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June 6, 2012

VIA ELECTRONIC DELIVERY

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: Amendment of Part 90 of the Commission's Rules to Improve Interference Protection in the 3650-3700 MHz Band, RM-11604

Dear Ms. Dortch:

Neptuno Networks ("Neptuno"), by and through the undersigned counsel, hereby submits this letter in support of the Petition for Rulemaking filed by the Fixed Wireless Communications Coalition ("FWCC") in the above-referenced proceeding (the "FWCC Petition").¹ For the reasons described more fully below, Neptuno urges the Federal Communications Commission ("FCC" or "Commission") to take prompt action to initiate a rulemaking proceeding to revise its licensing rules applicable in the 3.65 GHz band (*i.e.*, 3650-3700 MHz). Neptuno's recent experience in connection with certain 3.65 GHz link/location registration applications filed by RSISP in Puerto Rico² provides compelling evidence that the existing 3.65 GHz licensing regime is inadequate to protect authorized operators from harmful interference.

¹ See Petition for Rulemaking of the Fixed Wireless Communications Coalition, *Amendment of Part 90 of the Commission's Rules to Improve Interference Protection in the 3650-3700 MHz Band*, RM-11604 (filed Apr. 15, 2010) ("*FWCC Petition*"). The Commission sought public comments on the FWCC Petition on June 4, 2010. Consumer and Governmental Affairs Bureau, Public Notice, Report No. 2908 (rel. June 4, 2010).

² See ULS File Nos. 0004712285, 0004712103, 0004712134.

I. About Neptuno Networks

Established in 2000, Neptuno is a leading wireless service provider that offers a variety of enterprise services throughout Puerto Rico and the U.S. Virgin Islands. Such services include Layer 2 and Layer 3 MPLS Virtual Private Network services, Internet services, VoIP services, network consulting, integration services, and managed services. Neptuno serves over 1,400 business customers, providing each with the capability to deploy a complete, turnkey connectivity solution.

To support its independent wireless infrastructure, which has been designed and deployed for backbone connectivity and last mile WiMAX service, Neptuno has acquired a 3650-3700 MHz licenses and registered seven links in the band. The ability to conduct operations in an interference-free environment is essential for Neptuno to deliver the high-quality service that its enterprise customers demand and expect for their own uninterrupted commercial operation. Only through adequate regulatory protections, evenly and consistently enforced by the Commission, can Neptuno maintain the quality, reliability, and cost effectiveness of its services designed to meet its customers' voice, video, and data needs.

II. The Current 3.65 GHz Link/Location Registration Regime Is Inadequate

Neptuno agrees with FWCC that, although the 3.65 GHz band can play an important role in meeting the nation's spectrum needs for "mobile broadband, fixed wireless broadband access, and backhaul," its "utility . . . is impaired by the limited interference protection" that the FCC's current rules provide.³ Neptuno's recent experience with RSISP—and the material harmful interference to Neptuno's operations directly caused by RSISP's unlawful operations at three different locations—clearly demonstrates that the current 3.65 GHz licensing rules do not adequately protect authorized operators in the band from harmful interference. The existing licensing regime relies too heavily upon the good faith efforts of prospective registrants to coordinate with existing licensees to avoid, or even mitigate, such interference. Accordingly, the Commission should take prompt action to review and revise its Part 90 rules applicable to the 3.65 GHz band to ensure that licensees lawfully operating within that band are sufficiently protected from harmful interference.

A. Current Regulatory Framework

The service rules for the 3.65 GHz band combine "the flexibility with unlicensed operation with some of the interference protection associated with traditional licensing."⁴ Upon application to the Commission, 3.65 GHz licensees receive non-exclusive, nationwide licenses.⁵ However, prior

³ *FWCC Petition* at 1-2.

⁴ *Id.* at 2.

