**Before the**
**Federal Communications Commission**
**Washington, D.C. 20554**

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| In the Matter of | ) | |
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| AMERICAN SAMOA TELECOMMUNICATIONS AUTHORITY | ) | File Nos. 0006512857, 0006512884, 0006513476, 0006513020 |
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| Request for Waiver of Sections 101.141(a)(3) of the Commission's Rules for Common Carrier Fixed Point to Point Microwave Stations in Aunu'u, American Samoa and Ta'ū, American Samoa | ) | |

**ORDER**

**Adopted: December 16, 2014** **Released: December 17, 2014**

By the Deputy Chief, Broadband Division, Wireless Telecommunications Bureau:

1. *Introduction.* We have before us requests by American Samoa Telecommunications Authority (ASTCA) for waivers of Section 101.141(a)(3)(i) of the Commission's Rules[1] to permit it to install a microwave transmitter that does not meet the Commission's minimum payload capacity requirements. For the reasons set forth below, we grant the waiver requests.

2. *Background.* ASTCA is the licensee of two microwave paths in the 2450-2500 MHz band that are authorized to transmit between the islands of Aunu'u and Ta'ū in American Samoa.[2] These links provide backhaul for voice, video and data traffic between the islands.[3] According to ASTCA, the amount of data traffic has significantly increased over the past few years and the existing microwave links can no longer support the necessary data rates.[4] While ASTCA is currently in the process of installing a fiber optic cable along the ocean floor between the two islands to replace the existing microwave links, it explains that it intends to utilize the proposed microwave link for data transfer between the island while the cable is being installed and as its primary backup to the fiber optic cable after installation is complete because the link between the two islands supports critical communications and data traffic.[5]

3. ASTCA has determined that it will need two 30 megahertz channels for the microwave path from Aunu'u to Ta'ū and two 30 MHz channels for the return path from Ta'ū to Aunu'u in order to satisfy the current data traffic requirements.[6] Because the proposed path between the two islands is approximately 136 kilometers long and 90 percent of the path is over water, these unique propagation

[1] 47 C.F.R. § 101.141(a)(3)(i).

[2] *See* call signs WQJV400, WQJV401, WQJV402, and WQJV403.

[3] American Samoa Telecommunications Authority, File Nos. 0006512857, 0006512884, 0006513476, and 0006513020, Request for Waiver (filed Oct. 22, 2014) (Waiver Request) at 1.

[4] Waiver Request at 1.

[5] Waiver Request at 1.

[6] Waiver Request at 1.

conditions present a difficult engineering problem when trying to design a microwave link that will have high reliability and a reasonably high data rate.[7]

4. ASTCA states that it has explored options in fixed point-to-point microwave bands available to common carriers below 7 GHz and has decided to pursue authorizations in the 6525 MHz to 6875 MHz band.[8] Comsearch has investigated the potential for interference from the proposed facilities to all potentially affected licensees authorized to operate in this band and determined that no interference is expected.[9] ASTCA plans to use the Moseley NX-GEN-T radio in its proposed operations and has determined that 32 QAM is the maximum modulation level that can be employed while still maintaining the desired level of reliability.[10] The Moseley NX-GEN-T radio is capable of a maximum data rate of 86000 kilobits per second with 32 QAM modulation and a channel bandwidth of 30 megahertz.[11]

5. Section 101.141(a)(3) of the Commission's Rules establishes minimum payload capacities (in terms of megabits per second) for various channel sizes in certain Part 101 bands.[12] Pursuant to Section 101.141(a)(3), the minimum payload capacity for equipment operating on channel bandwidths of greater than 20 megahertz on frequencies between 3,700 and 10,550 MHz is 4.4 bits per second per hertz.[13] For a 30 megahertz channel, the required data rate would be 132,000 kilobits per second. Because the data rate for the Moseley NX-GEN-T radio operating with 32 QAM modulation is insufficient to meet the payload capacity requirement set forth in Section 101.141(a)(3)(i) of the Commission's Rules,[14] ASTCA seeks a waiver.[15]

6. *Discussion.* We may grant a request for waiver when (i) the underlying purpose of the rules(s) would not be served or would be frustrated by application to the instant case, and a grant of the requested waiver would be in the public interest; or (ii) in view of unique or unusual factual circumstances, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.[16] Under the circumstances presented, we conclude that grant of the waiver request is warranted pursuant to Section 1.925(b)(3)(ii) because, in view of the unique circumstances, ASTCA has no reasonable alternative.

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[7] Waiver Request at 1.

[8] ASTCA states that there is not enough available spectrum to accommodate four 30 megahertz channels in any of the 2 GHz bands. Waiver Request at 2. ASTCA further contends that, although sufficient spectrum is available in the 3700 MHz to 4200 MHz band (C-band) to accommodate four 30 MHz channels, this band is shared with satellite C-Band operations and many fixed satellite C-Band earth station receivers are licensed to operate in American Samoa, especially on the island of Aunu'u. Waiver Request at 2. According to an interference analysis performed by Comsearch, many fixed satellite C-Band earth station receivers were predicted to receive interference from ASTCA's proposed microwave facilities that could not be practically mitigated. Waiver Request at 2.

