

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

In the Matter of)	
)	
Amendment of Parts 1, 2, 22, 24, 27, 90 and)	WT Docket No. 10-4
95 of the Commission's Rules to Improve)	
Wireless Coverage Through the Use of Signal)	
Boosters)	

To: The Commission

**COMMENTS OF
GTECH CORPORATION**

GTECH Corporation ("GTECH"), by its attorneys and pursuant to Section 1.415 of the Commission's Rules, 47 C.F.R. § 1.415, hereby files comments on the Notice of Proposed Rulemaking in the above captioned proceeding.¹

GTECH is a significant user of fixed amplifiers to support its global network of data communications and support systems for government-authorized lotteries. GTECH operates lotteries in countries throughout the world, including most of the state lotteries in the United States. Revenues generated by these lotteries contribute billions of dollars annually to state government projects and programs promoting a wide variety of important societal benefits including health services, public safety, education, and economic development.

GTECH's use of wireless communications networks is vital to the efficient and secure operation of the state lotteries that it manages. An often critical component to these wireless

¹ See Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission's Rules to Improve Wireless Coverage Through the Use of Signal Boosters, *Notice of Proposed Rulemaking*, FCC 11-53, WT Docket No. 10-4 (April 6, 2011) ("*NPRM*").

networks is the use of fixed amplifiers to ensure that data from lottery and other point-of-sale terminals is transmitted rapidly and reliably to and from central data centers in order to process millions of lottery and other transactions every day.

GTECH configures and uses wireless signal amplifiers in its network in a manner that greatly minimizes any potential for harmful interference to wireless carriers, including both carriers providing wireless services to GTECH and carriers that are not. The *NPRM*, however, appears to make broad generalizations about all categories, configurations and uses of fixed amplifiers, classifying them all as “signal boosters” and potentially subjecting them to the same rules and coordination requirements. As explained in these comments, different types of amplifiers and network configurations of amplifiers can alter significantly the potential for harmful interference to wireless networks. Therefore, it is inappropriate to regulate all forms of amplifiers and network configurations under one set of rules.

Further, the Commission should avoid imposing coordination requirements on users of fixed amplifiers. Coordination requirements are likely to impose competitive restraints on the existing robust market for wireless signal boosters. Such coordination requirements may also further retard competition in the market for wireless services.

For obvious reasons, the Commission’s proposed rules refrain from imposing coordination requirements on mobile signal boosters. The Commission should employ this same light touch to fixed signal boosters when such boosters have technical capabilities or are used in configurations that minimize the possibility of causing harmful interference to wireless networks.

I. GTECH EMPLOYS FIXED AMPLIFIERS IN A MANNER THAT GREATLY MINIMIZES THE POTENTIAL FOR HARMFUL INTERFERENCE TO WIRELESS NETWORKS

Modern state lotteries require access to real-time data communications networks that can transfer information in a reliable and efficient manner between countless retail distribution locations and central lottery management facilities. In order to provide these services to state governments, GTECH uses a combination of cellular modems and/or VSAT terminals at tens of thousands of lottery point-of-sale locations.

At some retail locations, the lottery equipment is located in a portion of the retail establishment that does not have reliable access to wireless signals, often because they are in the interior of the building away from windows and outside walls. In order to provide wireless network access in such situations, GTECH technicians run a cable from the lottery equipment to an exterior wall or window where a cellular transmit/receive antenna can reliably communicate with cellular base stations.

The cable length between the lottery equipment and the transmit/receive antenna can often suffer significant attenuation in signal level. To compensate for this degradation, GTECH often employs fixed, closed input amplifiers, configuring the amplifier to compensate for the line loss without exceeding the authorized transmitter power for the wireless network.

GTECH's network configuration greatly minimizes the potential for harmful interference to wireless networks. First, GTECH's use of a "closed loop" or "tethered" input to the amplifier ensures that GTECH's network transmits only on the frequencies assigned by the wireless carrier providing services to GTECH and does not transmit on any other network. Second, GTECH's modems transmit only when they have data to transfer over the network and are shutdown at all other times. Third, GTECH's modems are slaved to the commands of the wireless network

providing services to GTECH, transmitting only on those frequencies and at those power levels dictated by the wireless network.

Because of these measures, GTECH's wireless networks, including those using signal amplifiers, create no more risk of harmful interference than any other wireless device or cell phone operating on a network. GTECH therefore believes that its configuration and use of signal amplifiers should fall within a safe harbor that the Commission should establish for fixed signal boosters that pose minimal risk of harmful interference to wireless networks. Such a safe harbor should create an exception from many of the Commission's proposed regulations for fixed signal boosters, particularly the Commission's proposed requirement that fixed signal boosters be coordinated with wireless carriers. In GTECH's experience, such coordination requirements could harm competition, both in the market for wireless signal boosters and in the far broader market for wireless services.

II. COORDINATION IS UNNECESSARY FOR FIXED SIGNAL BOOSTERS THAT ARE INSTALLED AND USED IN A CAREFULLY CONTROLLED MANNER

The *NPRM* proposes that operators of fixed signal boosters be required to coordinate the location and use of such boosters with wireless carriers.² The *NPRM* discusses several reasons why such coordination could be necessary. None of these reasons, however, are applicable to fixed signal boosters that are wired directly to the modem that is generating the input signal to the amplifier. This is especially true when the amplifier is not intended to increase the power of the wireless transmission, but is instead used only to restore signal loss resulting from the use of cable lengths between a modem and a distant antenna.

