

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

In the Matter of)
)
Expanding the Economic and Innovation) Docket No. 12-268
Opportunities of Spectrum Through Incentive)
Auctions)

To: The Commission

**RESPONSE OF xG TECHNOLOGY, INC.
TO NOTICE OF PROPOSED RULEMAKING**

xG Technology, Inc. (“xG” or “the Company”), by its representatives, hereby submits its response to the Commission’s *Notice of Proposed Rulemaking* (NPRM) in this proceeding, which requests public comment on the Commission’s proposals to establish rules governing incentive auctions and specifically incentive auction of the broadcast TV spectrum, as authorized by the Middle Class Tax Relief and Job Creation Act of 2012.¹ The NPRM also requests comment on how best to preserve and improve the use of the unused broadcast TV spectrum for unlicensed operations, including the possibility of providing for additional unlicensed spectrum on a nationwide basis by reallocation of TV Channel 37.

STATEMENT OF INTEREST

xG expresses no comment on the Commission’s proposals for auction design and “repacking” the relinquished spectrum for reauction. Rather, xG’s interest is in connection with the prospect of the Commission making available additional spectrum for exclusive or predominant use by unlicensed devices to enable innovators, such as xG, to maximize the use of the additional spectrum for increasing broadband access and efficiency, including the provision of broadband service in rural communities.

¹ Pub. L. No. 112-96, §§ 6402, 6403, 125 Stat. 156 (2012).

xG's interest stems from the fact that the Company is a leading developer of innovative communications technologies for cognitive radio networks and believes that the Commission's proposal to expand the use of unlicensed wireless devices is a welcome development in easing the growing shortage of available RF spectrum. xG has an extensive patented intellectual property portfolio covering a broad range of applications. The Company has commercialized its technologies to create xMax™, the world's first carrier-class cognitive radio network using licensed or unlicensed spectrum. The Company has successfully deployed and operated cognitive cellular mobile radio test networks in Fort Lauderdale, Florida and rural Arkansas, presently using the unlicensed 900 MHz band under Part 15 of the Commission's Rules (902-928 MHz). More recently, the U.S. Army awarded xG a contract to conduct laboratory and field tests of its xMax cognitive cellular network for potential use by military forces. Under the terms of the contract, the Company delivered xMax equipment to the Fort Monmouth, New Jersey laboratory facility for the Army's Communications-Electronics Research, Development, and Engineering Center (CERDEC). Also, xG installed and provided training for the Army to operate a multisite xMax system over a large part of the Army's Fort Bliss Desert Training areas. In addition, xG recently conducted demonstrations for the Commission's Office of Engineering and Technology and its Public Safety and Homeland Security Bureau in Washington, DC. xG has commercialized its technology through a range of spectrum-agnostic, cognitive radio solutions that enable commercial service providers and public safety entities to deliver a wide range of fixed and mobile wireless services using licensed and/or unlicensed spectrum.²

² Further information about the Company can be found at www.xgtechnology.com. The xMax system is described in detail in xG's comments, filed July 25, 2012, in *In the Matter of Utilizing Rapidly Deployable Aerial Communications Architecture in Response to an Emergency*, Notice of Inquiry, PS Docket No. 11-15 (rel. May 24, 2012).

RESPONSE TO NPRM

Guard Bands

The Commission has proposed 6 MHz guard bands between TV operations and 600 MHz uplink operations and between TV operations and 600 MHz downlink operations.³ The Commission also proposes to add to the guard bands the 0 to 4 MHz of “remainder” spectrum in any given market for each half of the duplex pairing under the band plan.⁴ xG supports these proposals and urges the Commission to make this guard band spectrum available for unlicensed devices on an interference-free basis. Since it appears that this spectrum would be available everywhere, a geographical database may not be necessary for users of the spectrum. However, if the Commission deems that database access is necessary or desirable, this additional spectrum could be used in time of emergency or disaster response by first responders, whereby a database would allow “deauthorizing” commercial users of the band in the location of and during the duration of the emergency response.

Height-Power Limitations

The Commission seeks comment on whether the existing power and emission limits for white space devices in the TV bands are appropriate for unlicensed operation in the guard band

³ The Commission’s proposed 600 MHz band plan, using relinquished broadcast spectrum, is described in detail in the NPRM at ¶123, *et seq.*

⁴ NPRM, at ¶234.

spectrum to protect licensed operations.⁵ xG believes that higher power should be allowed due to the fact that TV broadcast, medical telemetry and radio astronomy will not be adjacent to the guard bands and that the licensed broadband flexible use rules will enable higher power transmissions without interference. We strongly suggest that unlicensed devices be allowed to operate at 10 watts EIRP in order to promote the construction of effective and useful networks. This power level is needed to justify economically the construction of unlicensed wireless networks, especially in the rural environment.

Alternatively (or in addition), the antenna requirements should be relaxed to permit antenna heights of up to 100 meters above ground level and up to 500 meters above average terrain. The present rule limitations in Section 15.709(b)(2)⁶ of the Commission's Rules of 30 meters above ground and 250 meters above average terrain are too restrictive for the same reason that the power limitation is too restrictive.

Similarly, xG strongly recommends that personal/portable devices operating in the guard band spectrum should be allowed to operate at 4 watts EIRP -- the same power as fixed devices.⁷ The present height-power limitations for TV band devices are simply too restrictive taking into account the portion of the spectrum in which the guard bands will be situated and the fact that TV broadcast, medical telemetry and radio astronomy operations will not be adjacent to the guard bands and therefore will not be adversely affected by relaxing the height-power restrictions.

⁵ NPRM, at ¶235.

⁶ 47 CFR § 15.709(b)(2)

⁷ 47 CFR § 15.709(a)(2) limits the EIRP of personal/portable devices to 100 milliwatts (20 dBm).

Database Requirements

The Commission has asked for comment on whether the existing database regulations are needed to make the guard band spectrum available for use by existing and/or future white space devices. xG believes that the reliance upon a database to authorize unlicensed devices is unnecessary and creates a risk that entire networks of infrastructure will fail should access to the database be interrupted following a disaster, cyber attack or other emergency condition. The unlicensed guard band spectrum affords an unprecedented opportunity for the further development and proliferation of new cognitive radio technologies that feature interference avoidance and mitigation while maintaining the best possible communications link. Cognitive radios that work autonomously through sensing of the RF environment offer the best opportunity to construct networks that are robust and reliable.

Possible Use of TV Channel 37

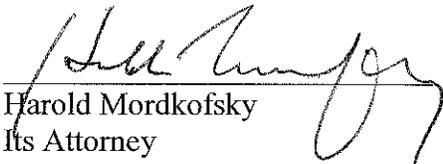
The Commission has questioned the advisability of allowing unlicensed devices to operate on TV Channel 37 (608-614 MHz) considering the need to protect WMTS and the Radio Astronomy Service. On the assumption and belief that the Commission will be capable of crafting sufficient protection criteria, xG supports the Commission's proposal for Channel 37. The use of Channel 37 would be a tremendous boon to the unlicensed wireless industry. The 608-614 MHz band is low enough in the RF spectrum to afford good building penetration and wide enough to deliver substantial wireless broadband services. Coupled with the relaxed

height-power limitations suggested herein, the availability of Channel 37 for unlicensed wireless devices would stimulate an entire new industry of broadband service providers, thereby facilitating solutions to the growing spectrum shortage crisis.

Respectfully submitted,

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