In the Matter of Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354

REPLY COMMENTS OF GENERAL COMMUNICATION, INC.

General Communication, Inc. (“GCI”) hereby submits the following reply comments in connection with the Federal Communications Commission’s (“FCC’s” or “Commission’s”) Second Further Notice of Proposed Rulemaking (“Second FNPRM”) seeking further comment on specific proposals concerning the service rules for the 3550-3700 MHz band (“3.5 GHz Band”). GCI provides important and critical services using Fixed Satellite Services (“FSS”) on the adjacent 3700-4200 MHz band (the “C-Band”). Accordingly, GCI urges the Commission to adopt appropriately tailored interference criteria to protect such out-of-band FSS earth station operations from interference by devices used in the 3.5 GHz Band.

I. INTRODUCTION

The Commission appropriately recognizes “the need to protect incumbent FSS earth stations from harmful interference.” GCI strongly supports the Commission’s stated goal to prevent harmful interference into the C-Band from Citizens Broadband Radio Service Devices

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1 In the Matter of Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, FCC 15-47 (rel. Apr. 21, 2015) (hereinafter, the “Report and Order” portion of the item will be referred to as “Report and Order”, while the Second Further Notice of Proposed Rulemaking” portion of the item will be referred to as “Second FNPRM”).

2 Report and Order ¶ 287.
(“CBSDs”) and agrees with the Commission that additional steps are necessary to ensure uninterrupted communications in adjacent bands.³

GCI highly values the C-Band for the same reason that the Commission seeks to protect it: “because its propagation characteristics allow for greater service reliability compared to other bands, especially in adverse weather conditions.”⁴ These characteristics are particularly important to GCI, Alaska’s largest communication provider. GCI provides critical and important services over the C-Band, and operations in Alaska oftentimes face particularly inclement weather. Many of these critical services, if interrupted, could result in life-threatening situations. For instance, GCI relies on the C-Band to offer long distance Measured Toll Service (“MTS”) to remote villages in Alaska. In many cases, these satellite services are the only communications option that these residents can rely upon to contact emergency officials in critical situations. In addition, GCI operates the largest medical network in Alaska, “ConnectMD,” which relies heavily on C-band spectrum to deliver its services. Notably, this network allows remote communities access to immediate healthcare expertise that is otherwise unavailable or extremely difficult to obtain. GCI also relies on the C-Band to operate an educational network, “SchoolAccess,” in rural and underserved areas. SchoolAccess delivers the latest technology and resources to teachers, students, administrators and parents, who may otherwise not have access to such resources due to their geographic location.

Subscribers to these vital communication services rely upon (and expect) uninterrupted service. Therefore, it is imperative that the Commission implement stringent interference protections for FSS earth stations in the C-Band to account for the volume of new CBSDs and End User Devices that will soon be operating in the adjacent 3.5 GHz Band as a result of the

³ See id. ¶¶ 292, 295.
⁴ Id. ¶ 292.
Commission’s newly adopted rules. In particular, GCI recommends that the Commission adopt interference protection criteria accounting for the aggregate interference power at the FSS earth station receiver based on (a) the theoretical thermal noise floor, and (b) a default earth station antenna elevation level, and adopt stringent out-of-band emission (“OOBE”) limits for CBSDs.

II. GCI PROVIDES CRITICAL OPERATIONS VIA FSS EARTH STATIONS IN THE C-BAND

GCI relies on its satellite operations in the C-Band to provide a variety of critical communication services to its customers, including, but not limited to, long-distance services, telehealth networks, and long-distance learning programs. In many instances, GCI’s C-Band satellite operations are the only way that Americans in Alaska are able to make and receive life-saving communications. Below are a number of examples of services provided by GCI over the C-Band.

Critical Long-Distance Services. GCI offers MTS for consumers and businesses using its licensed C-Band spectrum. For many remote villages in the northern, western, and interior regions of Alaska, this is oftentimes the only communications link to the “outside world,” allowing these residents to contact state troopers and other emergency officials at all times, but especially in critical situations. Many of these communities have no terrestrial (or other) transmission alternative. GCI also provides long-distance private line (special access) services to businesses, native corporations, and local, state and federal governments. These operations also service FAA circuits and other government agency circuits, helping to ensure that the most critical and secured communications travel from and reach their intended destination. Any interference to such circuits could result in the potential loss of life.

