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 THE SOCIETY OF BROADCAST ENGINEERS, INCORPORATED

The Society of Broadcast Engineers, Incorporated (SBE), the national association of broadcast engineers and technical communications professionals, with more than 5,000 members worldwide, 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." In the interests of broadcasters and broadcast engineers in maintaining the extremely important access to Broadcast Auxiliary Service (BAS) spectrum at 2450-2483.5 MHz (BAS

[1] The "S" Band, between 2 and 4 GHz generally, includes the segment 2483.5-2500 MHz. 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 licensee's 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. 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.

Channels A8 and A9) and, for grandfathered BAS licensees, access to the 2483.5-2500 MHz band (BAS Channel A10) without harmful interference from Globalstar's ATC facilities, SBE states as follows:

1. This proceeding is profoundly ill-advised for several reasons. First of all, it would inevitably result in interference to BAS channels A8 and A9 and other related facilities.[2] Moreover, it would preclude a spectrum-efficient alternative proposal that SBE placed before the Commission on September 8, 2004 and which remains unadjudicated today, *ten years later*. On that date, SBE filed a *Petition for Reconsideration* in IB Docket No. 02-364, relating to refarming of the 2450-2500 MHz band for BAS, Cable Auxiliary Relay (CARS) and Local Television Transmission Service (LTTS) licensees (the "2.5 GHz BAS band").

2. Television broadcast auxiliary operation and video production in the United States in the 2 and 2.5 GHz bands is under tremendous pressure. Electronic News Gathering (ENG) and live broadcast event and sports coverage is done almost exclusively, every day in every broadcast market, in the 2 and 2.5 GHz bands. Available on a *de jure* basis for ENG and video production are ten video-bandwidth channels. The first seven (the 2 GHz band) are at 2025-2110 MHz (Channels in this band, now each approximately 12 MHz channel bandwidth, are labeled A1-A7). The other three (in the 2.5 GHz band) are presently at 2450-2500 MHz (Channels in this band, now each approximately 17 MHz channel bandwidth, are labeled A8-A10). This ten-channel availability is, however, an illusion. First of all, Channel A10 is only available on a grandfathered basis [See, 47 C.F.R. § 74.602(a)(2)] and has been since 1989. Generally,

[2] 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." SBE can state without any reservation that permitting ubiquitous ATC in the 2473-2483.5 GHz band will severely disrupt broadcasters' mobile and unpredictable use of the 2450-2483.5 MHz band for providing information to viewers about breaking news events and emergency information dissemination.

however, BAS use of the entire 2.5 GHz band is difficult now due to the high noise levels encountered as the result of unlicensed Part 15 and Part 18 ISM devices operating at 2400-2483.5 MHz and other licensed services operating in this mature, multiple-use allocation. In some broadcast markets, the entire 2.5 GHz band is compromised for ENG or event video production due to high noise levels.[3] However, broadcast, cablecast and video production companies have no alternatives reasonably available. In most broadcast markets, each of the seven channels of the 2 GHz band has multiple overlays of in-market and out-of-market broadcast, cable, network and video production users using the band on a time-shared basis. SBE frequency coordinators maximize the utility of these channels, and of the 2.5 GHz channels to the fullest extent possible through frequency re-use techniques, but the public's needs and expectations for live coverage of breaking news, emergency and disaster information and enhanced sporting event coverage necessitates use of all of the 2.5 GHz channels, including Channel A10.[4]

3. The pressure on these few ENG channels is especially problematic going forward, because, in GN Docket 13-185, the Commission, in order to realize billions of dollars of auction revenues from the reallocation of the 1755-1780 MHz band (paired with the 2155-2180 MHz band) for broadband use, has in the process displaced large numbers of military terrestrial and aeronautical mobile facilities therefrom. To provide for the reaccommodation of those military

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[3] 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.

