, Industry Canada, CSA, and major North American Carriers.”<sup>53</sup>
- Wi-Ex – Retailer claims that Wi-Ex’s boosters are “FCC approved.”<sup>54</sup>

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<sup>48</sup> Wilson Electronics, Press Release, “Wilson Electronics Announces Newest Cell Phone Signal Booster: The Sleek,” at 2 (Jan. 6, 2010), [http://www.wilsonelectronics.com/PressKit/PressReleases/files/Sleek\\_Press\\_Release.pdf](http://www.wilsonelectronics.com/PressKit/PressReleases/files/Sleek_Press_Release.pdf).

<sup>49</sup> “Cell Phone Booster & Cell Phone Repeater FAQ,” <http://www.unwiredsignal.com/?view=Cell-Phone-Booster-Repeater-FAQ>.

<sup>50</sup> See Attachment B; see also “DA4000 - Digital Antenna 800MHz/1900MHz Dual-Band 3 Watt PowerMax Direct Connection Amplifier”, <http://www.wpsantennas.com/da4000-digitalantenna800mhz1900mhzdual-band3wattpowermaxdirectconnectionamplifier.aspx> (“Compatible carriers include: Verizon, AT&T GSM/GPRS/TDMA, Cingular, Alltel, Sprint PCS, T-Mobile (850MHz, 1900MHz), Cellular One, US Cellular, Metro PCS, Virgin Mobile, Cricket, Qwest, Boost Mobile, etc.”).

<sup>51</sup> See Attachment C. On its website, Digital incorrectly asserts that its devices are “FCC and IC Approved,” which “[e]nsures product compliance for safety and exact frequency and power specifications.” Digital Antenna, “Award-Winning PowerMax Cellular Boosters,” available at <http://www.digitalantenna.com/aboutouramplifiers.html> (last visited Feb. 4, 2010).

<sup>52</sup> GPS and Marine World, “Digital PowerMax DA4000,” <http://web.archive.org/web/20070814075750/http://www.gpsandmarineworld.com/DA4000.html>.

<sup>53</sup> Spotwave, “250 Cell Phone Signal Booster,” <http://www.spotwave.com/residential/products/2500xe.asp>.

- SignalReach – Retailer misleads consumers that SignalReach’s boosters are “FCC approved”<sup>55</sup> and “designed to operate on TDMA, CDMA and GSM mode signals from virtually all cellular service providers.”<sup>56</sup>
- Cellphone-mate – This manufacturer and its retailer mislead consumers that the company’s boosters are “FCC-approved for Maximum Output Power.”<sup>57</sup>
- Boston Amplifier – Misleads consumers that its boosters are “FCC & IC (Industry Canada) Certified” and “compatible with networks such as: AT&T, Verizon Wireless, Sprint PCS, Sprint Nextel, T-Mobile, SouthernLinc, Alltel and other Cellular networks through out the world.”<sup>58</sup>

*Misleading Statements About Licensee Consent*

- Digital – In a “FAQ” page used until 2006 by Digital and used by its retailers, Digital misleads AT&T’s customers to believe that neither FCC nor wireless carrier approval is needed before its signal boosters may be used:

Q: Does the owner of this equipment (installed location) require an FCC license to operate the repeater?

A: No, neither the user nor the installer needs an FCC license. All of our products are FCC approved . . .

Q: Do the cellular providers accept the use of cellular repeaters?

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<sup>54</sup> Provantage, “Wi-Ex zBoost YX500-CEL Wireless Cell Phone Extender,” <http://www.provantage.com/wi-ex-yx500-cel~7WIRE002.htm>.