Telehealth. Through its “ConnectMD” network, GCI supports the delivery of telemedicine services such as teleradiology, remote patient monitoring, medical network
solutions, and live video-conferencing to customers in Alaska. GCI has over 85 C-Band sites in Alaska, ranging from sites in large cities like Anchorage to small, remote islands such as Atka and Nikolski. These C-Band sites cover government health providers such as North Slope Borough Department of Health and Social Services, as well as Tribally-operated, non-profit health and social services organizations like the Arctic Slope Native Association. As discussed in prior comments, GCI has witnessed firsthand the transformational benefits of telemedicine for health care delivery in Alaska. These services improve healthcare in areas that traditionally have few physicians and even fewer medical specialists in a variety of medical fields, including audiology, cardiology, dental, family medicine, neurosurgery, ophthalmology, pediatrics, psychiatry, and women’s health. In most instances, the ConnectMD network is the only way that rural Alaskans may gain access to such specialists. For example, without telepsychiatry services, residents seeking psychiatric care in many remote villages would either have to wait for a sporadic visit from a traveling psychiatrist, or would have to travel vast distances – usually at a high cost – to seek the medical help that they needed. Neither of these options would likely be possible during the harsh long Alaskan winter. However, telepsychiatry has “extended the clinical infrastructure of the [Alaska Psychiatric Institute] hospital to areas typically not served

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8 See, e.g., Comments of General Communication, Inc., WC Docket No. 02-60 (filed Sept. 8, 2010).
9 For example, “the transportation costs, and then all of the other unintended costs that go along with that, traveling through Alaska [are a problem] . . you’re out of your village. You have costs if someone travels with you. You have food and lodging.” Joaqlin Estus, Study Shows Telepsychiatry Effective for Alaska Elders, NEW AMERICA MEDIA (Feb 13, 2014), http://newamericamedia.org/2014/02/study-shows-telepsychiatry-effective-for-alaska-elders.php.
by mental health professionals,”10 and when a resident in a remote area such as Kiana, located in the northwest Arctic Borough of Alaska, needs immediate or on-going care for depression, bipolar disorders, or even schizophrenia, GCI’s ConnectMD network enables them to visit with a specialist remotely, via a remote village clinic, on their own schedule.11 ConnectMD has allowed these communities to offer readily-available, cost-effective psychiatric services to its residents, eliminating any need for residents to take long and expensive trips to faraway cities just to seek medical attention. Importantly, ConnectMD also allows participating communities to accommodate patients with sudden symptoms, often developing treatment plans without the need for costly hospitalization.

**Long-Distance Learning.** GCI’s SchoolAccess network provides broadband access, video conferencing and state-of-the-art digital tools to schools and libraries in rural and underserved regions of the United States.12 This program focuses on K-12 school and library environments and currently serves more than 100,000 patrons.13 The SchoolAccess services have become an essential part of educating students in rural areas, with its video service logging more than 2.25 million minutes each year in Alaska, New Mexico, and Montana.14

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14 *Id.*
Ouzinkie and Port Lions schools, which are located on separate islands off the coast of Alaska (and are part of a single school district - the Kodiak Island Borough School District (“KIBSD”)), heavily rely on GCI’s SchoolAccess video services to bring their rural students “under one virtual ‘roof.’” For instance, these services have allowed students at Ouzinkie and Port Lions schools, along with other students in the school district, to participate (virtually) in district-wide online music performances, and have also spurred an island-wide leadership group that meets via video conference so all students can participate. All children in the district also are now afforded the opportunity to participate in online, state-wide programs and competitions, including Battle of Books, a statewide reading motivational and comprehension program; the District Spelling Bee; and Alaska Robotics, the state-level science and engineering fair. The opportunities do not end there: distance-learning has not only increased academic, athletic and social collaboration between the district’s geographically isolated students, but has also led to improved test scores among its students, providing a greater opportunity for these students to attend college. The services provided by GCI’s SchoolAccess have become an essential part of educating students in rural Alaska by allowing children in remote areas to gain an education that would otherwise not be available without leaving home.