[4] Channel A10 is routinely used by network entities for airborne relays, uplinks and downlinks, for event coverage. The channel is used often where multiple airborne platforms are used during a major news event.

facilities, the Commission has, by its *Report and Order* , FCC 14-31, released March 31, 2014 in that Docket, added co-primary, government mobile and fixed allocations those displaced facilities in the 2 GHz band, Channels A1-A7. This is being cooperatively accommodated by SBE volunteer frequency coordinators pursuant to a Memorandum of Understanding among SBE, the Department of Defense and the National Association of Broadcasters (now in the process of negotiation). Nevertheless, the new co-primary allocation stands to severely compromise the already difficult ability of broadcast stations to provide live ENG coverage of events in all large and medium markets and in many smaller markets as well. To take the action that the Commission has just taken in Docket 13-185 and, at the same time, to propose to permit high-powered terrestrial base stations and ubiquitous mobile handsets in the 2473-2483.5 MHz band (as well as in the 2483.5-2500 MHz band) compromises, and in many cases will preclude the ability of broadcasters, video production entities and CARS licensees to provide real-time ENG, including emergency and disaster relief information to mass audiences.[5] The ATC proposal of the Commission in this proceeding is ill-conceived and the Commission should not proceed with it.

4. In April of 2003, SBE filed in Docket 01-185 a Petition for Reconsideration. That proceeding concerned an ancillary terrestrial component for MSS facilities, which would operate at 2492-2500 MHz. The Commission held that the only technical issues that were raised by the proposal to permit terrestrial base stations for MSS systems were (a) adjacent channel protection of BAS Channel A9 (2467-2483.5 MHz) and possible brute-force overload to BAS receive sites at 2 GHz (then 1990-2100 MHz, now 2025-2110 MHz). The Commission, in response to SBE's comments that grandfathered Channel A10 facilities required protection from MSS interference,

[5] Worse still, the Commission has allowed wireless backhaul facilities to operate in the next higher BAS band near 7 GHz. That band does not have the same favorable propagation characteristics as does the 2 and 2.5 GHz BAS bands, but it is critical for certain mobile ENG operations in urban environments nevertheless.

held that its records "indicate that there are no grandfathered BAS facilities licensed in the 2,483.5-2,500 MHz band."[6] That was an error. The Commission's ULS system, then and now, shows at least 110 such licensed facilities, each using an unlimited number of transmitters. These include Inter-City Relay stations and TV Pickup stations. SBE asked in that proceeding that, if the Commission finds that terrestrial MSS facilities require operation on a co-channel basis with BAS channel A10, MSS licensees should "replace broadcasters' equipment with hardware that continues to give three channels in the remaining Channels A8 and A9. Conversion to digital would do this…"

5. Instead of recognizing this displacement situation for what it was, the Commission instead, in July of 2004 in Docket 02-364, also dealing with MSS ancillary terrestrial component facilities, concluded [7] that MSS ATC transmitters, operating between 2483.5-2493 MHz, with equivalent isotropic radiated powers up to 1,610 watts (62.1 dBm) could co-exist with grandfathered TV BAS stations operating on channel A10 with proper frequency coordination techniques. This was and is simply incorrect, and SBE noted such in its Petition for Reconsideration, filed September 8, 2004. Apparently, SBE noted, the Commission was confusing the potential for adjacent channel interference in Channels A8 and A9, and brute force overload interference to BAS Channel A1-A7 stations with co-channel interference from MSS ATC to BAS in grandfathered Channel A10. *There is in fact fundamental incompatibility between MSS ATC and BAS in the 2483.5-2500 MHz band that has never been resolved.* Effectively, MSS ATC displaces BAS grandfathered stations in Channel A10 because the entire ATC segment is now within BAS Channel A10. The instant proceeding would compound that never-acknowledged problem by allowing ATC into the 2473-2483.5 GHz band, thus

[6] *See, the Report and Order,* released February 10, 2003, page 168, Appendix C-1.
[7] *See, the Report and Order,* released July 16, 2004, at paragraphs 67 and 75.

compromising the many licensed BAS, CARS and LTTS facilities now operating in Channels A8 and A9.