⁵ 47 C.F.R. § 90.1307.

to commencing service on a fixed or base station, the licensee must register the link/location with the Commission.⁶

Under Section 90.1319(d) of the FCC's rules, applicants and licensees in the 3.65 GHz band must cooperate in the selection and use of frequencies and locations "to minimize the potential for interference and make the most effective use of the authorized facilities."⁷ Licensees are directed to examine the Commission's Universal Licensing System ("ULS") before seeking station authorization, and "to make every effort to ensure that their fixed and base stations operate at a location, and with technical parameters, that will minimize the potential to cause and receive interference."⁸ Licensees in the 3.65 GHz band may not commence base station operations until their specific registration applications pertaining to such base stations have been granted.⁹

Moreover, licensees "suffering or causing harmful interference are expected to cooperate and resolve this problem by mutually satisfactory arrangements."¹⁰ In the past, the Commission has declined to adopt a conventional, exclusive licensing regime for the 3.65 GHz band, and has likewise refused to implement certain modifications "that would effectively infuse the non-exclusive licensing scheme with some of the rights and protections of a traditional, exclusively licensed regime."¹¹ Rather, the Commission has emphasized that Section 90.1319(d) requires registration applicants "to reach a reasonable accommodation with the other operators nearby,"¹² and that "all registration data is available publicly, online" "[t]o facilitate the required cooperation and sharing" among 3.65 GHz licensees.¹³

B. RSISP's Unauthorized 3.65 GHz Operations

Neptuno's recent experience in Puerto Rico with RSISP highlights the deficiencies of the Commission's current 3.65 GHz licensing and registration regime. Despite its obligation to comply with Section 90.1319(d), RSISP, a 3.65 GHz licensee, elected to begin operations at three different locations in Puerto Rico without registering its links/locations in the FCC's database, discussing its operations with Neptuno, or cooperating in the resolution of the harmful interference that resulted.

⁶ *Id.*

⁷ 47 C.F.R. § 90.1319(d); *see also* Wireless Telecommunications Bureau Announces Start Date for Licensing and Registration Process for the 3650-3700 MHz Band, *Public Notice*, 22 FCC Rcd 19802, 19803 (2007) (noting that 3.65 GHz licensees "have the mutual obligation to cooperate and avoid harmful interference to one another").

⁸ 47 C.F.R. § 90.1319(d).

⁹ *Id.* § 90.1307.

¹⁰ *Id.* § 90.1319(d).

¹¹ Wireless Operations in the 3650-3700 MHz Band, *Memorandum Opinion and Order*, 22 FCC Rcd 10421 ¶ 20 (2007) (the "3.65 GHz MO&O").

¹² *See id.* at 10429 ¶ 22.

¹³ World Data PR Inc. Applications for Base/Fixed Station Registrations in the 3650-3700 MHz Band under Nationwide, Non-exclusive License Call Sign WQJI716, *Memorandum Opinion and Order*, 24 FCC Rcd 14648 ¶ 2 (2009) ("World Data Order").

Because of RSISP's unlawful operations, Neptuno and its customers suffered material harmful interference that resulted in substantial business losses.

This occurrence mirrors past instances in which Neptuno suffered harmful interference caused by the unauthorized operations of another 3.65 GHz licensee,¹⁴ and provides even more compelling evidence that the Commission's 3.65 GHz licensing regime does not effectively manage operations in the band. As the FWCC Petition notes, the Commission's rules, and the Wireless Telecommunications Bureau's interpretation of those rules, "allows a newcomer to cause harmful interference to an incumbent, and then demand that the incumbent make adjustments to alleviate the interference."¹⁵

Beginning on approximately March 1, 2012, Neptuno's 3.65 GHz WiMAX network in Ponce and Juana Díaz, Puerto Rico, began to experience intermittent harmful interference from an unknown source. The interference manifested through signal degradation, loss of packets and communication, and increased noise. Consequently, Neptuno received a number of complaints from various customers served in those areas. Following these complaints, Neptuno attempted to resolve the interference by adjusting the frequency channel design and transmission power at its base stations. Despite these initial troubleshooting efforts, material harmful interference to Neptuno's network continued.

On Tuesday, March 13, 2012, following additional complaints, Neptuno replaced one of its base stations located at Ponce, at a substantial cost. After this failed to remedy the problem, Neptuno conducted further testing and discovered the interference was most likely the result of another party's operations in the 3.65 GHz band.

