

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

In the Matter of)
)
Amendment of Part 74, Subpart D of the) **RM- _____**
Commission's Rules)

To: The Commission

PETITION FOR RULE MAKING

The Society of Broadcast Engineers, Incorporated ("SBE")¹, by counsel and pursuant to Section 1.401 of the Commission's Rules (47 C.F.R. § 1.401), hereby respectfully requests that the Commission issue a *Notice of Proposed Rule Making* at an early date, proposing to modify Sections 74.402 and 74.462 of the Commission's rules so as to facilitate the use by Broadcast Auxiliary Service (BAS) licensees of certain digital voice and data emissions in BAS allocations at VHF and above by Remote Pickup (RPU) Broadcast Stations (Subpart D, Part 74). The proposed modified rules are as set forth in *Appendix A* hereto. This Petition is very narrow in scope. It seeks (1) to facilitate the use of existing, narrowband, spectrum-efficient digital voice and data technology by permitting the use of digital emissions not currently permitted in Subpart D, Part 74 for RPU stations; and (2) to address an anomaly in the Part 74 Rules which was created in 2002 in ET Docket No. 01-75 (17 FCC Rcd. 22979, FCC 02-298, released November 13, 2002) relative to licensing of stacked narrowband RPU channels. In the interests of the Broadcast Service in encouraging the conversion of analog RPU systems to narrowband digital voice technologies at VHF and above, and to simplify the use of stacked,

¹ SBE is the national association of broadcast engineers and technical communications professionals, with more than 5,000 members worldwide.

narrowband channels for RPU operation by BAS licensees and encourage the use of the minimum necessary bandwidth for RPU facilities, SBE states as follows:

I. Permitting Digital Emissions in the RPU Service.

1. The rule changes proposed in this Petition and in the attached Appendix are necessary in order to facilitate implementation in the Broadcast Auxiliary Service of certain spectrum-efficient narrowband digital voice and data equipment and systems in the VHF and UHF bands. Specifically, the rule changes will permit BAS licensees to migrate to the use of spectrum-efficient narrowband digital technology and equipment which is now and has been in regular use in the Land Mobile Radio Service for several years. Time Division Multiple Access (TDMA) technology and Next Generation Digital Network (NXDN) technologies are but two among several that can facilitate the gradual conversion from analog voice to narrowband digital voice and data technologies by RPU station licensees. It should clearly be permitted where analog voice and data emissions are now permitted pursuant to Section 74.462 of the Commission's Rules, but it is not. Both TDMA and NXDN are permitted for Part 90 PMRS licensees and in general, the applications for this equipment are similar for Part 74 RPU stations.

2. In the 2002 Report and Order referenced above which extensively rewrote the Part 74 Rules, the Commission specifically held at Paragraph 111 thereof that Remote Pickup service licensees will benefit most by having the capability to choose from a wide variety of radios, and that in accordance with the Commission's proposal to standardize Remote Pickup channels with those listed in Part 90, it believed that RPU licensees should adhere to the technical standards of Part 90. In this way, the Commission stated, "Part 74 licensees could choose from among the wide variety of radios available for

PLMRS licensees.” Accordingly (and with SBE’s support as the only entity that commented on the proposal) the Commission decided to apply to the RPU channels the Part 90 technical rules for the emission mask (47 C.F.R. § 90.210) and frequency stability (47 C.F.R. § 90.210).² The Commission has not yet acted, however to permit digital emissions for RPU stations, though such emissions have been permitted for some years by part 90 PMRS licensees.

3. The use of Part 90 equipment for RPU operations, most especially dispatch and operational traffic will, as the Commission already determined, encourage narrowband conversion by RPU licensees and increased spectrum efficiency. Part 90 radios may not suit certain audio program feeds requiring broadcast quality audio and little or no real-time delay. However, the low degree of latency in the use of modern TDMA and NXDN technology, for example, would encourage broadcasters to utilize off-the-shelf equipment wherever possible. The Part 74 rules should continue to diverge from the Part 90 rules in order to permit channel stacking (as is presently the case). It is necessary as well, however, to implement a solution, also proposed herein, for the current anomaly regarding specification of channel centers for stacked channels. Wideband channels for delivery of program material are necessary in varying degrees and should continue to be permitted.