² See *id.*, ¶ 51.

For example, the *NPRM* suggests that, “[i]f frequencies assigned to fixed signal boosters are not coordinated with the provider, their use can potentially disrupt a provider’s frequency reuse plan because certain frequencies may have been assigned by the provider to an adjacent cell site or sector, increasing the likelihood of co-channel interference.”³ This problem cannot occur, however, if a signal booster is wired directly to a modem and retransmits only the signals from that modem because the modem would transmit only on those frequencies and power levels that are assigned by the network for use by the modem during a certain interval of time.

The *NPRM* also suggests that coordination is needed because signal boosters operating in the interleaved 800 MHz frequencies (a situation that is being resolved by rebanding) could unintentionally amplify signals in Sprint Nextel’s network, potentially overloading Sprint Nextel’s base stations.⁴ Here again, this problem could occur only using a signal booster that is configured as a bi-directional amplifier, retransmitting and amplifying all signals within the range of its receiver. In contrast, amplifiers that retransmit only the signals that are provided to it through a wired or tethered input path could not inadvertently boost the signals of adjacent networks and, as a result, could not overload the base stations of adjacent networks.

The fact that coordination is not necessary in all cases is evidenced by the fact that the Commission is not, for obvious reasons, proposing to require coordination for mobile signal boosters.⁵ Instead, the *NPRM* proposes that, in lieu of coordination, mobile signal boosters be

³ *Id.*, ¶ 48.

⁴ *See id.*, ¶ 49.

⁵ *See id.*, ¶ 53. Acknowledging that “[u]nlike fixe devices, mobile signal boosters cannot reasonably be coordinated with nearby carrier base stations in advance.” *Id.*

designed in such a manner that they operate only when needed (powering down when nearing a base station) and cease operations when they are unnecessary.⁶

GTECH believes that such a proposal constitutes a reasonable approach that is specifically associated with the interference concerns that it is intended to address. Rather than limiting this regulatory approach to mobile signal boosters, however, the Commission should permit operators of fixed signal boosters to comply with these requirements as well as a potential alternative to the arguably more burdensome coordination requirements that have been proposed in the *NPRM* for fixed signal boosters. Such an approach is reasonable given the fact that the use of fixed signal boosters arguably poses a significantly lower risk of interference to wireless networks than the potential risk posed by mobile booster equipment.⁷

III. MANDATING COORDINATION OF ALL FIXED SIGNAL BOOSTERS COULD HARM SIGNIFICANTLY THE MARKET FOR SUCH DEVICES

As noted above, GTECH is a significant user of wireless signal amplifiers, particularly to support state lottery operations in the New York area. In fact, GTECH has considered plans to increase its use of signal amplifiers, but has placed these plans on hold pending the outcome of the Commission's rulemaking proceeding.

To enable its state lottery support operations, GTECH has service contracts with two of the major wireless carriers, but has also interfaced extensively with the other major wireless carriers in the region. It has been GTECH's experience that, on the issue of signal boosters, the major wireless carriers are much more cooperative with their own customers than they are with

⁶ *See id.*

⁷ Such an approach would also be reasonable given the fact that mobile signal boosters are often used in stationary locations if, for no other reason, than to comply with state statutes that restrict the use of handheld wireless devices by operators of motor vehicles.

the customers of their competitors. Further, when the use of signal amplifiers is brought to the attention of the major wireless carriers, the carriers often use these discussions to pressure the user to subscribe to the services of that carrier. Carriers also pressure users of signal boosters to purchase signal booster equipment directly from the carrier, rather than from one of the many independent companies that manufacture such products.⁸

Given this experience, GTECH urges the Commission to refrain, to the extent possible, from requiring users of amplifiers and other signal boosters to coordinate the use of such equipment with the various wireless carriers. The *NPRM* acknowledges some of the difficulties that are likely to result from such a coordination requirement.⁹ GTECH believes these difficulties will be heightened substantially by the unlevel playing field and the complete absence of negotiating leverage that would be held by individuals and companies seeking the permission of major wireless carriers for the placement and operation of existing and future signal booster equipment.

IV. CONCLUSION

For the foregoing reasons, the Commission should refrain from adopting rules for fixed signal boosters that treat all such equipment in the same manner. Instead, a safe harbor should be created for fixed signal boosters that are configured and operated in a manner that minimizes the potential for harmful interference to wireless networks. At the very least, this safe harbor should cover fixed signal boosters that are wired directly to a wireless device and retransmit only

⁸ Oddly, when GTECH has engaged in discussions with such carriers regarding the costs of purchasing amplifiers directly from them, the carriers have routinely acknowledged that they do not have any such equipment available for sale.

⁹ See *NPRM*, ¶ 52.

the signal of that device. The safe harbor should also consider whether the wireless device is slaved to a particular wireless network and therefore would transmit only on frequencies and at power levels that are assigned by the network. Fixed signal boosters that satisfy the safe harbor requirements should be exempt from coordination and other burdensome regulatory requirements.

As the Commission has acknowledged, amplifiers and other signal boosters are used to support numerous important communications services in the United States. The Commission should ensure that the rules adopted in this proceeding do not impair unnecessarily the continued sale and use of such equipment for beneficial purposes.

Respectfully submitted,

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