6. SBE, given the difficulties inherent in MSS ATC relative to BAS on Channels A8-A10, and given the Commission's apparent unwillingness to protect these three auxiliary channels from harmful interference by restricting or prohibiting MSS ATC,[8] proposed in its September 8, 2004 Petition for Reconsideration the solution set forth in the attached graph **(See Exhibit A)**. SBE proposed a two-step process for migrating BAS Channel A8-A10 facilities downward by narrowing the bandwidth of such stations in place, and then ultimately narrowing the channel bandwidth to 12 MHz from 17 MHz, with the new channels beginning at the bottom of the existing 2.5 GHz band at 2450 MHz. This would result, per Exhibit A, in the 2.5 GHz band moving downward from an upper limit of 2500 MHz to an upper limit of 2486 MHz. This would have the following effects: (a) it would permit the termination of existing grandfathered licensed BAS operation in Channel A10 and free up 2486-2500 MHz for MSS ATC operation; (b) it would permit BAS to operate with three channels at 2.5 GHz instead of the presently available two; (c) it would require the conversion of BAS 2.5 GHz licensees to digital operation, as has occurred in the 2 GHz band; and (d) it would accommodate the BRS/EBS (at the time, ITFS/MMDS) refarming, which in WT Docket 04-66 [9] expanded the 2500-2690 MHz ITFS/MMDS band downward, such that BRS/EBS channel 1 is now at 2496-2502 MHz, also principally within BAS Channel A10.

7. With respect to the advent of BRS/EBS Channel 1 operation in BAS Channel A10, the urgency of SBE's 2.5 GHz refarming plan increased substantially. Recognizing this, Sprint,

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[8] SBE noted in its Petition for Reconsideration the impracticality of requiring MSS ATC stations to shut down whenever a BAS Channel A10 licensee commences operations in the same market.

[9] *See, the Report and Order,* released July 29, 2004.

which at the time had interests in the BRS/EBS band, offered [10] voluntarily, to bear the cost of BAS refarming, provided that the 2.5 GHz refarming took place concurrently with the rebanding of the 2 GHz band. Typically, narrowband digital equipment for 2 GHz BAS is sufficiently frequency agile that it could be configured to operate at 2.5 GHz as well due to the use of built-in MPEG decoders in the 2 GHz equipment. However, because the Commission has taken no action on the SBE refarming proposal, and because Sprint's management of the 2 GHz rebanding effort was completed nationwide in 2009, Sprint's generous offer was terminated.

8. As discussed above, the ten-year-old, unadjudicated SBE 2.5 GHz refarming plan accommodates both MSS and BRS/EBS operation in the 2483.5-2500 MHz band. It permits three channels to be used by broadcasters, cablecasters and video production companies instead of the presently available two channels. It resolves a fundamental incompatibility between Channel A10 grandfathered licensees and MSS licensees, and allows BRS/EBS Channel 1 users to operate with a reduced interference potential. It should not have taken ten years to adjudicate. It is now, however, just as urgent as it was when SBE proposed it in 2004. *And it is completely mutually exclusive with the instant Notice proposal.*

9. The instant Notice proposal would completely preclude SBE's BAS rebanding proposal for 2.5 GHz. The Notice proposes, instead, to force an incompatible overlay allocation where none is possible in a completely mature band. Indeed, the necessity of the SBE refarming plan was due entirely to the incompatibility between BAS and MSS ATC facilities which had been permitted in 2003. There is, as SBE has repeatedly urged, a fundamental incompatibility between MSS ATC and BAS operations, not only with respect to grandfathered BAS channel A10 operations, but as well to licensed channel A8 and A9 facilities due to adjacent channel interference. SBE notes that the Commission has apparently not conducted a reliable

[10] See, June 4, 2007 letter from undersigned counsel and Trey Hanbury of Sprint Nextel, filed in IB Docket 02-364.

compatibility analysis relative to incumbent services at 2473-2483.5 MHz. Instead, it merely assumes compatibility based on no evidence at all. 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. There are no technical underpinnings to this allocation proposal.

10. It would be fundamentally unfair, and arguably a violation of the Administrative Procedure Act to leave the SBE 2.5 GHz rebanding proposal unadjudicated for ten years and then, *sub silencio*, to enact the Notice proposal in this proceeding, which would preclude it completely. Moreover, SBE's proposal is spectrum-efficient. ATC in this band is not. The Commission's zeal to overlay mobile broadband services, in this case in the form of ATC, is understandable. What is not understandable is that the Commission here seems to be willing at every turn to sacrifice real-time news, event reporting, emergency and disaster relief information, and sports video production that the public expects just as much as it expects available mobile broadband services. Commission action on SBE's 2004 Petition for Reconsideration, now ten years old, is far overdue. The Commission should resolve the fundamental incompatibility that exists now in the 2400-2500 MHz band by enacting SBE's 2.5 GHz band refarming plan immediately rather than by the ill-conceived Notice proposal.