<sup>55</sup> Sold Signal, “SA300 SignalReach Direct Connection Amplifier,” [http://www.solidsignal.com/pview.asp?mc=07&p=SA300&d=SA300-SignalReach-Direct-Connection-Amplifier-for-iDEN--Nextel-Cell-Phones-\(SA300\)&c=Amplifiers&sku=](http://www.solidsignal.com/pview.asp?mc=07&p=SA300&d=SA300-SignalReach-Direct-Connection-Amplifier-for-iDEN--Nextel-Cell-Phones-(SA300)&c=Amplifiers&sku=); “TP210 SignalReach Portable Dual Band Direct Connect Cell Phone Amplifier Kit for Cellular/PCS,” [http://www.solidsignal.com/pview.asp?mc=07&p=TP210&d=TP210-SignalReach-Portable-Dual-Band-Direct-Connect-Cell-Phone-Amplifier-Kit-for-CellularPCS-\(TP210\)&c=Amplifiers&sku=](http://www.solidsignal.com/pview.asp?mc=07&p=TP210&d=TP210-SignalReach-Portable-Dual-Band-Direct-Connect-Cell-Phone-Amplifier-Kit-for-CellularPCS-(TP210)&c=Amplifiers&sku=).

<sup>56</sup> “3 Watt Dual-Band (PCS & Cellular) Cell Phone Antenna Signal Booster/ Cellular Antenna Signal Amplifier,” <http://www.cell-phone-accessories.com/cell-phone-signal-booster-cellular-phone-antenna-boosters-3-watt-wireless-pcs-dual-band.html>.

<sup>57</sup> WPS Antennas, “Cell-phone Mate: Home,” <http://www.cellphone-mate.net/index.html>; <http://www.wpsantennas.com/inlineboosters.aspx>.

<sup>58</sup> Boston Amplifier, “Products,” <http://www.bostonamplifier.com/new/products/>.

A: Not all amplifiers are tower friendly. All of our amplifiers have dynamic variable gain control so that the tower is never overpowered. We are the only manufacturer with carrier approvals.<sup>59</sup>

- Spotwave Wireless – Claims that it “has the only out-of-box solution certified by carriers across North America. Carriers have spent billions of dollars for their wireless spectrum – it’s their most valuable asset ... Spotwave has worked closely with carriers to determine what impacts their networks ... Spotwave has the only integrated solution approved for use in carrier networks, and our systems maintain spectrum integrity. We ensure your organization will not interfere with any carrier network when you improve your coverage with Spotwave.”<sup>60</sup> The website banner for Spotwave’s booster states that the device “supports any carrier” and “boosts cell coverage for Cingular voice services, Sprint PCS voice and data services and T-Mobile voice and data services.”<sup>61</sup>
- Cellular Specialties – Advertises and sells a booster that it advertises as a “Verizon Wireless and AT&T approved repeater.”<sup>62</sup>
- Wilson – Promotes an “iBooster™ for iPhone™, BlackBerry® Curve™” that AT&T has not approved for either the iPhone or Curve.<sup>63</sup> Advertises that it “manufactures powerful mobile wireless and direct-connection amplifiers for all carrier frequencies (Cellular, PCS, and Nextel/iDEN).”<sup>64</sup>

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<sup>59</sup> Based on our research, AT&T believes that Digital posted these statements on the “Frequently Asked Questions” section of its website until May 17, 2006. *See* Digital Antenna, Inc., “Frequently Asked Questions”, *available at* <http://web.archive.org/web/20060517130547/www.digitalantenna.com/faq.html> (emphasis added) (*see* Attachment D). Digital’s distributors have repeated these false statements. *See* Attachment E.

<sup>60</sup> Spotwave, “What do we mean by Carrier-Approved?,” [http://www.spotwave.com/commercial/learning/carrier\\_approved.asp](http://www.spotwave.com/commercial/learning/carrier_approved.asp).

<sup>61</sup> Spotwave, “Z1900 Cell Phone Signal Booster,” <http://www.spotwave.com/residential/products/z1900.asp>.

<sup>62</sup> CSI, “In-Building Wireless Solution,” <http://www.cellularspecialties.com/uploads/pdfs/CSI%20In-Building%20Wireless%20Kit%20REV2.pdf>.

<sup>63</sup> Wilson Electronics, “iBooster for iPhone, Blackberry Curve, and Other Phones and PDAs,” [http://www.wilselectronics.com/PressKit/files/Wilson\\_Electronics\\_iBooster\\_Spec\\_Sheet.pdf](http://www.wilselectronics.com/PressKit/files/Wilson_Electronics_iBooster_Spec_Sheet.pdf).