On Wednesday, March 14, 2012, a Neptuno base station located in Juana Díaz experienced interference similar to that experienced at Neptuno's base station in Ponce. Following additional analysis, Neptuno employees identified unregistered base stations operated by RSISP as the source of the interference. Upon closer inspection, Neptuno discovered Ubiquiti radios transmitting in the 3.65 GHz band from three separate locations, in Ponce and Juana Díaz, all of which continued to cause material interference to Neptuno's operations.

Neptuno subsequently contacted Robert Schmidt, the sole proprietor of RSISP, with a principal office located at 928 Hostos Avenue in Ponce, Puerto Rico. Mr. Schmidt confirmed to Neptuno's employees that RSISP was transmitting on the 3.65 GHz band in Ponce and Juana Díaz using Ubiquiti equipment at three base stations, none of which had been registered with the FCC. At the time of Neptuno's initial contact with Mr. Schmidt, RSISP did not even have registration

¹⁴ See *World Data Order* ¶¶ 3-4. As described below, RSISP's conduct was even more harmful than past instances of 3.65 GHz licensee transmissions in Puerto Rico that have caused harmful interference to Neptuno's operations. See *supra* Section III.A.

¹⁵ *FWCC Order* at 5.

applications for these sites pending at the Commission. Rather, on March 15, 2012—one day after learning that its operations were adversely affecting Neptuno’s network—RSISP resuscitated three of its returned 3.65 GHz link/location registration applications for the locations in question.

On March 17, 2012, Neptuno again attempted to resolve the interference problems directly with Mr. Schmidt. At that time, he expressed his intention to discontinue his unlawful operations within the next two days, and to begin operations in the 5 GHz band. Despite these representations, Mr. Schmidt never ceased transmitting in the 3.65 GHz band.

Neptuno had little recourse other than to contact the FCC field officer in Puerto Rico, Reuben Jusino, which it did shortly after identifying the source of interference. On March 15, 2012, after discussing the harmful interference with Mr. Schmidt, Neptuno officials contacted Mr. Jusino to explain this matter and its adverse impact on Neptuno’s operations and customers. On March 19, 2012, after RSISP failed to discontinue its operations in the 3.65 GHz band, Mr. Jusino sent RSISP an order directing RSISP to cease and desist its operations causing the harmful interference to Neptuno. Unfortunately, RSISP did not abide by the FCC’s directive, and continued to operate at the three locations in Ponce and Juana Díaz.

Despite Neptuno’s pleas to the FCC field office for help, and despite RSISP’s failure to heed Mr. Jusino’s directive to cease its 3.65 GHz transmissions, the Commission accepted RSISP’s pending link/location registration application on April 26, 2012.¹⁶ That such applications were granted “without prejudice to possible enforcement action for any operations without FCC authorization prior to April 26, 2012,” provides only a vague indication that RSISP may face repercussions for its unauthorized transmissions. To date, Neptuno is not aware of any enforcement action that has been initiated against RSISP regarding its conduct described herein, although Neptuno encourages the Commission to refer this matter to the Enforcement Bureau to determine whether a monetary forfeiture, license revocation, or other sanction should be imposed on RSISP.

C. The Adverse Consequences to Neptuno and Its Customers

RSISP’s unlawful transmissions have had a direct adverse impact on Neptuno’s service. Yet, due to the current 3.65 GHz rules, Neptuno was powerless to protect its own operations and could only stand idly by while RSISP transmitted without restraint, and without fear of any consequence from the Commission. In fact, by granting RSISP’s link/location registration applications—*after* Neptuno informed the FCC field officer of RSISP’s unlawful operations—the Commission has effectively rewarded RSISP’s harmful conduct, effectively placed RSISP on the same legal footing as 3.65 GHz operators that have complied with the rules, and empowered a licensee that clearly cannot be trusted to cooperate in the future with other licensees to avoid harmful interference in the 3.65 GHz band, and likely to continue wreaking havoc on Neptuno’s operations.

¹⁶ See ULS File Nos. 0004712285, 0004712103, 0004712134.

