

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

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| In the Matter of |) | |
| |) | |
| Terrestrial Use of the 2473-2495 MHz Band for Low-Power Mobile Broadband Networks; |) | IB Docket No. 13-213 |
| Amendments to Rules for the Ancillary |) | RM-11685 |
| Terrestrial Component of Mobile Satellite |) | |
| Service Systems |) | |
| |) | |

Comments of Oceus Networks

Oceus Networks Inc. (“Oceus Networks”) respectfully submits these comments in response to the Notice of Proposed Rulemaking (“NPRM”)¹ issued by the Federal Communications Commission (“FCC” or “Commission”) on proposing modified rules for the operation of the Ancillary Terrestrial Component (ATC)² of the single Mobile-Satellite Service (MSS) system operating in the Big LEO S band.³ The NPRM sought comment on the benefits of the proposed approach by Globalstar⁴ to provide a low-power ATC service in a portion of its licensed spectrum at 2483.5-2495 MHz and in the adjacent 2473-2483.5 MHz band under the FCC’s unlicensed rules. Oceus Networks files comments supporting modified rules that would

¹ FCC, Terrestrial Use of the 2473-2495 MHz Band for Low-Power Mobile Broadband Networks; Amendments to Rules for the Ancillary Terrestrial Component of Mobile Satellite Service Systems (hereinafter “2.4 GHz Low Power NPRM”), *Notice of Proposed Rulemaking*, IB-Docket 13-213, rel. November 1, 2013.

² Ancillary Terrestrial Components (ATC) are terrestrial base stations and mobile terminals licensed to the operator of an Mobile-Satellite Service (MSS) system for provision of radio communication services offered together with MSS, re-using frequencies assigned for the licensees’ MSS operations.

³ “LEO” is an acronym for Low-Earth Orbit, and generally refers to orbits at altitudes of less than 2000 kilometers. The term “Big LEO” was coined to distinguish systems using the 1610-1626.5 MHz and 2483.5-2500 MHz bands, which operate with voice and higher data-rate capabilities, from “Little LEO” systems, that do not provide voice service and generally operate with lower data rate capabilities. The term “S band” generally refers to radiofrequencies from 2-4 GHz. Globalstar is currently authorized to operate its MSS (space-to-Earth) in the 2483.5-2500 MHz portion of the S band.

⁴ See RM-11685, at 13-15 (filed Nov. 13, 2012) (hereinafter “Globalstar Petition”).

allow Globalstar to offer this new service. It would meet communication needs of specialized markets and allow users to leverage commercial economies of scale for devices, equipment and chipsets which offer state-of-the-art capabilities and features.

I. Introduction

Oceus Networks, headquartered in Reston, Va., is a provider of wireless broadband solutions for Federal and public safety customers. Oceus Networks adapts standards-based commercial wireless technologies to provide private managed networks for users with specialized needs. These non-traditional users often require solutions that offer greater availability, security, and throughput than traditional consumer-grade services provide. In the past, these specialized users would invest in proprietary solutions to meet these communications needs. However, as these markets are generally niche ones and, with the rapid development of commercial wireless technologies, proprietary solutions cannot keep pace.

Specialized solutions are also not well-positioned to evolve as fast or cost effectively as technologies used to provide commercial service. Manufacturers invest billions of dollars annually in research and development for LTE.⁵ One analyst estimates that global LTE capital expenditures will grow from \$75 billion in 2014 to \$180 billion in 2018.⁶ Thus, specialized users face a dilemma in the new broadband wireless world. They require the capabilities and cost advantages of commercial grade technology. But, these specialized users cannot match the research, development, and manufacturing economies of scales of an ecosystem backed by commercial service providers.

⁵ Marie Mawad, Huawei Ready to Outspend Ericsson in R&D Race to Woo Clients, Bloomberg News July 3, 2013. (In 2012 both Ericsson and Huawei spent nearly \$5 billion each on research and development activities. Alcatel-Lucent's 2013 R&D budget forecasted at \$2.6 billion)

⁶ TeleResearch Labs, LTE CAPEX & OPEX Strategies 2014-2018, May 2014.

II. Specialized User Market Broadband Dilemma: Leveraging The Benefits Of Commercial Technologies While Meeting Requirements For Specialized Markets

In the past, users with specialized communications requirements developed or worked with industry partners to develop communications systems tailored to their unique needs. As commercial wireless technology development was still in its early stages, these proprietary systems could offer innovative and state-of-the-art capabilities and, possibly, remain apace of breakthroughs in commercial technologies. However, commercial investment in research and development and manufacturing during the last decade or more vastly outstrips the possible investment of specialized users including ones with “deep pockets.” As a result, commercial investment and consumer adoption of mobile broadband services, equipment, and applications have irrevocably changed this historical paradigm. Commercial and government entities now view communications with the view of enabling mobile broadband applications using small, powerful handheld computing devices just like those that the average wireless consumer enjoys. Specialized users seek to leverage the latest devices, applications, and networking capabilities for their own niche needs. They seek to use the capabilities and cost advantages of commercial technologies, while maintaining their requirements for security, reliability, and throughput to meet their mission or enterprise needs.

