

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

In the Matter of	)	
	)	
Amendment of the Commission's Rules	)	GN Docket No. 12-354
With regard to Commercial Operations in	)	
The 3550-3650 MHz Band	)	

To: The Commission

**COMMENTS OF  
NEPTUNO NETWORKS**

Neptuno Media, Inc. d/b/a Neptuno Networks (“Neptuno”), pursuant to Section 1.415(a) of the Commission’s Rules, 47 C.F.R. § 1.415(a), submits these Comments in response to the Public Notice FCC-13-144, released by the Commission on November 1, 2013 (“*Public Notice*”).

**I. INTRODUCTION**

Neptuno is a leading wireless service provider based in Puerto Rico. Neptuno offers Layer 2 and Layer 3 MPLS VPNs services, Internet services, VoIP services, network consulting, integration services and managed services to small and medium-sized businesses, government agencies, public and private educational institutions and hospitals, as well as major enterprise customers that require an infrastructure capable of supporting their mission-critical business around Puerto Rico and the U.S. Virgin Islands. Since its foundation in June 2000, Neptuno has grown into a profitable services business by providing quality, reliable and cost-effective solutions to its customers’ voice, data and video requirements. Today, Neptuno has thousands of enterprise customers, including the major telecommunications carriers in Puerto Rico and various bank and government agencies.

The 3650-3700 MHz band has been and remains a critical component to Neptuno's success and its ability to provide reliable commercial broadband service in Puerto Rico. The Commission opened the door to the development of the 3650-3700 MHz band in 2005, when it adopted a "licensed light" approach under which prospective operators were given the opportunity to register for ten-year, non-exclusive, nationwide licenses to operate in the band.<sup>1</sup> At the time, the Commission proclaimed that the 3650-3700 MHz band was "well-suited to respond to the needs expressed by the growing number of entrepreneurial wireless internet service providers (WISPs)" and expressed its hope that the regulatory framework it was adopting would "provide an opportunity for the introduction of a variety of new wireless broadband services and technologies, such as WiMax."<sup>2</sup> The Commission concluded at the time that the "minimal" licensing requirements it was adopting would give licensees "maximum flexibility to evolve their systems to meet uncertain future needs and requirements," would facilitate "cooperation among users," and would lead to investments in the band.<sup>3</sup> The Commission stressed that the license being granted in the 3650-3700 MHz band was intended to allow licensees "to provide all allowable services anywhere within their service area at any time, consistent with whatever regulatory status they choose."<sup>4</sup>

The Commission was right in its assessment of the potential of the 3650-3700 MHz band and the effects of the licensing scheme it was adopting. And Neptuno was one of those entities

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<sup>1</sup> See *In re Wireless Operation in the 3650-3700 MHz Band, Report and Order and Memorandum Opinion and Order*, 20 FCC Rcd 6502 (2005) ("3650-3700 MHz Report and Order").

<sup>2</sup> *Id.* at 6503 (¶ 2).

<sup>3</sup> *Id.* at 6512 (¶¶ 27-29).

<sup>4</sup> *Id.* at 6515 (¶ 36).

that accepted the Commission's invitation to invest in the 3650-3700 MHz band and deploy innovate technology to offer wireless broadband services. Specifically, Neptuno partnered with leading providers of WiMax-based wireless broadband equipment to develop a completely independent wireless backbone structure that allows it to offer WiMax solutions for the last mile. The 3650-3700 MHz band worked for these purposes because it allowed Neptuno to offer service-level agreements that are not feasible in bands more vulnerable to interference, and enabled Neptuno to provide a wide range of solutions to customers that require total carrier redundancy or an integrated wireless backup solution that operates in conjunction with their traditional wireline services. Since Neptuno began its operations in the 3650-3700 MHz band, it has invested over \$6 million on its WiMax infrastructure and over \$4 million in equipment.

The Commission's original proposal in the instant proceeding had two components: (1) the creation of a Citizens Broadband Service in the 3550-3650 MHz band subject to the license-by-rule regime and composed of three tiers and (2) the integration of the 3650-3700 MHz band (and its current licensees) into the proposed Citizens Broadband Service framework.<sup>5</sup> Neptuno did not object to the general contours of the Commission's proposal to promote small cell deployment in the 3550-3650 MHz band.<sup>6</sup> Neptuno did object, however, to the proposal to integrate the 3650-3700 MHz band (and its current licensees) into the proposed Citizens Broadband framework. Among other things, Neptuno noted that full integration of the 3650-3700 MHz band into the proposed Citizens Broadband Service framework would cripple the ability of Neptuno and others to continue to operate and provide the services that it offers now, in