<sup>64</sup> Wilson Electronics, “Improving Your Cellular Signal,” [http://www.wilselectronics.com/Files/Brochures/Product\\_Overview.pdf](http://www.wilselectronics.com/Files/Brochures/Product_Overview.pdf), at 4.

- PC Powerzone – Sells an “AT&T Cell Phone Booster Dual-Band” that is “easy to install and simple to use.”<sup>65</sup>
- Wi-Ex – Retailer claims that Wi-Ex’s booster “[w]orks with Cingular, Verizon and Alltel.”<sup>66</sup>

These false statements about signal boosters violate Section 2.927(c) and mislead present and future customers into believing that the boosters are FCC approved for use on CMRS carriers’ networks without a license or explicit permission from the CMRS licensee. Such false and misleading statements likely lead unwitting customers to purchase and illegally operate signal boosters on AT&T’s and other licensees’ wireless networks which, in turn, has created, and will continue to create, significant interference problems for AT&T and its customers.

#### **IV. SIGNAL BOOSTERS CAN AND DO INTERFERE WITH LICENSED SERVICES.**

Harmful interference from signal boosters is a widespread and well-documented phenomenon that harms public safety users, ordinary consumers, and wireless carriers.<sup>67</sup> As detailed below, the substantial harmful interference generated in the process of boosting cell phone signals results in dropped calls and, on many occasions, total loss of service in the affected cell site sector. Notably, signal booster interference has become so severe that multiple members of Congress have alerted the Commission to the need for prompt action, *see* “Congressional

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<sup>65</sup> PC Powerzone, “AT&T Cell Phone Booster - Dual Band,” <http://pcpowerzone.com/cicephbo.html>.

<sup>66</sup> Provantage, “zBoost YX500-CEL Wireless Cell Phone Extender,” <http://www.provantage.com/wi-ex-yx500-cel~7WIRE002.htm>.

<sup>67</sup> The U.S. wireless industry repeatedly has documented the harms caused by unauthorized signal boosters. *See* Petition for Declaratory Ruling of CTIA – The Wireless Association® Regarding the Unlawful Sale and Use of Cellular Jammers and Wireless Boosters and Repeaters, WT Docket No. 10-4 (filed Nov. 2, 2007); CTIA-The Wireless Association®, White Paper on Wireless Repeaters (filed May 1, 2006), *available at* [http://files.ctia.org/pdf/CTIA\\_Repeater\\_White\\_Paper\\_Final\\_050106.pdf](http://files.ctia.org/pdf/CTIA_Repeater_White_Paper_Final_050106.pdf).

Letter to Chairman Martin,” at Attachment F. And the Commission confirms in the *Public Notice* that “improper installation and use of these devices can interfere with network operations and cause interference to a range of communication services.”<sup>68</sup> Petitioners also agree that these devices cause substantial harmful interference:

- Even Wilson – a major booster manufacturer – concedes that “low quality amplifiers and repeaters can cause interference to both CMRS networks and public safety systems.” Wilson also “agrees that technically deficient amplifiers and repeaters are being marketed to consumers.”<sup>69</sup>
- DAS concedes that “low cost or poorly manufactured repeaters, whether certificated by the Commission or not, are installed in households, small offices or vehicles without any coordination by local carriers” and “[h]owever one defines it, these devices are clearly operating without consent of the licensee whose service is being used.”<sup>70</sup> DAS also acknowledges that “[w]hen such devices begin to cause interference, it often is necessary for a carrier to go to great lengths to locate the source and take steps to correct the problem.”<sup>71</sup>
- Bird Technologies explains that “interference is being caused by (among other things) improper installation and optimization of these devices by untrained consumers.”<sup>72</sup>
- CTIA explains that signal boosters are “typically poorly manufactured and likely to interfere with licensed radio communications” and “by their very nature, repeaters and signal boosters, regardless of the quality of their design and/or manufacture, trade a private benefit to a single user against the public harm to other users.”<sup>73</sup>

Given the consensus about the danger of these devices – and the evidence of harmful interference documented below – rapid Commission action is needed.