Therefore, the foregoing considered, SBE respectfully requests that the Commission

adopt SBE's ten-year-old proposal in its Docket 02-364 Petition for Reconsideration, and not adopt the instant proposal or any part of it.

Respectfully submitted,

THE SOCIETY OF BROADCAST ENGINEERS, INC.

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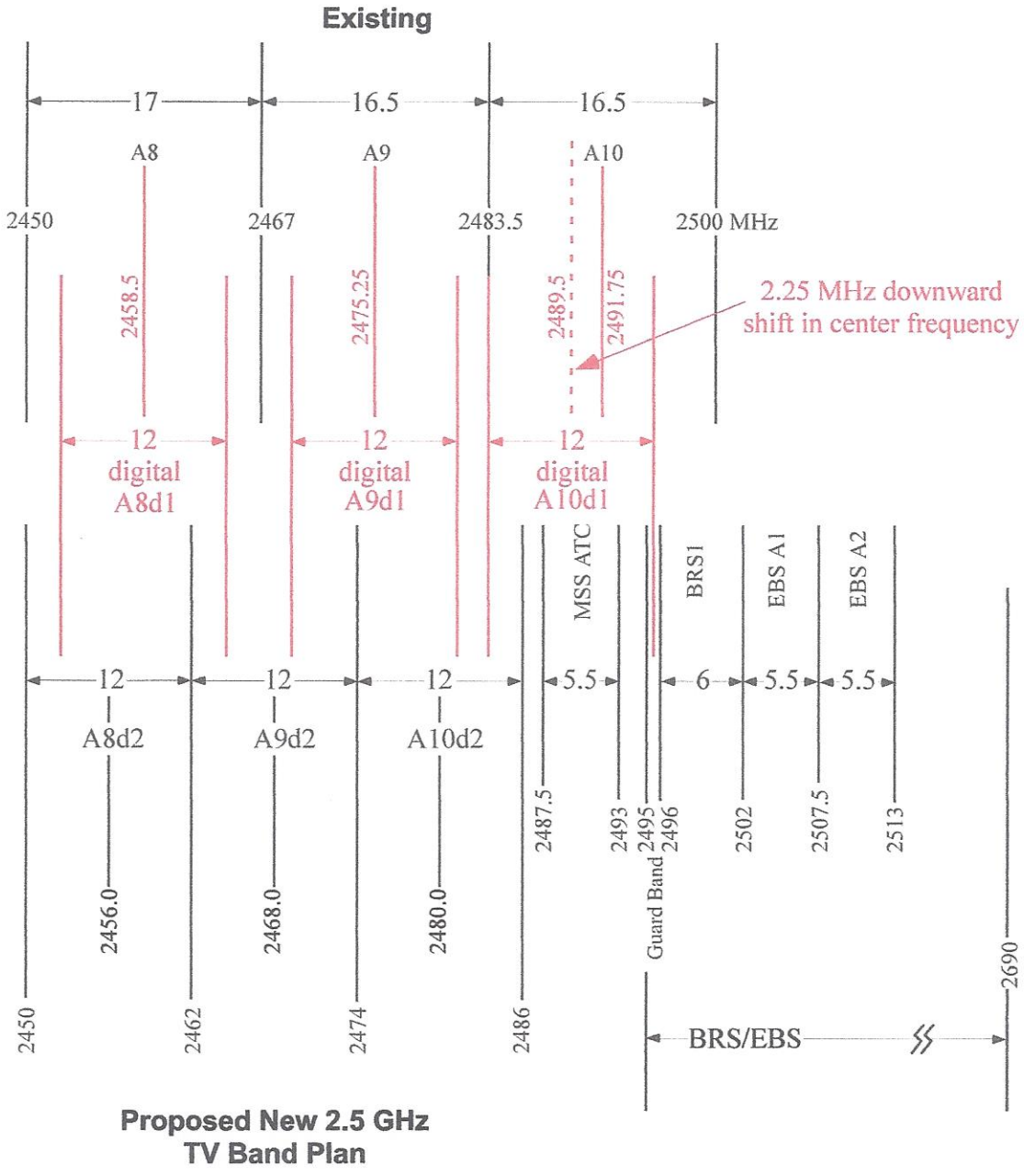
EXHIBIT A

Existing vs Proposed New 2.5 GHz TV BAS Band Plan



All frequencies and bandwidths are in MHz.