

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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

To: The Commission

**COMMENTS OF ARRL, THE NATIONAL ASSOCIATION
FOR AMATEUR RADIO**

ARRL, the national association for Amateur Radio, formally known as the American Radio Relay League, Incorporated (ARRL), by counsel, hereby respectfully submits its comments in response to the *Notice of Proposed Rule Making*, FCC 13-147, 28 FCC Rcd. 15351, released November 1, 2013 (the Notice). In response to a proposal by Globalstar, Inc. (Globalstar) the Notice proposes rules for the operation of the Ancillary Terrestrial Component (ATC) of the single Mobile-Satellite Service (MSS) system operating in the Big LEO (Low-Earth Orbit) S band.¹ The proposed rules would permit Globalstar to provide low-power ATC using its licensed spectrum at 2483.5-2495 MHz under certain parameters, and also, using the same equipment, to access spectrum in the adjacent 2473-2483.5 MHz band “pursuant to the applicable technical rules for unlicensed operations in that band.” The Notice also proposes, without justification, to depart from the consistent and longstanding rules governing interference from unlicensed devices to licensed radio services. Specifically, the Notice proposes that ATC, a component of a licensed radio service, would not be subject to interference protection from incumbent or future unlicensed devices in the same or adjacent spectrum. In the interests of the

¹ The “S” Band, between 2 and 4 GHz generally, includes the segment 2483.5-2500 MHz.

Amateur Radio Service in maintaining the fundamental and important spectrum management and interference-avoidance rules and policies that have existed for many decades as between licensed and unlicensed radio services in the same and adjacent frequency bands, ARRL states as follows:

1. This is not a proceeding that directly threatens the use of Amateur Radio spectrum by licensees in the Amateur Radio Service.² Nevertheless, the Commission's proposal in this proceeding is profoundly ill-advised in at least one major respect, and if adopted would set aside a fundamental principle of efficient use of spectrum that absolutely must be preserved. For this reason, ARRL has a substantial stake in the outcome of this proceeding and offers the following in opposition to the proposal contained in the Notice.

2. ATC makes use of terrestrial base stations and mobile terminals licensed to the operator of an MSS system for provision of radio communication services offered together with MSS, re-using frequencies assigned for the licensees' MSS operations. Globalstar is an ATC licensee. Licensed ATC operation at 2483.5-2500 MHz has been permitted since 2003, when the Commission adopted rules for licensing and operation of ATCs.³ In the domestic table of allocations, the band 2450-2483.5 MHz is allocated on a co-primary basis to the fixed and mobile services for non-Federal use by Broadcast Auxiliary Service (BAS) and fixed point-to-point and point-to-multipoint networks, and on a secondary basis to the non-Federal Radiolocation Service. *ATC is therefore a component of a licensed radio service using mobile service allocations.*

² The nearest Amateur Radio allocation to that under consideration in this proceeding is 2390-2450 MHz. However, this proceeding seriously threatens the widespread deployment of Bluetooth technology in the band 2400-2480 MHz. Radio Amateurs utilize Bluetooth and other Part 15 technologies in the configuration and designs of their stations. The Notice also proposes to abandon longstanding spectrum management policy that must be preserved.

³ See, *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands; Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands*, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd 1962 (2003); *modified on Reconsideration*, 18 FCC Rcd 13590 (2003); *recon granted in part by Memorandum Opinion and Order and Second Order on Reconsideration*, 20 FCC Rcd 4616 (2005).

3. The Commission acknowledges at Paragraph 10 of the Notice that Part 15 of the Commission's rules governs the operation of low power radiofrequency devices in the 2400-2483.5 MHz band. The Commission also notes there that, as a general condition of operation, Part 15 devices may not cause harmful interference⁴ to any authorized services and must accept any interference that may be received from them or other Part 15 devices.⁵ Notwithstanding the acknowledgement of this longstanding rule, the Notice proposes to permit ATC operation not only in the licensed MSS spectrum in the 2483.5-2495 MHz band, but as well in the lower adjacent 2473-2483.5 MHz band, with operating conditions never before applied to a licensed service relative to unlicensed devices. The Notice, at paragraph 16, suggests that the Commission seeks to "determine whether it is possible to increase the use of this spectrum terrestrially in the near term, without causing harmful interference to users of this band and adjacent bands, and without compromising Globalstar's ability to provide substantial service to the public under its existing MSS authorization." If, the Notice states, the record supports the allocation, it "could potentially increase the usefulness for terrestrial mobile broadband purposes of 11.5 megahertz of *licensed spectrum*." (emphasis added). At paragraph 18 of the Notice, the Commission says that it tentatively concludes, due to the proposed managed deployment of this equipment in a unique radiofrequency environment involving both unlicensed and licensed operations, that "the proposed operations are ancillary to Globalstar's licensed MSS operations and are thus appropriately considered for licensing as ATC." There is thus no doubt at all that ATC as proposed herein at 2473-2483.5 MHz is a component of a *licensed* radio service and will be

