

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of)	
)	
Expanding Flexible Use of the 3.7 to 4.2 GHz Band)	GN Docket No. 18-122
)	

To: The Commission

REPLY COMMENTS OF CB2.0 COMMUNICATIONS INC.

CB2.0 Communications Inc. (“CB2.0”), pursuant to Sections 1.415 and 1.419 of the Commission’s Rules, hereby replies to certain comments filed on October 29, 2018 in response to the Notice of Proposed Rulemaking (“NPRM”) in the above-captioned proceeding.¹ CB2.0 appreciates the opportunity that the Commission has afforded to provide input in this valuable, timely discussion of the future of the 3.7 to 4.2 GHz spectrum band and to provide details of technology it is developing that can facilitate and expedite this transition.

Implementing the proposal CB2.0 outlined in its initial comments would cost-effectively double or even triple the total capacity currently available from geostationary orbit use of the C-band FSS allocation, thereby permitting the Commission to maintain currently utilized space segment capacity with significantly less spectrum than is currently allocated to the FSS, or even currently proposed by the C-Band Alliance. The proposal can be successfully accomplished in stepped phases to minimize both costs and disruptions to operators and end users, while maintaining flexibility for the eventual future technological advancements and satisfying main objectives of respective industry participants.

¹ See *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, Order and Notice of Proposed Rulemaking, GN Docket No. 18-122, FCC 18-91 (released July 13, 2018).

The initial comments in this proceeding reflect a broad range of views from a variety of important stakeholders, including incumbent satellite operators, content providers, cable system owners, trade associations, ad hoc industry groups, equipment manufacturers, cellular telephone companies and fixed wireless service providers. The breadth and diversity of these comments demonstrate robust interest in mid-band spectrum, while also highlighting the significant transition challenges that current fixed-satellite service (“FSS”) users and the Commission face. Many commenters express concern regarding how orderly transitions might be achieved, yet there is only limited evidence presented concerning mechanisms for orderly migration and band clearing that preserve necessary C-band satellite capacity for existing users.

CB2.0’s technological approach fills this gap. Its distinct orbital architecture replicates the characteristics of geostationary FSS satellites, effectively doubling the capacity of the remaining C-band FSS spectrum, but with two to three times less latency.² With this space network, CB2.0 can seamlessly provide (on a non-interfering basis to existing or future providers) all current North American user services that would be displaced due to clearing of a portion of the FSS spectrum, and with additional opportunities available to meet future market demand. Sufficient non-geostationary satellites can be launched within a timeframe of 18 to 24 months to replicate all current services requiring migration at a cost about the same as just four conventional geostationary satellites (and with the capability of tripling the total potential capacity of the C-band geostationary orbit with the launch of additional satellites at an even lower prorated cost). This capability offers the many affected industries an orderly and economic solution to ease their concerns regarding changed use of the band. Moreover, it enables a defined, phased transition path for utilizing existing satellite operators’ assets and initiating near-term flexible use with the potential for clearing or

² See CB2.0 Comments, GN Dkt. 18-122 (filed Oct. 29, 2018), at 2 & 3-4.

enabling more efficient sharing of additional spectrum in the longer-term. For example, clearing an additional 80 MHz in the 3.7-4.2 GHz downlink band would ultimately result in a total of 160 MHz available for reassignment as it would allow reassignment of a corresponding 80 MHz in the 6 GHz uplink FSS allocation.

Given the range of interested parties, it is not surprising that there are divergent opinions on many of the key issues the Commission faces. Nonetheless, there are significant areas of agreement that should allow the Commission to move forward expeditiously to implement needed changes in spectrum allocation and use. For example, there is broad recognition that the C-band spectrum has uniquely valuable propagation characteristics that are beneficial in delivering multiple types of communications service, and that accordingly there is a growing demand for more efficient use of this spectrum, including for 5G mobile and fixed use.³ At the same time, many commenters are also in agreement that the new rules will need to protect the interests of current FSS users, including content distributors, cable systems, broadcasters, temporary-fixed operators and VSAT service providers, as well as fixed wireless users.⁴ Moreover, there is broad agreement that any resolution of this proceeding must address the fact that co-frequency sharing between or among mobile services

³ See, e.g., Comments of Cisco Systems, Inc. (“Cisco Comments”), GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 2; Comments of the C-Band Alliance (“CBA Comments”), GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 9-11; Comments of Verizon (“Verizon Comments”), GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 2-3.