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<sup>68</sup> *Public Notice* at 1.

<sup>69</sup> Wilson Petition at 4.

<sup>70</sup> DAS Forum Petition at 5.

<sup>71</sup> *Id.*

<sup>72</sup> Bird Petition at 6.

<sup>73</sup> CTIA Petition at 10 & n. 26.

**A. Booster Interference May Be Triggered in Multiple Scenarios and Is More Prevalent with Mobile and Broadband Boosters.**

While certain signal booster designs are more likely to cause interference, all signal boosters can create harmful interference,<sup>74</sup> often in one of two distinct scenarios. First, substantial harmful interference is caused when the signal booster's transmitter overpowers licensed wireless communications on AT&T's network, which occurs when the signal booster is operated too close to one of AT&T's cell phone towers, or simply by virtue of a transmitter being too powerful. This threat of harmful interference to AT&T's network is ongoing and constant.<sup>75</sup>

Second, substantial harmful interference is caused when the device's two antennas are placed too closely together, which causes a phenomenon known as "oscillation." An amplifier in oscillation creates its own uncontrolled, continuous wave signal directed toward the cell site receiver. AT&T's network interprets the signal as external noise, which results in electronic instructions being transmitted to all of the cell phones being served by that sector to increase power in an effort to overcome the perceived noise. This action effectively constricts the scope

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<sup>74</sup> The harmful interference caused by signal boosters cannot be remedied by better technology or the creation of additional certification processes, as Wilson proposes. Wilson Petition at 14 (asserting that the next-generation of boosters "can be robustly designed and marketed with the oscillation detection technology and shutdown logic necessary to prevent interference to wireless networks"). Wilson fails to account for the millions of boosters currently in the marketplace or already installed by end-users. Wilson itself admits that it sold over two million boosters since 2001, and 150,000 boosters since late 2006. *See id.* at 4. These devices alone – which already wreak havoc on wireless networks – will continue to threaten the integrity of wireless networks for many years to come, regardless of any future certification processes or improvements in the interference controls of future boosters.

<sup>75</sup> Wilson agrees that "[a]n amplifier operating at full power when too close to a cell tower will overload the site and impair service to a large number of users." Wilson Electronics, "Seven Tips to Identify a Quality Cellular Amplifier," [http://www.wilselectronics.com/PressKit/files/Seven\\_Tips\\_to\\_Identify\\_a\\_Quality\\_Cellular\\_Amplifier.pdf](http://www.wilselectronics.com/PressKit/files/Seven_Tips_to_Identify_a_Quality_Cellular_Amplifier.pdf).

of coverage of the affected cell site sector, causing cell phones to drop calls and lose coverage. This action also reduces battery life, not only of the signal booster user's own phone, but of cell phones of other subscribers whose phones automatically increase their power in response to the boosted signal in order to mitigate the interference. This, in turn, causes additional interference and a higher lost call rate in other cell sites further away.<sup>76</sup>

The possibility of harmful interference increases and is more difficult to rectify with mobile and broadband signal boosters. With mobile boosters, such as those in use on boats and other vehicles, the areas of impact are impossible to predict. Further, the mobility of signal boosters prevents AT&T from tracking down, documenting, and putting a stop to a large number of interference events caused by signal boosters. Broadband boosters have their own unique set of problems. Broadband signal boosters boost a range of frequencies, rather than targeting a specific frequency and boosting that frequency alone. Thus, when a non-AT&T cell phone user operates a broadband booster on another carrier's nearby frequency, harmful interference may be generated on AT&T's licensed spectrum.