⁴ Under the Commission's rules, harmful interference is defined as interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with the International Telecommunication Union Radio Regulations. 47 C.F.R. § 2.1(c).

⁵ 47 C.F.R. § 15.5.

operated in this case in a band in which other unlicensed and licensed services already coexist in abundance.⁶

4. The problem with this is as follows: at paragraph 19 of the Notice, the Commission states that it proposes to modify the Part 25 service rules in order to allow Globalstar to implement its plan of deploying a low-power broadband network in its licensed spectrum from 2483.5-2495 MHz and in a portion of the adjacent band, at 2473-2483.5 MHz. Only the Part 25 rules, and specifically Section 25.149, are proposed to be changed. At the same time, however, the Commission states at paragraph 20 of the Notice that:

Under this approach, Globalstar's managed operations in the 2473-2483.5 MHz band would not be entitled to interference protection from licensed services, other Part 15 devices, or Part 18 ISM devices.

*This plan would thus, for the first time, create a multiple-use, radio frequency environment in which Part 15 unlicensed devices do **not** have to protect a licensed, allocated radio service from harmful interference.* This is untenable as a precedent and it makes the entirety of the Notice proposal likewise untenable. It represents an unprecedented withdrawal of the assurances that licensed users and the Commission have been given by the Commission and relied upon in dozens of allocation proceedings: (1) that Part 15 unlicensed devices that interfere with licensed radiocommunications will be required to stop operating; and (2) that the fundamental premise for allowing unlicensed devices in bands in which licensed services will or do operate is the

⁶ At paragraphs 8 and 9 of the Notice, the Commission summarizes the numerous incumbent services in the 2450-2500 MHz band. These services include Part 74 Broadcast Auxiliary Service (BAS); Parts 90 and 101 fixed and mobile service stations (2450-2483.5 MHz), including Local Television Transmission Service which operates ubiquitously from temporary fixed locations; MSS stations (2483.5-2500 MHz for satellite-to-user downlinks); Part 27 Broadband Radio Service (2496-2500 MHz); and grandfathered Part 74 BAS and Parts 90 and 101 fixed and mobile stations (2483.5-2500 MHz). In addition, Part 18 of the Commission's rules authorizes unlicensed industrial, scientific, and medical (ISM) devices to operate in the 2400-2500 MHz band. Finally, Part 15 devices operate up to 2483.5 MHz. Noteworthy among these are Bluetooth devices which operate between 2400 and 2480 MHz. The Commission also notes at paragraph 11 of the Notice a plethora of Federal government assignments in the band 2450-2495 MHz.

prediction, based on sound engineering evaluation, that the devices and the licensed services can operate in the same spectrum without interference being caused to the licensed service.

5. Section 301 of the Communications Act of 1934 declares that any person who uses or operates “*any apparatus for the transmission of energy or communications or signals by radio*” must have a “license . . . granted under the provisions of [the Communications Act].”⁷ This licensing requirement is the chief statutory mechanism to “maintain the control of the United States over all the channels of radio transmission.” *Id.* Despite section 301’s categorical language, the Commission has always read the Section to allow some unlicensed radio frequency emissions, but only where they are so limited that they will not cause harmful interference to licensed communications. The Commission has reasoned that a device that transmits so little radio energy that it does not harm licensed users is not an “apparatus for the transmission of energy” within the meaning of section 301: “A more reasonable reading of Section 301, consistent with Congress’s intent and subsequent legislation, would limit the licensing requirement to *any apparatus that transmits enough energy to have a significant potential for causing harmful interference.*”⁸ Since the Commission first authorized unlicensed devices in 1938, the touchstone for permissibility has been that they not risk harmful interference to licensed operations; a device that *does* risk interference must be licensed.⁹

6. Based on this reading of section 301, the Commission over the years adopted Part 15 rules to ensure that unlicensed devices do not risk harmful interference. In *Ultra-Wideband Transmission Systems*, for example, the FCC restricted the use of ultra-wideband (UWB) devices

⁷ 47 U.S.C. § 301 (emphasis added).