By adhering closely to commercial standards and layering additional functionality on top of the network layer and within the user devices, our customers can obtain the increased capabilities and cost savings from commercial technologies, while satisfying their heightened technical and operating requirements.⁷ The extensibility of the LTE standard and the flexibility in modern

⁷ Oceus Networks has worked with the National Security Agency and the Department of Defense’s Defense Spectrum Organization to develop a security architecture for transmission of SECRET level communications over a

mobile operating systems make this possible. In essence, Oceus Networks has successfully extended standards-based commercial technologies to meet higher levels of security, reliability, and throughput while maintaining the capability and cost advantages afforded by the commercial ecosystem.

III. Commercial Standards-based Terrestrial Low Power Service Can Meet Unique Specialized User Market Requirements

Oceus Network has concluded that this current NPRM offers the opportunity to leverage an existing commercial technology standard, WiFi, and extend its functionality to meet specialized market needs, such as higher degrees of availability, security, and Quality of Service (QoS). Globalstar's proposed service offers the best of both worlds. It can provide a specialized network service based on widely used commercial standards that offer users a far greater degree of control as a licensed service. Highly specialized, mission-focused users such as military, public safety, critical infrastructure, or federal agency security would benefit from enhanced services. They require solutions that provide a greater degree of control. Globalstar's proposed terrestrial service in the 2.4 GHz band offers a unique opportunity to do so.

As Globalstar stated in its Petition for Rulemaking, existing WiFi enabled devices can be upgraded through software based modification.⁸ Thus, end users of the new proposed service have a wide selection of equipment such as smartphones, tablets, and sensor devices they could use. This dramatically decreases an end-user's costs and accelerates the time-to-market of this new service, helping users realize this new service's benefits more rapidly than with a completely greenfield service.

private LTE network. The architecture includes network transport layer and device OS ROM modifications, while preserving core aspects of the LTE specification. Oceus Networks business model is to use specialized users' finite budget to modify commercial technologies to meet its unique needs.

⁸ Globalstar Petition at 17.

IV. FCC Rules Opens Up Potential For New Global Licensed Service

Further, Globalstar is licensed to operate its satellite service in the 2.4 GHz band around the world. If the recommended framework were established domestically, regulators elsewhere could rely on the blueprint to extend this capability in their countries. This potential for global reach could be of interest to Oceus Networks' customer prospects, as it would open up spectrum supportability options that are not currently available. Globalstar could provide a managed service with a global footprint offering unique features. Greater levels of security, control, and QoS are all features that a managed service could offer to specialized users that would be difficult to replicate using an unmanaged service. In addition, reliance on a standardized global band reduces development and manufacturing costs, savings which Oceus Networks can pass to its customers.

V. The FCC Should Take Appropriate Steps To Enable This New Service

The FCC should take necessary steps to enable this new service as being in the public interest. By establishing a regulatory framework, the FCC can unleash more spectrum for mobile broadband and foster the development of a new wireless service. Among necessary changes, revisions to Section 25.149 of the Commission's rules should be made to allow operations by end-user equipment.⁹ The FCC should follow through with its proposal to provide an exception to the "integrated services rule."¹⁰ This exception is critical to allowing existing, software-modified WiFi enabled devices to be used with the new service.

Oceus Networks recommends the FCC take further steps to ensure a robust technical service

⁹ 2.4 GHz Low Power NPRM at 24. ("In the forward-band mode, ATC mobile terminals transmit in the MSS uplink frequency band and base stations transmit in the downlink band. *ATC R&O*, 18 FCC Rcd at 2019, ¶ 107")

¹⁰ Id at 27. (The existing integrated services rule requires Globalstar to offer dual-mode handsets that would operate with both terrestrial and satellite services.)

rules while protecting licensed services in adjacent bands. The FCC should appropriately address interference and other concerns raised by parties leading up to this NPRM. The FCC should take the necessary steps to enable the full benefits of this new service while ensuring existing user needs are accommodated. In this way, the FCC can achieve a win/win solution for both incumbents and new services.

VI. Conclusion

The Commission should adopt a regulatory framework to enable Globalstar to offer a new terrestrial low power service in the 2.4 GHz band. Adopting this framework would provide another option for entities that have special mobile broadband needs that cannot be met by traditional services. In establishing these rules, the FCC can promote innovation in a number for specialized markets.

Respectfully submitted,

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