4. The means by which the Commission can permit a wide variety of digital emissions in the RPU Service is quite simple. Section 74.462 should be amended in accordance with the proposed Appendix to simply permit any emission that meets the applicable emission mask and bandwidth limitations. This will create the flexibility in the

² Also at SBE’s request, the Commission in Docket 01-75 did not include any new restrictions on the allowable types of modulation permitted on RPU channels. *Id.* at paragraph 112-113.

rules necessary to accommodate future digital technologies to which RPU licensees can adapt to their purposes. In this manner, the Commission will have effectuated the policy adopted in 2002 to permit RPU licensees to utilize a wide variety of digital modulation schemes. It is noted as well that the Low Power Auxiliary rules, at Section 74.861(e)(3), permit the use in that service of “any form of modulation” subject to a maximum deviation (bandwidth) limit. The same flexibility should be permitted for RPU operation as well.

5. Contemporaneously with the filing of this Petition, and in recognition of the inherent delay in implementing rule changes through normal processes, SBE is filing a Request for Temporary Waiver of Section 74.462 in order to permit RPU licensees to immediately begin utilizing: (1) a Motorola TDMA system that is in regular use in the private land mobile radio service and which is also authorized through the Commission’s certification program for Part 74 applications;³ and (2) radios using the NXDN Common Air Interface technology, which is an FDMA (Frequency Division Multiple Access) technology with 4FSK modulation that uses 6.25 kHz channel bandwidths, also certified in two different manufacturer configurations for Part 74 use. Both Motorola’s TDMA product and the current generation of NXDN products conform to the Digital Mobile Radio (DMR) Tier 2 Standard, which is a published, open standard (See, ETSI TS 102-361, parts 1-4).⁴

³ Motorola’s product incorporates two-slot TDMA technology with respect to the repeater. However, the associated portable and mobile transceivers in this configuration use single-slot TDMA emissions. The system uses 12.5 kHz bandwidth to achieve an efficiency of one channel per 6.25 kHz of bandwidth.

⁴ Other manufacturers have access to this DMR standard as well. Several land mobile radio manufacturers either have or are in the process of designing products that are compatible with the DMR standard.

II. RPU Center Frequency Specification.

6. As briefly discussed above, the principal distinction between the Commission's long-pending narrowbanding plan for the Part 90 VHF and UHF bands and that adopted in 2002 for the BAS RPU bands is the necessity for broadcasters to stack narrowband channels where necessary for the transmission of wider bandwidth program material. SBE supported the Commission's proposal in Docket 01-75 to permit stacking of narrowband channels in accordance with the rules in Section 74.402. In the 2002 Report and Order, the Commission questioned the need for continued wideband channels in Channel Groups R and S, but it did adopt the channel plan, consistent with the Part 90 channel plan, to utilize 7.5 kHz (stackable) channels in the 150-160 MHz band and 6.25 kHz (stackable) channels in the 450 MHz band. This system is generally fine and has worked well in the years since the band plan was adopted.

7. However, there was an unintended consequence of the channel stacking formula that is limited, for example, to the channel centers specified in Section 74.402(b)(4). That subsection permits the stacking of up to eight, 6.25 kHz channels which are listed in a table of channel centers beginning at 450.03125 MHz and ending at 455.61875 MHz. The problem that requires a solution is that, if one attempts to stack an *even* number of channels in this list, the applicant must specify as a center frequency a channel that extends to *six decimal places*. The resultant center frequency cannot be programmed into many, if not most, analog radios now in use. The Commission regularly returns applications specifying an *offset* channel center for even numbers of stacked channels to assemble a 12.5, 25 or 50 kHz channel. So, the applicant has no choice but to specify an *odd number of channels* in order to obtain a license specifying a channel

center that can actually be used and which is specified in the license. So, if, for example, RPU Applicant X really wants to utilize a 25 kHz-wide channel bandwidth for transmission of program material, but cannot specify a center frequency that would result from stacking two or four or six adjacent, 6.25 kHz channels specified in Section 74.402(b)(4), Applicant X has no choice but to specify, for example, five stacked channels (31.25 kHz) instead of four (25 kHz); or three (18.25 kHz) instead of two (12.5 kHz) which is in each case more bandwidth than what that applicant needs. Under these circumstances, the process defeats the Commission's narrowbanding goal in the 2002 RPU band plan, since the original goal was to permit applicants to utilize the *minimum* amount of spectrum necessary for the transmission of program material.