**B. The Harmful Interference Caused by Signal Boosters Severely Threatens Public Safety.**

Most troubling is the harmful impact signal boosters have on public safety. When signal boosters impair commercial wireless networks or the dedicated public safety 800 MHz systems, public safety officials are frequently unable to communicate about and respond to emergencies. A number of public safety agencies that commented early in this proceeding have raised this

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<sup>76</sup> Wilson agrees that "oscillation, also known as feedback, can be attributed to improper installation" and "improper design." And "[t]his oscillation can make cell sites shut down, violating FCC regulations." *Id.*

issue for the Commission's attention.<sup>77</sup> The Sheriff's Office in Lake County, Florida, explains that it has "significant and well founded technical concerns of the interference that these inexpensive and often transient devices could cause to our trunked public safety network, as it has in other areas in Central Florida."<sup>78</sup> Therefore, the Sherriff's Office presses the FCC to "carefully weigh this issue before allowing the industry to continue the questionable marketing and subsequent sale of these BDA's to unknowing individuals and organizations, which results in illegal operation and interference to both part 22 and part 90 licensed systems."<sup>79</sup> Similarly, the Public Safety Department for St. Lucie County explains that it has learned "through experience, that each licensee must have knowledge of, and at least some control over, the use of signal boosters in their area of spectrum."<sup>80</sup> The Public Safety Department goes on to explain that it is "critical to Public Safety that these signal booster systems be of an approved design, installed by knowledgeable technical people, and registered with the licensee of the system for which it will serve. To allow less is an abdication of our duties to manage the airwaves in the public interest."<sup>81</sup> Additionally, the E911 Communications Bureau in Cobb County, Georgia, succinctly states that "it only takes one malfunctioning device to hamper communications for

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<sup>77</sup> In its Petition, Bird Technologies concurs that "[p]ublic safety licensees in particular are experiencing a dramatic increase of such interference causing long term degradation or blockage of critical and potentially life saving communications on their wireless systems." Bird Petition at 6.

<sup>78</sup> Comments of Jason Matthews, Lake County, Florida, Sherriff's Office, WT Docket No. 10-4, at 1 (filed Jan. 15, 2010).

<sup>79</sup> *Id.*

<sup>80</sup> Comments of Gregory Bunting, St. Lucie County, FL, Public Safety Department, WT Docket No. 10-4, at 1 (filed Jan. 20, 2010).

<sup>81</sup> *Id.*

all.”<sup>82</sup> Further, the Emergency Communications agency in Worcester, Massachusetts “urge[s] the Commission to end unlicensed cellular amplifiers/boosters/repeaters,” explaining that it has “experienced degradation in our system stability due to failures with these unlicensed systems” and that “any degradation in a public-safety system puts the lives of our first-responders at risk.”<sup>83</sup>

Public safety’s concerns are not new. In 2008, a number of Florida public safety agencies raised this issue for the Commission’s attention, including: Palm Beach County Sheriff’s Department; Palm Beach County Fire Department; Broward County Sheriff’s Office; St. Lucie County Sheriff’s Office; St. Lucie County Fire District; The Ft. Pierce Police Department; The Port St. Lucie Police Department. As documented in Attachment G, certain public safety agencies filed letters with the Commission “express[ing] serious concerns regarding the use of wireless boosters and repeaters” and reporting a “dangerous increase” in the amount of interference to their communications systems, which they “largely attribute to the growing use of wireless boosters and repeaters.”<sup>84</sup>

**C. AT&T’s Experience Demonstrates How the Harmful Interference Caused by Signal Boosters Hurts Everyday Wireless Consumers and Their Wireless Providers.**

Signal boosters also harm everyday wireless consumers, and in turn, impair the commercial viability of wireless carriers. The network disruptions and dropped calls caused by

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<sup>82</sup> Cobb County Comments at 2.

<sup>83</sup> Comments of David Clemons, City of Worcester, MA, Director of Emergency Communications, WT Docket No. 10-4, at 1 (filed Jan. 30, 2010).