The interference harm to Neptuno has been severe. Neptuno serves several hundred enterprise customers in Puerto Rico, many of whom rely upon base stations located in close proximity to the RSISP sites. Neptuno estimates that at least 118 of its customers located in and around Ponce and Juana Díaz experienced harmful interference from RSISP's operations at the three locations in Puerto Rico. Since detecting RSISP's unauthorized operations, Neptuno has received complaints from a substantial number of its customers, many of whom have expressed a desire to cancel service and/or receive reimbursement as compensation for the service degradations.

III. The Commission Should Revise the Part 90 Rules to Further Protect Incumbent 3.65 GHz Licensees From Harmful Interference

A. RSISP's Egregious Conduct Evidences the Weaknesses of the Commission's 3.65 GHz Rules

The foregoing facts offer compelling evidence that the Commission's 3.65 GHz rules are inadequate to protect authorized operators from harmful interference. RSISP consistently and intentionally failed to abide by the applicable rules in the following respects:

- *First*, RSISP operated base stations illegally in violation of Section 90.1307, apparently without attempting to identify potential licensees that could be adversely affected by its transmissions, and without seeking the necessary FCC registrations.
- *Second*, RSISP failed to take any measures to operate its stations at a location, and with technical parameters, that consider potential interference to other licensees. Prior to filing the registration applications at issue, RSISP clearly failed to consult ULS or take any other steps to cooperate with other authorized users in its use of the 3.65 GHz band.¹⁷ Only after RSISP learned that it was causing material interference to Neptuno did RSISP renew its applications to register its links with the Commission.
- *Third*, RSISP failed to cooperate with Neptuno to minimize potential interference and make the most effective use of the authorized facilities. RSISP not only disregarded its Section 90.1319(d) obligations prior to filing the link/location registrations, it also ignored them when it became aware of the interference caused to Neptuno. As the attached declaration of Jorge Melendez of Neptuno Networks demonstrates, at no time did any employee or representative of RSISP attempt to communicate with Neptuno regarding the parties' shared use of the 3.65 GHz band, even after Neptuno informed RSISP that its unlawful operations were causing

¹⁷ See *World Data Order* ¶ 13.

harmful interference to Neptuno's customers.¹⁸ Moreover, RSISP failed to respond to Neptuno's requests to discuss how the parties might resolve the interference concerns, and declined to provide information to Neptuno concerning RSISP's network operations and potential means of mitigating interference.¹⁹

- *Fourth*, RSISP ignored the local FCC field officer's directive to cease and desist operations pending resolution of Neptuno's interference complaint.
- *Fifth*, RSISP has not employed a technology that Neptuno uses, and therefore has not "facilitated the opportunity for both licensees to use synchronization to substantially mitigate interference between the two systems."²⁰ Likewise, RSISP is not using any directional antennas or other spectrum management techniques that will mitigate the risk of interference to Neptuno's operations.²¹

Such blatant disregard for the FCC's Part 90 rules not only reflects RSISP's lack of fitness as a licensee,²² it also underscores how ineffective the current regulatory regime is in protecting authorized 3.65 GHz operations.

B. The Commission Should Revise the 3.65 GHz Licensing Regime

Neptuno strongly urges the Commission to institute a rulemaking to revise the current licensing regime for the 3.65 GHz band. As FWCC has explained to the Commission, even minor clarifications to the existing rules will serve the public interest by ensuring that all licensees understand the full scope of their obligations.²³ By adopting clear, mandatory standards that better protect incumbent licensee operations, the Commission can promote the public interest by making 3.65 GHz services more reliable, reducing the number of disputes among licensees, and enabling licensees and applicants to better understand their rights and obligations.

¹⁸ See Attachment 1, Jorge Melendez Declaration (June 1, 2012) ¶ 9.

¹⁹ *Id.* ¶¶ 7-9.