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<sup>5</sup> See *In re Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, Notice of Proposed Rulemaking*, 27 FCC Rcd. 15594 (2012) ("NPRM")

<sup>6</sup> See Comments of Neptuno Networks (Feb. 20, 2013); Reply Comments of Neptuno Networks (Apr. 5, 2013).

addition to potentially going too far in modifying the terms of the licenses that Neptuno and others obtained in the 3650-3700 MHz band. Given the significant uncertainty and the many recognized challenges involved in promoting small cell deployments in the 3550-3650 MHz band alone, Neptuno urged the Commission to focus on allowing small cell deployment to flourish in the 3550-3650 MHz band, and monitor its development before contemplating any expansion to other bands where commercial operators are already present.

In the *Public Notice*, the Commission proposes significant changes to the Citizens Band Service framework as part of what the Commission calls the “Revised Framework.” In addition, the Commission again raises the possibility of extending the Citizens Band Service framework, as modified by the Revised Framework, to the 3650-3700 MHz band. Neptuno welcomes the changes proposed by the Commission, particularly those aimed at expanding eligibility for Priority Access tier use and granting licenses for discrete blocks of 10 MHz channels and at a granular geographic level. But Neptuno remains concerned with the supplemental proposal to extend the Citizens Band Service framework, even as modified by the Revised Framework, to the 3650-3700 MHz band. Neptuno again submits that the many unanswered questions and the need for additional testing and on-the-field observation counsels against integrating the 3650-3700 MHz band, at least initially. The challenges involved in promoting small cell deployments in the 3550-3650 MHz band, even under the Revised Framework, still appear significant enough to counsel focusing on that band first before adding the additional complicating factors involved in integrating a band composed of licensees that use different technology and equipment, currently operate under a different licensing regime, and have invested millions of dollar to help fulfill the Commission’s goal of expanding access to wireless broadband services.

## II. DISCUSSION

Neptuno continues to support the Commission's efforts to promote small cell deployment in the 3550-3650 MHz band. In this regard, the changes proposed in the Revised Framework are a welcomed development. By expanding accessibility to the Priority Access tier, the Revised Framework makes it more likely for commercial entities to invest in this arena. The flexibility inherent in granting exclusive licenses covering blocks of 10 MHz channels in highly localized geographic basis is also likely to contribute to the kind of micro-targeted cell deployment that will be critical for the success of small cell deployment in the 3550-3650 MHz band.

As stated above, however, Neptuno remains deeply concerned with the proposal to integrate the 3650-3700 MHz band into the Citizens Band Service framework, even as modified by the Revised Framework.

First, Neptuno remains concerned that that the higher power operations that are common in the 3650-3700 MHz band may be prove to be incompatible with the kind of small cell deployment envisioned in the Public Notice. The presence of low-power small cell deployments and higher power operations in a constrained geographical space (and operating in nearby spectrum) is likely to lead to interference and signal quality degradation. This is a concern that has been echoed by commenters in this proceeding.<sup>7</sup> Neptuno respectfully submits that until these questions can be answered with data derived from testing and on-the-field experience, rushing to extend the Revised Framework to the 3650-3700 MHz would not be advisable.

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<sup>7</sup> See, e.g., Comments of KanOkla Communications at 3; Comments of WISPA at 14; Comments of the Utilities Telecom Council, the Edison Electric Institute, and National Rural Electric Cooperative Association at 17 (raising concerns with interference from and to higher power operations in the Priority Access tier); Comments of Ericsson at 15-16 (urging the Commission to further study the coexistence of the different users that would share the 3550-3700 MHz band under the NPRM's proposal).

Second, while it is unclear what status the Commission is envisioning for current licensees under its supplemental proposal, each of the two more likely options poses serious questions and risks that cannot be fully addressed today. For instance, the Commission's initial proposal was to convert current licensees in the 3650-3700 MHz band into licensees in the third (and lowest tier) of the proposed Citizens Broadband Service framework. As Neptuno explained, integrating the 3650-3700 MHz band by treating incumbent licensees as GAA tier users would cripple the ability of Neptuno and others to continue providing the commercial broadband services that they provide today. As a GAA tier user, Neptuno would not have even the limited protections from interference that are currently available in the 3650-3700 MHz band. And without these protections, it would be impractical for operators like Neptuno to continue to provide point-to-point last-mile connectivity in the 3650-3700 MHz band, since the risk of interference from what could be numerous Priority Access tier users would prevent Neptuno from guaranteeing the level of service and reliability that its customers expect from a last-mile provider of commercial broadband service. The consequences are even more crippling in the case for Neptuno, which operates in a dense area where the propagation of even a limited number of Priority Access tier users in the 3650-3700 MHz band could disrupt Neptuno's ability to provide reliable service. Neptuno fears that this course of action could be so extreme in its implications as to have the effect of modifying the terms of its license without first following the procedures set forth in 47 U.S.C. § 316.