<sup>84</sup> See Letter from Audrey Wolf, Director, Facilities Development and Operations, Palm Beach County, Florida, to Kevin Martin, Chairman, FCC (filed March 27, 2008) (on file at FCC); see also Letter from Jack T. Southard, Director of Public Safety, Board of County Commissioners, St. Lucie County, Florida, to Kevin J. Martin, Chairman, FCC (filed March 25, 2008) (on file at FCC).

signal boosters negatively affect 911 emergency assistance calls, which are critical to individual safety and the safety of society at large. Network interference also prevents consumers from communicating with friends and family and requires that consumers waste time and energy remedying interference problems. Similarly, once a signal booster disrupts a wireless network, the wireless carrier must spend a significant amount of time and resources isolating and fixing the problem. Ultimately, these network problems unfairly tarnish a carrier's brand and goodwill, which leads some customers to cancel or not renew their service contracts. Wireless customers are unable to determine that the interference associated with signal boosters is the reason their service has been degraded – rather, they only know that coverage and reliability for their wireless calls is no longer acceptable.

AT&T itself is experiencing serious and repeated network disruptions and other harmful interference events, which AT&T has conclusively tied to devices from multiple signal booster manufacturers. In AT&T's experience, the disruption and interference to an affected cell site sector can last for several days until AT&T can identify, and remove, the source of the interference. Until the problem is isolated and corrected, other users within an affected cell site sector may not be able to make or receive calls on their cell phones using AT&T's network. Pursuant to FCC instructions, AT&T logs signal booster interference incidents using a web tool provided by the Enforcement Bureau. In South Florida alone – which contains a large number of boosters given the large yachting population – AT&T has recorded 83 separate incidents triggered by signal boosters since July 2007. And the number of recorded incidents logged with the FCC significantly understates the scope of the signal booster problem. Because many signal boosters are mobile and interference incidents are transient, AT&T estimates that three times as many interference events impact AT&T's network as the number reported to the Enforcement

Bureau. But in these unreported cases, AT&T cannot conclusively tie the incidents to a signal booster.

The following examples illustrate the damage that signal boosters have caused since AT&T started recording incidents in 2007:

- From November 29, 2007 until November 30, 2007, a BDA aboard the yacht “New Frontier” caused severe harmful interference to six AT&T towers in Florida. The event lasted for 21 hours, led to 2,795 dropped calls, and led to 81,000 blocked or impaired calls. Naturally, this event also produced a large amount of consumer complaints.
- From March 23, 2009 through March 27, 2009, a signal booster aboard the yacht “Miss Penny” caused severe harmful interference that adversely affected three AT&T cell sites with a peak interfering signal level of -69 dBm measured. Specifically, the signal booster on the ship caused interference to three sites, resulting in approximately 3,055 blocked calls over a four-day period.
- From March 26, 2009 through March 29, 2009, two signal boosters aboard the yachts “Fine Print” and “Andrea V” caused severe harmful interference that adversely affected an AT&T cell site with a peak interfering signal level of -55 dBm measured. Specifically, the interference caused by the signal boosters on these ships resulted in approximately 3,831 blocked calls over a three-day period.
- From November 23, 2007 to November 26, 2007, AT&T’s network experienced serious interference from a signal booster on a ship (“Tug Boat Betty”) in southern Florida. Specifically, the signal booster caused interference levels of -70 dBm at the cell site, which caused severe degradation to all three AT&T towers on Key West.
- From September 19, 2007 until September 28, 2007, the equipment used by the Broward County Sheriff’s Office and Fort Lauderdale Police Department, as well as AT&T’s network, experienced very broad interference caused by a signal booster in oscillation on a yacht (“Pipe Dream”).
- From October 31, 2008 through November 1, 2008, AT&T located and identified over 20 interfering signals at the Fort Lauderdale Boat Show. FCC Field Office staff, in coordination with AT&T, interacted with offending boat owners and handed out “cease and desist letters” in some cases. Many boat owners did not know they had a booster on board.

Booster manufacturers are on notice regarding this serious problem, but have failed to take corrective action. The growing severity of the problem has forced AT&T to take legal and regulatory action against a particularly egregious manufacturer, and AT&T currently is

considering the possibility of additional action against other manufacturers. Specifically, on April 30, 2009, AT&T filed a Complaint and Motion for Preliminary Injunction against booster-manufacturer Digital Antenna, Inc, the principal focus of which is Digital's false representation in its advertising that a purchaser does not require an FCC license to operate their PowerMax™ Wireless Repeater. AT&T also filed a separate complaint with the FCC against Digital for violating Section 302 of the Communications Act and the associated FCC rules.