²⁰ *See id.*

²¹ *See id.*

²² RSISP's egregious conduct offers a reasonable basis to conclude that it is not likely to use good faith efforts in the future to share spectrum, cooperate with existing link/location registrants, or work to resolve interference issues that may arise in the future. In stark contrast to RSISP's conduct, Neptuno, which has a strong record of cooperating with other users of the 3.65 GHz band, took multiple steps to resolve the interference problems caused by RSISP. For example, Neptuno initiated contact with Mr. Schmidt to discuss how to resolve the interference that is affecting Neptuno's customers on two occasions. The Commission has encouraged 3.65 GHz licensees to take such actions in the event of interference. *See id.* As a result of these discussions, Mr. Schmidt verbally committed to discontinue his operations in the 3.65 GHz band, and to instead transmit in the 5 GHz band. However, as noted above, Mr. Schmidt never followed through on this commitment. Additionally, RSISP never initiated contact with Neptuno to discuss the shared use of the 3.65 GHz band, and clearly has no interest in cooperating with Neptuno to resolve these issues.

²³ *FWCC Petition* at 6-7.

At a very minimum, the Commission should adopt the language proposals endorsed by FWCC.²⁴ The Commission can easily improve the advisory language currently contained in Section 90.1319(d) to *require* licensees to (i) examine the FCC's database before seeking a station authorization, (ii) make efforts to ensure that their operations will minimize the potential to cause and receive interference, and (iii) cooperate to resolve interference. Neptuno agrees that such changes will "improve quality of service while preserving the band's flexibility and speedy implementation."²⁵

However, the Commission should also consider even greater reform to the 3.65 GHz licensing regime. As demonstrated by RSISP's misconduct, the requirement that parties "act in good faith to help eliminate the interference" is not enough.²⁶ Accordingly, the Commission should revisit some of the proposals that it discounted in 2007, including:

- A requirement that later-in time licensees coordinate their operations with incumbent licensees to protect incumbent operations from harmful interference;
- A frequency coordination regime, consistent with other Part 90 frequencies, under which designated frequency coordinators will evaluate licensees' needs for spectrum at specific sites within a given territory; and
- Performance standards to ensure that 3.65 GHz licensees actually provide service where they have registered operations.

While these proposals may reduce some of the flexibility and speed with which licensees can deploy service in the 3.65 GHz band, they will more effectively prevent the type of harmful interference that Neptuno has experienced. By instituting a rulemaking proceeding, the Commission can obtain a better understanding as to whether such revisions are necessary.

²⁴ *Id.*

²⁵ *Id.* at 7.

²⁶ *World Data Order* ¶ 15 (*citing* Wireless Operations in the 3650-3700 MHz Band, ET Docket No. 04-151, Rules for Wireless Broadband Services in the 3650-3700 MHz Band, WT Docket No. 05-96, *Report and Order*, 20 FCC Rcd 6502, 6513 ¶ 29 (2005) ("*3.65 GHz R&O*").

Attachment 1

Declaration of Jorge Melendez

1. I, Jorge Melendez, am the Director of Planning and RF Department of Neptuno Networks (“Neptuno”). In this capacity, I am responsible for the planning, design, construction, maintenance, and operation of Neptuno’s 3.65 GHz network, which serves several hundred enterprise customers in Puerto Rico, including Ponce and Juana Díaz.
2. On Wednesday, March 14, 2012, after several days of extensive investigation, Neptuno determined that harmful interference to its authorized 3.65 GHz network operations was being caused by three unregistered base stations operated by RSISP in Ponce and Juana Díaz.
3. After further investigation, Neptuno located the base stations, all of which used Ubiquiti radio equipment, at the following three locations: 928 Ave. Hostos, Ponce, Puerto Rico (18-0-15.58 N, 066-36-50.98 W); El Sector El Vigía El Bertoly St., Ponce, Puerto Rico (18-1-12.98 N, 66-37-4.43 W); and Juana Díaz, Puerto Rico (18-02-34.99 N, 066-31-46.31 W). Neptuno confirmed that these base stations were not registered with the Federal Communications Commission or reflected in the Universal Licensing System (“ULS”).
4. Immediately after identifying the source of the harmful interference to its authorized 3.65 GHz network, Neptuno initiated a search for the party responsible for operating the unregistered base stations to discuss the harmful interference and unauthorized 3.65 GHz operations, inform or remind the party of its obligation under the FCC’s rules to use its good faith efforts to cooperate with other authorized users in its use of the 3.65 GHz band, understand the offending party’s intentions for use of the 3.65 GHz band and network deployment in the Ponce and Juana Díaz areas, and determine if the party planned to operate in a manner that avoided harmful interference to Neptuno and other licensees operating in the area.
5. On the afternoon of Wednesday, March 14, 2012, Neptuno’s engineers were able to determine that the unregistered base stations belonged to RSISP, an internet service provider operating in Ponce, Juana Díaz and Santa Isabel, Puerto Rico.
6. Neptuno subsequently contacted Robert Schmidt, the sole proprietor of RSISP, with a principal office located at 928 Hostos Avenue in Ponce, Puerto Rico. Mr. Schmidt confirmed to Neptuno employees that RSISP was using Ubiquiti equipment to transmit in the 3.65 GHz band at three base stations in Ponce and Juana Díaz, but that it lacked the necessary FCC authorizations to do so.
7. On March 17, 2012, Mr. Schmidt expressed his intention to discontinue RSISP’s operations in the 3.65 GHz band by March 19, 2012, and to commence operations in the 5 GHz band. Despite these representations, RSISP did not discontinue transmitting in the 3.65 GHz band on March 19, 2012.
8. On March 15, 2012, I contacted Reuben Jusino in the FCC’s field office in Puerto Rico to explain the adverse impact that RSISP’s unauthorized operations were having on Neptuno’s