[9] Waiver Request at 2.

[10] The Moseley NX-GEN-T radio is capable of many different modulation modes (QPSK, 16 QAM, 32 QAM, 64 QAM, 128 QAM and 256 QAM). Waiver Request at 3. However, ASTCA claims that, given the path propagation characteristics, a more robust (lower) modulation is necessary in order to ensure that the microwave links have a high reliability. Waiver Request at 3.

[11] Waiver Request at 3.

[12] 47 CF.R. § 101.141(a)(3).

[13] 47 CF.R. § 101.141(a)(3).

[14] 47 C.F.R. § 101.141(a)(3).

[15] Waiver Request at 3.

[16] *See* 47 C.F.R. § 1.925(b)(3)(i)-(ii).

7. The underlying purpose of Section 101.141(a)(3) of the Commission's Rules is to promote efficient frequency use.[17] The Commission believes that requiring links to carry a set amount of traffic (expressed in mega-bits/second) ensures that licensees will actually place the spectrum and their facilities to efficient use.[18] We have granted waivers of Section 101.141(a)(3) in cases where the licensee serves a sparsely populated and remote area that is unlikely to become further developed and experience greater frequency demands, and other unusual circumstances weigh in favor of granting the waiver.[19]

8. In this instance, we find that that ASTCA has presented unique circumstances and that it has no reasonable alternative. The propagation characteristics present challenging and unique circumstances in which to engineer a link at a payload capacity compliant with Section 101.141(a)(3) of the Commission's Rules. As noted by ASTCA, the proposed path between two remote islands in American Samoa is approximately 136 km long and 90% of the path is over water.[20] Although the proposed transmitting radio is capable of higher modulations, ASTCA needs use a lower modulation, specifically 32 QAM, in order to achieve the desired level of reliability.[21] The higher level of reliability is necessary because the links support critical communications and data traffic. While lower frequencies offer more favorable propagation characteristics, ASTCA has explored such options but the frequencies are either unavailable for the bandwidth necessary or would cause interference to other licensees. Based on the these unique circumstances and the lack of a reasonable alternative, we find that a waiver of payload capacity requirement set forth in Section 101.141(a)(3) is warranted to permit ASTCA to operate the links between Aunu'u and Ta'ū.

9. Accordingly, IT IS ORDERED that pursuant to Section 4(i) of the Communications Act of 1934, 47 U.S.C. § 154(i), Sections 1.925, and 101.141(a)(3) of the Commission's Rules, 47 C.F.R. §§ 1.925, and 101.141(a)(3), the requests for waiver filed by American Samoa Telecommunications

[17] *See* Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees, *Report and Order, Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order*, 26 FCC Rcd 11614, 11632 ¶ 40 (2011) (*Wireless Backhaul Report and Order*) (*citing* Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, *Report and Order*, WT Docket No. 94-148, 11 FCC Rcd 13449, 13476 ¶ 77 (1996).

[18] *Wireless Backhaul Report and Order*, 26 FCC Rcd at 11632 ¶ 40.

[19] *See, e.g.*, Minnesota Power, Inc., *Order,* 18 FCC Rcd 11374, 11375 ¶ 6 (WTB PSPWD 2003); Kentucky Power Company d/b/a American Electric Power, *Order*, 17 FCC Rcd 453, 455 ¶ 6 (WTB PSPWD 2002) (operation in remote area, and transmitter purchased before efficiency standards were adopted); Wilderness Valley Telephone Company, *Order*, 15 FCC Rcd 11751, 11752-11753 ¶ 6 (WTB PSPWD 2000) (operation in remote area, and no model of compliant transmitter would withstand the weather conditions at the proposed site).

[20] Waiver Request at 2. The two islands are located in American Samoa, which is in the South Pacific Ocean. The population of American Samoa is 55,519, according to the 2010 Census. *See* U.S. Census Bureau Releases 2010 Census Population Counts for American Samoa, *News Release*, (Aug. 24, 2011), *available at* http://www.census.gov/2010census/news/releases/operations/cb11-cn177.html. The islands of Ta'ū and Aunu'u had populations of 873 and 476, respectively, as of the 2000 Census.

[21] ASTCA states the calculated annual link reliability for operating at 32 QAM and 64 QAM is 99.99916 % and 99.94450 %, respectively. Waiver Request at 3.

Authority on October 22, 2014 ARE GRANTED, and applications File Nos. 0006512857, 0006512884, 0006513476, and 0006513020 shall be processed consistent with this *Order* and the Commission's rules.

10. This action is taken under delegated authority pursuant to Sections 0.131 and 0.331 of the Commission's Rules, 47 C.F.R. § 0.131, 0.331.

FEDERAL COMMUNICATIONS COMMISSION

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