⁸ *Ultra-Wideband Transmission Systems*, 19 FCC Rcd 24558 ¶ 68 (2004)

⁹ See *Certain Low Power Radio Frequency Electrical Devices*, 3 Fed. Reg. 2999 (December 14, 1938); *Ultra-Wideband Transmission Systems*, 19 FCC Rcd 24558 ¶ 72 & n.188 (citing decisions that show the Commission’s continued reliance on the “no harmful interference” criterion as the basis for allowing unlicensed operations under section 301).

“to ensure that UWB devices can coexist with the authorized radio services without the risk of harmful interference.” Likewise, when it revised Part 15 in 1989, it declined to ease restrictions on unlicensed devices’ power levels because that would create an “increased potential” of interference with licensed services.¹⁰ Even where unlicensed devices are used for important purposes such as public safety, the Commission has stressed that their operation cannot cause harmful interference.¹¹

7. A corollary is that operators of Part 15 devices must promptly cease any unlicensed operations that do cause harmful interference. This requirement is enshrined in the Part 15 rules: The operator of [an unlicensed] radio frequency device shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected.¹² Numerous Commission orders over the years consistently embody this rule,¹³

¹⁰ *Operation of Radio Frequency Devices Without An Individual License*, 4 FCC Rcd 3493 (1989). *See also, e.g., Spread Spectrum Transmitters*, 12 FCC Rcd 7488 ¶ 2 (1997) (“The technical standards for Part 15 transmission systems are designed to ensure that there is a low probability that these devices will cause harmful interference to other users of the spectrum.”)

¹¹ *See, e.g., Spread Spectrum Transmitters*, 12 FCC Rcd 7488 ¶ 14 (1997) (warning “utilities, cellular stations, public safety services, government agencies and others that employ Part 15 transmission systems to provide critical communication services” that they will be required to correct any interference they cause “even if such correction requires the cessation of operation of the Part 15 transmitter. The Commission will not exempt Part 15 devices from this latter requirement because of the application for which the Part 15 transmitter is employed.”); *Operation of Biomedical Telemetry Devices on VHF*, 12 FCC Rcd 17828 ¶ 27 (1997) (adopting rules to prevent biomedical telemetry devices from causing harmful interference to licensed services); *Additional Frequencies for Cordless Telephones*, 10 FCC Rcd 5622 ¶ 16 (1995) (adopting requirements for cordless phones to mitigate risk of interference to licensed Private Land Mobile Radio Service users); *Additional Frequencies for Auditory Assistance Devices for the Hearing Impaired*, 7 FCC Rcd 2256 ¶ 8 (1992) (permitting new unlicensed auditory assistance devices because they would not cause harmful interference with licensed land mobile transceivers); *Operation of Low Power Communication Devices*, 102 F.C.C.2d 1042 ¶ 7 (1986) (describing purpose of field-strength limits for consumer products as to protect licensed radio services from interference).

¹² 47 C.F.R. § 15.5(c). “[A]ll Part 15 devices operate under the condition that transmission must cease if the Part 15 device causes harmful interference.” *Amendment of Part 15*, 21 FCC Rcd 12266 ¶ 29.

¹³ *See, e.g., Ultra-Wideband Transmission Systems*, 19 FCC Rcd 24558 ¶ 99 (2004) (“If a Part 15 device causes interference it is required to remedy the interference or to cease operation.”); *Spread Spectrum Transmitters*, 12 FCC Rcd 7488 ¶ 2 (1997) (“[T]he primary operating conditions under Part 15 are that the operator must accept whatever interference is received and must correct whatever interference is caused.”); *Unlicensed NII/SUPERNet Operations*, 11 FCC Rcd 7205 ¶ 54 (1996) (requiring unlicensed NII/SUPERNet devices “to cease operation or make some accommodation . . . to eliminate any harmful interference caused to a licensed operation”); *Additional Frequencies for Cordless Telephones*, 10 FCC Rcd 5622 ¶ 16 (1995) (noting that “Part 15 rules require that a

of which *Remote Control and Alarm Devices*, 88 F.C.C.2d 147 (1981) is typical. There, the Commission acknowledged the importance of security systems for crime deterrence, but still made clear that “operation of a control or security alarm device *must cease* if harmful interference occurs to a licensed radio service until the interference problem has been resolved.”¹⁴