⁴ See, e.g., Comments of AT&T Services, Inc. (“AT&T Comments”), GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 9-11; Comments of Comcast Corporation and NBCUniversal Media, LLC (“Comcast/NBCU Comments”), GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 11-13; Comments of the Content Companies (“Content Companies Comments”), GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 4-5 & 7-8; Comments of Inmarsat, GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 3 *et seq.*; Comments of NCTA – The Internet & Television Association (“NCTA Comments”), GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 18-21; Comments of National Public Radio, Inc., GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 6-8; Comments of the Satellite Industry Association (“SIA Comments”), GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 3-9; Comments of Speedcast Communications, Inc., GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 2-4.

and FSS is simply not workable and would require unduly large exclusion zones to protect existing operations, thereby severely undercutting the benefit of allowing greater mobile use.⁵

While there is not universal agreement on a mechanism for reallocating and reassigning spectrum from current users to a more diverse array of licensees, there is considerable support for a voluntary, market-driven solution.⁶ As Cisco Systems, Inc. observes, “[v]oluntary spectrum transitions are much less susceptible to policy and legal friction that will slow the transition of the band.”⁷

Among the more contentious issues raised in the initial comments, which pose challenges for the Commission to resolve, are the scope and timing of spectrum reassignment, the means of migrating and relocating existing spectrum users in the band, and the length of time required to initiate and complete the transition from FSS to flexible use in the lower portion of the band. While the interest in this proceeding suggests that demand for 5G-compatible spectrum is considerable, the need for immediate reassignment of more than 180-200 megahertz for mobile service is not justified by the evidence presented to date.⁸ This particular transition may take five or more years, and the Commission will need to ensure that this process is orderly and that existing users are fully

⁵ See, e.g., Comcast/NBCU Comments at 15-16; Comments of Ericsson, GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 11; Comments of the National Association of Broadcasters, GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 13; NCTA Comments at 22; Comments of Nokia, GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 12-14; SIA Comments at 16-20; Comments of T-Mobile USA, Inc., GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 7-8.

⁶ See, e.g., CBA Comments at 8-21; Cisco Comments at 1 & 3; Comments of Eutelsat, GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 3-5; Comments of the Information Technology and Innovation Foundation, GN Dkt. No. 18-122 (filed Oct. 29, 2018); Joint Comments of Intel Corporation, Intelsat License LLC, and SES Americom, Inc., GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 4-8; Comments of Motorola Solutions, Inc., GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 2; Comments of the Telecommunications Industry Association, GN Dkt. No. 18-122 (filed Oct. 29, 2018), at 4-5; Verizon Comments at 4-6. See also AT&T Comments at 15-16 (expressing general support in principle but indicating that additional details need to be provided).

⁷ Cisco Comments at 1.

⁸ See, e.g., Comcast/NBCU Comments at 29-30; Comments of Lockheed Martin Corporation, GN Dkt. 18-122 (filed Oct. 29, 2018), at 3-6.

compensated for all costs associated with migrating their operations to new frequency bands or alternate means of transmission.

In addressing these challenges, the technological approach that is outlined in CB2.0's initial comments provides an industry-wide solution that can avoid unnecessary expense and migration disruptions.⁹ The CB2.0 highly-inclined elliptical orbit satellite network architecture will deliver a resource-efficient, seamless solution, allowing the Commission initially to clear as much as 200 megahertz of spectrum (3.7-3.9 GHz) on the fast-track timetable desired by many commenters while at the same time expanding opportunities for the use of remaining C-band spectrum for continued FSS and other permitted uses. The CB2.0 satellite network architecture delivers capacity/content far more economically than other satellite alternatives. By enabling incremental capacity growth for fractions of the cost of geostationary satellites, its design can deliver targeted space segment capacity that is available to more than 80% of the global population in an area that accounts for 90% of worldwide GDP.

Through implementation of orbital diversity at C-band, existing users can benefit from seamless migration, without relocation, and enough capacity to meet the needs of all existing users as well as expanded opportunities for use of the band for both satellite and terrestrial services. These benefits can be enjoyed in the near-term with just an 18 to 24-month timetable from contracting to launch, and without producing harmful interference to current and or future geostationary FSS operators and users or to remaining or new fixed service users in the band.

⁹ See CB2.0 Comments, GN Dkt. 18-122 (filed Oct. 29, 2018), at 2 & 3-4.

Conclusion

The record established by the initial comments in this proceeding reflects significant areas of agreement that should allow the Commission to move forward quickly to implement changes in C-band spectrum allocation and use. CB2.0 believes its technology can be synergistic with and a vital component in this transition, to expanded flexible use of the band and significantly reduce potential disruption to current FSS users by affording additional opportunities for efficient satellite use.

Respectfully submitted,

CB2.0 COMMUNICATIONS INC.

By: /s/ David Lewis
David Lewis
Managing Partner

151 Charles Street West
Kitchener, Ontario
N2G1H6
Canada

December 11, 2018