FCC action, however, is needed at a national level, and not just in AT&T's case against Digital. The FCC simply lacks the resources to track and prosecute every interfering signal booster on a reactive basis and, in the case of mobile boosters, this task may prove impossible. AT&T urges the Commission to promptly issue a Public Notice reminding manufacturers and end users that signal boosters may not be used on CMRS networks without a license or licensee consent. In addition, AT&T proposes the creation of an "accelerated docket" that will enable the FCC and AT&T to rapidly address the interference caused by these devices.

**V. THE COMMISSION SHOULD CREATE AN ACCELERATED DOCKET PROCEDURE TO ADDRESS COMPLAINTS AGAINST MANUFACTURERS REGARDING EQUIPMENT INVOLVED IN MULTIPLE INTERFERENCE INCIDENTS.**

The Commission should adopt an accelerated docket procedure for addressing interference at its source: the marketing and sale of unauthorized equipment to unwitting consumers. The current, end user-focused process for addressing unauthorized operation of wireless transmitters is ineffective and highly resource consumptive. And while Commission rules provide for complaints against manufacturers, there is no formal, time-limited, Section 208-style complaint process that allows carriers to escalate such complaints against manufacturers

whose products are involved in multiple harmful interference events.<sup>85</sup> Instead, carriers react to individual harmful interference incidents by locating the source of the interference and taking one or more of the following actions: (1) negotiate with the operator to shut down the interfering equipment; (2) solicit assistance from agents of the relevant FCC field office; or (3) file a complaint and request for investigation with the FCC’s Enforcement Bureau (as AT&T did against Digital Antenna), a process that has no set timeline for resolution. By creating an accelerated docket procedure to address complaints regarding manufacturers that have sold and marketed equipment that has caused multiple harmful interference events, the FCC can stop such interference incidents – at least with respect to the manufacturer in question – in a reasonable, fixed timeframe. Such a process will enable the Commission to slow down the proliferation of these dangerous, interfering devices and thereby proactively protect the integrity of wireless networks relied on by public safety and consumers, consistent with the public interest.

The current process for addressing unauthorized transmitter operation is ill-suited to resolving this growing problem. Carriers like AT&T monitor their network performance constantly. When carriers observe an increase in the received signal strength indicator (“RSSI”) associated with a particular cell site sector – the tell tale sign of an interference event likely caused by a signal booster – they document the event by filing a trouble ticket in a database established by the FCC’s Enforcement Bureau.<sup>86</sup> If the event persists, AT&T’s engineers must physically locate the source of the interference using directional antennas. When an interfering

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<sup>85</sup> As noted earlier, on April 30, 2009, AT&T filed an informal complaint against Digital Antenna Inc. before the Enforcement Bureau. *See AT&T Complaint Against Digital Antenna, Inc. for Violations of Section 302 of the Communications Act*, EB Docket No. \_\_ (filed April 30, 2009) (“Digital Antenna Complaint”). This complaint remains pending.

<sup>86</sup> Due to recurring interference events that AT&T had experienced, the FCC agreed to create an online reporting system for interference events. Other carriers also use this system, which can be found at: <http://www.fcc.gov/eb/CTIX/>.

signal booster is identified, AT&T engineers request that the operator shut down the signal booster. If the operator does not cooperate, AT&T provides the operator with a cease-and-desist letter. If the operator still does not cooperate, AT&T solicits assistance from the relevant FCC field office.<sup>87</sup> Where FCC field agents identify a *bona fide* instance of unauthorized operation, their procedure is to issue a warning letter to the operator of the offending equipment requiring the operator to provide an explanation within ten days or risk being subject to a monetary forfeiture and other penalties. At this point, most operators choose to comply. Resolving interference problems in this manner can take considerable time, leaving carriers' networks down, in some cases, for several days. During this time, the substantial interference caused by a signal booster results in dropped and blocked calls, including 911 calls, and on many occasions, total loss of service in the affected cell site sector or sectors.