8. Again, the solution for this anomaly is simple, and it is as proposed in the attached Appendix: to specify in narrative fashion the opportunity for stacking channels in *3.75 kHz segments* for VHF and *3.125 kHz segments* for UHF in the frequency ranges specified in Section 74.402.⁵ It would be cumbersome to specify a table of channel centers in this manner, each channel being 3.75 kHz wide for VHF or 3.125 kHz wide for UHF, and the narrative format is far simpler.

9. While reviewing this rule, SBE preliminarily concluded that there is no longer a need to apply for *new*, 100 kHz RPU channels. It is understood that there are outstanding licenses specifying 100 kHz channel bandwidths, and those facilities should be grandfathered and should be renewed (or modified) as necessary (assuming that they are in fact in use with emissions that wide), but there does not appear to be a justification for the grant of any new, 100 kHz channel bandwidth facilities. Therefore, the Rule as

⁵ In SBE's view, it is unnecessary to specify the precise channel centers in the rules, when it is possible to describe the means of dividing the band into 3.75 kHz segments for VHF channels and 3.125 kHz segments for UHF channels.

stated in the attached Appendix reflects SBE's suggestion that no new, 100 kHz RPU facilities be licensed after the effective date of an order adopted in this proceeding *absent a showing of need* in individual cases.

III. Conclusions.

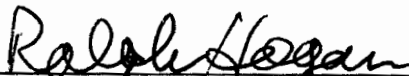
10. The Commission implemented a reasonable and flexible band plan for the RPU band in 2002, updating the previous band plan which had been in place since 1983. The advances since 2002, however, in deployment of digital technologies have been profound, and since most commercially manufactured equipment for Part 90 PLMR use is also certified for Part 74 use. Since that equipment is ready for deployment in the Part 74 RPU bands but for the limits on emission designators found in Section 74.462, it is timely to modify that rule to permit the cost efficiencies and spectrum economy of deploying digital emissions in the RPU service with minimal limitation. The existing emission mask regulations and bandwidth limitations are adequate to safeguard analog or digital adjacent channel users and it is therefore not necessary any longer to specify emission designators on a case-by-case basis. Indeed, specification of individual emissions in the rules is administratively cumbersome because it necessitates frequent rule changes when new technologies are developed in the mobile radio industry. Because certain types of current Part 90 digital equipment, most notably at the present time TDMA and NXDN equipment, are ready and available for use and are certified for Part 74 operation; and because there is substantial demand for this equipment among BAS licensees for RPU use, SBE's temporary waiver to permit the emission types used by these technologies should be granted *pendente lite*.

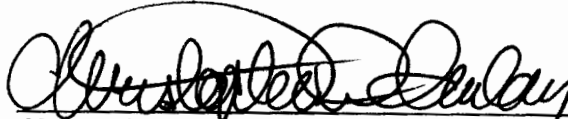
11. As well, the Commission should resolve the anomaly in Section 74.402 of the rules, which requires many RPU applicants (and applicants for modification of existing BAS RPU licenses) to specify either a channel center frequency that cannot be programmed into their existing equipment, or alternatively, to stack more channels than the applicant needs for the transmission of program material. SBE's solution to this anomaly as set forth in the attached Appendix should be adopted.

Therefore, for the reasons discussed herein, SBE respectfully requests that the Commission issue a notice of proposed rulemaking at an early date proposing the revision of Sections 74.402 and 74.462 as proposed in the attached Appendix.