III. THE COMMISSION SHOULD ADOPT INTERFERENCE PROTECTIONS FOR FSS EARTH STATIONS IN THE C-BAND TO ENSURE THAT CRITICAL COMMUNICATIONS ARE NOT INTERRUPTED

GCI urges the Commission to take additional actions to ensure that the critical operations of incumbent C-Band FSS earth stations are protected from any interference caused by CBSDs.

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16 Id.
17 Id.
and End User Devices in the 3.5 GHz Band. First and foremost, GCI agrees with the Satellite Industry Association ("SIA") that the methodology provided in Appendix D of the 2005 3.65 GHz Order\(^\text{18}\) should not be automatically applied in this instance, as any methodology adopted needs to address the unique attributes of out-of-band earth stations and to reflect the higher power levels adopted for CBSDs.\(^\text{19}\) Furthermore, the Commission should take the following additional actions to address the unique protection needs of out-of-band FSS earth stations:

**Specific Interference Protection Criteria.** Any adopted interference protection criteria must take into account the aggregate effect on FSS stations of various CBSDs that will be in service in the 3.5 GHz Band once the rules fully take effect. For instance, the Commission should set deployment density constraints or provide protection zones with a significant margin to account for aggregate interference, which should be based on a theoretical thermal noise floor.\(^\text{20}\) Accordingly, GCI supports SIA’s proposal to adopt interference criteria based on 1% of noise floor for out-of-band FSS protection, equal to an I/N of -20 dB, as recommended by ITU-R S.1432.\(^\text{21}\) Due to the significant critical operations at stake, these stringent protection criteria are necessary and warranted.

Antenna elevation angles or “look angles” must also be addressed with respect to any interference protections. “Low-look” angular antennas (approximately 5 degrees) are more susceptible to interference from CBSDs than higher angular antennas. Because earth stations


\(^\text{19}\) *See Comments of the Satellite Industry Association (SIA), GN Docket No. 12-354, at 8 (filed July 15, 2015) (“SIA Comments”).*

\(^\text{20}\) *See Second FNPRM ¶ 439.*

\(^\text{21}\) *See SIA Comments 9; see also Recommendation IRU-R S.1432-1 at 2.*
may utilize different levels of angle elevation for their antennas, and due to the significant – and
oftentimes devastating – impact that interference may have on low-look angles, GCI
recommends incorporating stringent elevation policies into interference protections in order to
protect all FSS earth stations, regardless of their antenna elevation. Specifically, GCI supports
the adoption of a default protection value based on a five degree minimum elevation angle, to
better ensure protection of its important and critical operations.22

Device OOBE Limits. As commenters in this proceeding have previously demonstrated,
and GCI itself has experienced, the out-of-band emissions of CBSD transmitters in the 3.5 GHz
Band present significant interference concerns to adjacent band operations.23 GCI agrees that “a
more stringent OOBE limit would enable closer proximity of neighboring service operations
while still protecting the operations of earth stations in the C-Band.”24 The Commission should
therefore implement stringent OOBE limits at the upper edge of the 3.5 GHz Band. At a
minimum, a -40 dBm/MHz limit should be implemented to protect C-Band FSS earth station
receivers operating at 3700 MHz and above.25 GCI disagrees with Qualcomm’s assessment that
stringent limits will “challenge equipment designs,” as even the Commission has recognized that
“there has been considerable technological advancement in transmitter and receiver technologies
. . such that more stringent out-of-band emission limits may be practical without undue burden to
manufacturers and operators.”26 The need for protection of critical services from interference
should outweigh any concerns regarding equipment design.

22 See SIA Comments 6.
23 See, e.g., FNPRM Comments of SIA, GN Docket 12-354, at 15 (filed July 14, 2014); Google
24 Report and Order ¶ 178.
26 Report and Order ¶ 177.
IV. CONCLUSION

For the foregoing reasons, GCI requests that the Commission adopt the interference protections described herein to protect the important and critical communications provided via FSS earth stations in the C-Band.

Respectfully submitted,

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