The other option would be to grandfather incumbent 3650-3700 MHz licensees as Priority Access tier users under the Revised Framework. This option certainly would be preferable to not grandfathering incumbent 355-3650 MHz licensees and/or downgrading them to GAA tier licensees under the Revised Framework. Indeed, grandfathering incumbent 3550-3650 MHz

licensees as Priority Access tier users would appear to be the best mechanism to allow incumbent licensees to continue to operate without modifying the terms of their licenses.

But grandfathering into the Priority Access tier still poses questions that are not answered by the Commission's current proposal. For instance, even if incumbent 3650-3700 MHz licensees were grandfathered as Priority Access users, the Commission's original proposal to limit the operations of these licensees to High Power Operation Zones ("HPO Zones") would severely hamper the ability of incumbent licensees to continue operating as they do now.<sup>8</sup> In the particular case of Neptuno, there is no indication whatsoever as to whether there will be any HPO Zones in Puerto Rico, thus leaving unclear whether Neptuno would be able to continue operate anywhere in its current service area. Any attempt to integrate the 3550-3650 MHz band into the Revised Framework should thus specify that incumbent licensees will be free to continue operating in the geographical areas where they currently operate (define based on whatever geographical tract the Commission ends up adopting).

Likewise, grandfathering incumbent 3650-3700 MHz licenses as Priority Access tier users would have limited practical effects if the geographic exclusion zones proposed for 3550-3650 MHz band are expanded into the 50 MHz of spectrum in the 3650-3700 MHz band. This is of particular concern in the case of Puerto Rico, where Neptuno operates, because the map provided in the Figure 2 of the *NPRM* does not cover Puerto Rico at all and it is easy to imagine a scenario where most of the island is covered by an exclusion zone. Because there appears to be no reason to expand these exclusion zones to the 3650-3700, the Commission would have to make clear that in any integration of the 3650-3700 MHz band into the Revised Framework the exclusion zones would not apply to the 3650-3700 MHz band. Otherwise, the supplemental proposal to

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<sup>8</sup> See *NPRM* at ¶¶ 77-79.

integrate the 3650-3700 MHz band would effectively force Neptuno to end its current operations.

Finally, simply grandfathering incumbent 3650-3700 MHz licensees as Priority Access tier users would not necessarily address all of the concerns with the incompatibility of the small cell deployments and the higher power commercial broadband service operations that are more prevalent in the 3650-3700 MHz band. As WISPA suggested in earlier comments,<sup>9</sup> some spectrum separation between low power Priority Access tier users and the higher power users that would be grandfathered as Priority Access tier users would be necessary. Likewise, it would be necessary to test and study how the propagation of potentially hundreds of low power small cell operations in high density areas may affect signal quality when operating nearby higher power operations such as those of the incumbent 3650-3700 MHz band licensees.

All of these questions are serious and they cannot be answered without first knowing how exactly small cell deployment will take place in the 3550-3650 MHz and what technology they will use. The uncertainty as to how small cell deployments will interact with one another and with the existing military and satellite users in the 3550-3650 MHz band are complicated and uncertain enough without adding the additional complexity and uncertain of determining how that would interact with the distinct operations of the incumbent 3650-3700 MHz licensees. This counsels for patience and a period of observation and study, not to a rush to fully integrate the 3650-3700 MHz band. Neptuno urges the Commission to continue with its plans for the 3550-3650 MHz as modified by the Revised Framework and wait until small cell deployments flourish in that band before considering integrating the 3550-3650 MHz band. At that point, consensus may emerge that adding the 50 MHz of the 3650-3700 MHz is unworkable or even unnecessary. Or the concerns with full integration may be swept away by data and experience. The

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<sup>9</sup> See Comments of WISPA at 7-14.

Commission should not proceed without the benefit of that experience, especially when it does not need the 3650-3700 MHz band to establish the framework under which small cell deployment can flourish in a 100 MHz band that is not being used for commercial purposes today.

### III. CONCLUSION

For these reasons, Neptuno respectfully requests that the Commission take notice of the instant comments and respectfully submits that promoting cell deployment and spectrum sharing in the 3560-3650 MHz band does not require a dramatic overhaul of the current 3650-3700 MHz regime in a manner that prevents current licensees from operating as they do now or that would leave them worse off than they are now.

Respectfully submitted,

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NETWORKS

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