Respectfully submitted,

**THE SOCIETY OF BROADCAST ENGINEERS,
INC.**


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APPENDIX A

PROPOSED RULE CHANGES

Part 74 of Chapter I of Title 47 of the Code of Federal Regulations is proposed to be amended as follows:

Section 74.402 is amended to read as follows:

Sec. 74.402 Frequency assignment.

Operation on all channels listed in this section (except: frequencies 26.07 MHz, 26.11 MHz, and 26.45 MHz, and frequencies listed in paragraphs (a)(4) and (c)(1) of this section shall be in accordance with the "priority of use" provisions in §74.403(b)). The channel will be assigned by its center frequency, channel bandwidth, and emission designator. In general, the frequencies listed in this section represent the center of the channel or channel segment. When channels are stacked in those sections where stacking is permitted, the center frequency of an assigned channel will be halfway between the upper and lower limits of the stacked channel segments.

(a) The following channels may be assigned for use by broadcast remote pickup stations using any emission (other than single sideband or pulse) that will be in accordance with the provisions of §74.462.

(1) [Reserved]

(2) HF Channels: 25.87, 25.91, 25.95, 25.99, 26.03, 26.07, 26.09, 26.11, 26.13, 26.15, 26.17, 26.19, 26.21, 26.23, 26.25, 26.27, 26.29, 26.31, 26.33, 26.35, 26.37, 26.39, 26.41, 26.43, 26.45, and 26.47 MHz. The channels 25.87–26.09 MHz are subject to the condition listed in paragraph (e)(2) of this section.

(3) VHF Channels: 166.25 and 170.15 MHz. These channels are subject to the condition listed in paragraph (e)(8) of this section.

(4) UHF Channels: Within the band 450.003125 MHz to 450.028125 MHz and the band 450.978125 MHz to 450.996875 MHz and the band 455.003125 MHz to 455.028125 MHz and the band 455.978125 MHz to 455.996875 MHz, each band being divided into 3.125 kHz segments, up to four such 3.125 kHz segments may be stacked to form channels, which may be assigned for use by broadcast remote pickup stations using any emission contained within the resultant channel in accordance with the provisions of §74.462. These channels are subject to the condition listed in paragraph (e)(9) of this section.

(b) Up to eight of the following 3.75 kHz VHF segments and up to sixteen of the following 3.125 kHz UHF segments may be stacked to form a channel which may be assigned for use by broadcast remote pickup stations using any emission contained within the resultant channel in accordance with the provisions of §74.462.

(1) VHF segments: Within the band 152.85875 MHz to 153.36125 MHz being divided into 3.75 kHz segments, up to eight such 3.75 kHz segments may be stacked to form channels. These channels are subject to the conditions listed in paragraphs (e)(3), (4), (5), and (10) of this section.

(2) VHF segments: Within the band 160.85625 MHz to 161.40375 MHz being divided into 3.75 kHz segments, up to eight such 3.75 kHz segments may be stacked to form channels. These channels are subject to the condition listed in paragraph (e)(6) and (10) of this section.

(3) VHF segments: Within the band 161.62125 MHz to 161.77875 MHz being divided into 3.75 kHz segments, up to eight such 3.75 kHz segments may be stacked to form channels. These channels are subject to the conditions listed in paragraphs (e)(4), (7), and (10) of this section.

(4) UHF segments: Within the band 450.028125 MHz to 450.621875 MHz and the band 455.028125 MHz and 455.621875 MHz, each band being divided into 3.125 kHz segments, up to sixteen such 3.125 kHz segments may be stacked to form channels, which may be assigned for use by broadcast remote pickup stations using any emission contained within the resultant channel in accordance with the provisions of Sec. 74.462.

(c) Up to sixteen of the following 3.125 kHz segments may be stacked to form a channel which may be assigned for use by broadcast remote pickup stations using any emission contained within the resultant channel in accordance with the provisions of §74.462. Users committed to 50 kHz bandwidths and transmitting program material will have primary use of these channels.