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operations and customers. On March 19, 2012, I received a copy of an order (sent by email) from Mr. Jusino to RSISP directing RSISP to cease and desist its unauthorized operations in the 3.65 GHz band. Despite this directive, RSISP continued to conduct unauthorized operations in the 3.65 GHz band at the three locations in Ponce and Juana Díaz.

9. Mr. Schmidt was not willing to cooperate with Neptuno to facilitate the parties' shared use of the 3.65 GHz band. Additionally, he declined to provide Neptuno with information regarding RSISP's intentions for using the 3.65 GHz band and network deployment in the Ponce and Juana Díaz areas.
10. On March 23, 2012, Neptuno learned that RSISP resuscitated its 3.65 GHz link/location registration applications with the FCC for the three sites in Ponce and Juana Díaz on March 15, 2012, just one day after Neptuno informed RSISP of the harmful interference that RSISP's transmissions were causing to Neptuno's network and customers.
11. Despite several requests from Neptuno, RSISP never cooperated with Neptuno in the selection or use of frequencies in the 3.65 GHz band. RSISP also failed to provide Neptuno with the technical aspects of its plans to operate the 3.65 GHz sites (and avoid harmful interference to Neptuno 3.65 GHz operations) in Puerto Rico.
12. Without that information, Neptuno was unable to assess how 3.65 GHz operations by RSISP and Neptuno in close proximity could coexist without harmful interference.
13. Use of the 3.65 GHz band for fixed wireless broadband operations in Puerto Rico poses significant technical challenges due to topographical, building density and other issues. In such an environment, it is essential that parties seeking to use the 3.65 GHz band communicate and cooperate with each other in their use of spectrum. The close proximity of Neptuno's base stations to RSISP's sites will likely result in an overlap of coverage areas served by the two companies. Although it might be possible for the 3.65 GHz operations of the two companies in this area to be conducted so as to avoid harmful interference, interference-free coexistence can only occur if both parties are sensitive to each other's operations and cooperate in the use of frequencies. If these steps are not taken, RSISP's operation at those sites will continue to cause harmful interference to Neptuno's authorized and existing 3.65 GHz operations.
14. RSISP's transmissions have had a direct adverse impact on Neptuno's business. Neptuno serves several hundred enterprise customers in Puerto Rico, many of whom receive service from base stations located in close proximity to RSISP's sites. Neptuno estimates that at least 118 of its customers located in and around Ponce and Juana Díaz have experienced interference from RSISP's operations. Since detecting RSISP's operations, Neptuno has received complaints from a number of its customers. Many of those customers have expressed a desire to cancel service and/or receive reimbursements for the service degradations.

Dated: June 6, 2012

Jorge Melendez
Director of Planning and RF Department
Neptuno Networks