This reactive and resource-consuming process depends entirely on a carrier's own network monitoring to identify the source of interference and carrier initiative to solicit FCC involvement. In AT&T's experience, there are particular manufacturers that have marketed and sold large numbers of signal boosters that have been documented to have caused harmful interference to AT&T's network on multiple occasions, strongly suggesting that these manufacturers are violating the FCC's type certification requirements (*i.e.*, that the interference stems from the fact that the equipment as manufactured does not conform to the specifications for which it is certified) and/or Section 302 of the Communications Act and the associated rules on marketing and selling transmitting equipment.<sup>88</sup> Indeed, AT&T has documented 45 harmful

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<sup>87</sup> The process is not uniform in all cases. In some cases, AT&T's solicits assistance from FCC field agents in identifying the source of interference before there is any indication of non-cooperation on behalf of an end user.

<sup>88</sup> See Digital Antenna Complaint at 5-6.

interference events in one market involving boosters manufactured by Digital Antenna.<sup>89</sup> While AT&T has asked the FCC to investigate the repeated violations of Digital Antenna, the current process has no date certain for resolution. Indeed, as the investigation lingers on, Digital continues to market and sell the unauthorized boosters that it knows cause interference.

To address manufacturers of equipment responsible for multiple interference events in a way that will protect the public interest, the Commission should create an accelerated docket to handle complaints from carriers.<sup>90</sup> Under such a framework, when a carrier has concluded that multiple interference events resulted from equipment produced by a particular manufacturer, that carrier may bring a complaint under an accelerated docket procedure against the manufacturer. Consistent with the procedures applicable to accelerated Section 208 complaints, once a complaint has been lodged with the Commission, the manufacturer would have ten days to show that it is in compliance with the FCC's type certification requirements and rules, including Section 302 of the Communications Act and the associated rules relating to the marketing and sale of transmitting equipment. The Commission should also establish mini-trial procedures to allow for a short hearing as it has in its accelerated Section 208 complaint process.<sup>91</sup> Ultimately, the Commission would be required to resolve the issue within sixty days of receiving a complaint. An accelerated docket procedure of this type would allow carriers to prevent harmful

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<sup>89</sup> *See id.* at 8 (noting that 31 interference events in South Florida were conclusively the result of Digital Antenna's boosters). An additional 14 events have been recorded since the filing of the Complaint.

<sup>90</sup> The Commission has created a similar accelerated docket procedure to address Section 208 complaints promptly. *See Implementation of the Telecommunications Act of 1996; Amendment of Rules Governing Procedures to Be Followed When Formal Complaints are Filed Against Common Carriers*, Second Report and Order, 13 FCC Rcd 17018 (1998); *see also* 47 C.F.R. §§ 1.720-1.736.

<sup>91</sup> *See* 47 C.F.R. § 1.730(g).

interference at the source rather than reacting to individual interference events in a piecemeal manner, stop the proliferation of illegal devices, and protect the integrity and reliability of the wireless networks upon which American consumers and public safety rely.

## **VI. CONCLUSION**

For the foregoing reasons, AT&T respectfully requests that the Commission: (1) issue a Public Notice reminding the public that operation of a signal booster on CMRS exclusive-use frequencies requires a license or licensee consent; (2) aggressively enforce the prohibition on end user operation of a signal booster without a license or licensee consent; (3) affirm – consistent with the CTIA Petition – that the marketing and sale of signal boosters to individuals that may not legally operate them is itself illegal; and (4) create an accelerated docket procedure allowing carriers to file complaints regarding manufacturers of transmitting equipment that has caused multiple harmful interference events and for such complaints to be addressed within sixty days.

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February 5, 2010

## **CERTIFICATE OF SERVICE**

I, Steven Merlis, do hereby certify that on this 5<sup>th</sup> day of February 2010, I caused copies of the foregoing "Comments of AT&T Inc." to be delivered to the following via email.

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