8. The Commission now, *sub silencio*, proposes to throw out the entirety of that jurisprudence (and the regulatory philosophy of allowing unlicensed devices relative to the statutory licensing obligation under Section 301 of the Communications Act) in order to expand an allocation for a licensed radio service into spectrum heavily used by licensed stations and unlicensed RF devices and systems. The Commission cannot, consistent with the entire regulatory underpinning for allowing Part 15 devices, premise an allocation decision in this case on the unique provision that a component of a *licensed* radio service will *not* be entitled to interference protection from Part 15 devices, whether those unlicensed devices are incumbent or deployed in the future in the band at issue. ARRL would suggest that the Commission should instead do some *bona fide* technical evaluation of the compatibility between and among incumbent services in (and below) 2473-2483.5 MHz and ATC systems and decide whether this licensed ATC overlay at 2473-2483.5 MHz is compatible or not. It would appear that the conclusion is that ATC is *not* compatible with incumbent uses, else the Commission would not

cordless telephone cease operation if it is found to cause harmful interference”); *Operation of Wide-band Swept RF Equipment Used as Anti-Pilferage Devices*, 65 F.C.C.2d 802 ¶ 12 (1977) (requiring operators of security devices “to stop operating the device until such time as the harmful interference is eliminated”); *Operation of Radio Door Controls*, 1 F.C.C.2d 518 ¶ 4 (1965) (categorically banning devices shown to interfere with licensed radionavigation services). *See also Unlicensed Operation in the TV Broadcast Bands*, 21 FCC Rcd 12266, at ¶ 29 (2006) (“Because unlicensed operations are not allowed to cause harmful interference, if we proceed on an unlicensed basis, the interference protection status of existing services operating in this spectrum would not be affected.”) (citing 47 C.F.R. § 15.5).

¹⁴ 88 F.C.C.2d 147 ¶ 37 (emphasis added).

have proposed to abandon the fundamental condition of operation of unlicensed devices in order to make ATC fit in the segments proposed.

9. ARRL takes no position on the merits of adding ATC for MSS below 2483.5 MHz, or the ability to do so without seriously compromising Broadcast Auxiliary and Local Television Transmission Service operation, Bluetooth operation, and other incumbent services and devices in the band. However, it is notable that the reason why some Part 15 wireless broadband devices are operated below 2473 MHz now is in order to protect MSS above 2483.5 MHz from interference, as something of a “guard band.” It is unfair, given that circumstance, for Globalstar to propose to deploy ATC in the segment 2473-2483.5 MHz premised on the fact that the band is unused by those same Part 15 devices and systems, when those devices and systems avoided the segment for Globalstar’s benefit in the first place.

10. ARRL urges the Commission to consider a spectrum overlay in this band, *if at all*, on the basis of reliable compatibility analyses rather than on mere assumptions of compatibility. The price of making the wrong assumptions is too high in this and similar allocations proceedings and the damage from the wrong assumptions will be, practically speaking, impossible to reverse. Much, much more fundamentally, however, the Commission must absolutely refrain from compromising the most fundamental concept of domestic spectrum planning: that unlicensed RF intentional, unintentional and incidental radiators regulated under Part 15 can operate *only on the absolute condition that they do not interfere with any component of a licensed radio service*. To do otherwise would be contrary to statutory obligations of the Commission and contrary to sound spectrum management. There have been too many allocations decisions that were made with this fundamental regulatory obligation as an essential component.

Now, therefore, the foregoing considered, ARRL, the National Association for Amateur

Radio, respectfully requests that the Commission resolve this proceeding in accordance with the recommendations contained herein, and not otherwise.

Respectfully submitted,

ARRL, the national association for Amateur Radio

225 Main Street
Newington, CT 06111-1494

By: Christopher D. Imlay
Christopher D. Imlay
Its General Counsel

Booth, Freret & Imlay, LLC
14356 Cape May Road
Silver Spring, MD 20904-6011
(301) 384-5525

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