(1) UHF segments: Within the band 450.625 MHz to 450.875 MHz and the band 455.625 MHz and 455.875 MHz, each band being divided into 3.125 kHz segments, up to sixteen such 3.125 kHz segments may be stacked to form channels.

(2) [Reserved]

(d) Up to thirty-two of the following 3.125 kHz segments may be stacked to form a channel which may be assigned for use by broadcast remote pickup stations using any emission contained within the resultant channel in accordance with the provisions of §74.462. Users committed to 100 kHz bandwidths and transmitting program material will have primary use of these channels.

(1) UHF segments: Within the band 450.875 MHz to 450.975 MHz and the band 455.875 MHz and 455.975 MHz, each band being divided into 3.125 kHz segments, up to thirty-two such 3.125 kHz segments may be stacked to form channels.

(2) [Reserved]

(e) Conditions on Broadcast Remote Pickup Service channel usage as referred to in paragraphs (a) through (d) of this section:

(1) [Reserved]

(2) Operation is subject to the condition that no harmful interference is caused to stations in the broadcast service.

(3) Operation is subject to the condition that no harmful interference is caused to stations operating in accordance with the Table of Frequency Allocations set forth in part 2 of this chapter. Applications for licenses to use frequencies in this band must include statements showing what procedures will be taken to ensure that interference will not be caused to stations in the Industrial/Business Pool (Part 90).

(4) These frequencies will not be licensed to network entities.

(5) These frequencies will not be authorized to new stations for use on board aircraft.

(6) These frequencies are allocated for assignment to broadcast remote pickup stations in Puerto Rico or the Virgin Islands only.

Note to paragraph (e)(6): These frequencies are shared with Public Safety and Industrial/Business Pools (Part 90).

(7) These frequencies may not be used by broadcast remote pickup stations in Puerto Rico or the Virgin Islands. In other areas, certain existing stations in the Public Safety and Industrial/Business Pools (Part 90) have been permitted to continue operation on these frequencies on the condition that no harmful interference is caused to broadcast remote pickup stations.

(8) Operation on frequencies 166.25 MHz and 170.15 MHz is subject to the condition that harmful interference shall not be caused to present or future Government stations in the band 162–174 MHz and is also subject to the bandwidth and tolerance limitations and compliance deadlines listed in §74.462 of this part. Authorization on these frequencies shall be in the lower 48 contiguous States only, except within the area bounded on the west by the Mississippi River, on the north by the parallel of latitude 37°30' N., and on the east and south by that arc of the circle with center at Springfield, Illinois, and radius equal to the airline distance between Springfield, Illinois, and Montgomery, Alabama, subtended between the foregoing west and north boundaries, or within 150 miles (241.4 km) of New York City.

(9) The use of these frequencies is limited to operational communications, including tones for signaling and for remote control and automatic transmission system control and telemetry. Stations licensed or applied for before April 16, 2003, must comply with the channel plan by March 17, 2006, or may continue to operate on a secondary, non-interference basis.

(10) Stations licensed or applied for before April 16, 2003, must comply with the channel plan by March 17, 2006, or may continue to operate on a secondary, non-interference basis.

(f) License applicants shall request assignment of only those channels, both in number and bandwidth, necessary for satisfactory operation and for which the system is equipped to operate. However, it is not necessary that each transmitter within a system be equipped to operate on all frequencies authorized to that licensee.

(g) Remote pickup stations or systems will not be granted exclusive channel assignments. The same channel or channels may be assigned to other licensees in the same area. When such sharing is necessary, the provisions of §74.403 shall apply.

Note to paragraph (e)(6): These frequencies are shared with Public Safety and Industrial/Business Pools (Part 90).

Section 74.462 is amended to read as follows:

Sec. 74.462. Authorized bandwidth and emissions.

(a) Each authorization for a new remote pickup broadcast station or system shall require the use of certificated equipment and such equipment shall be operated in accordance with emission specifications included in the grant of certification and as prescribed in paragraphs (b), (c), and (d) of this section. Any form of modulation may be used.

(b) The maximum authorized bandwidth of emissions corresponding to the types of emissions specified below, and the maximum authorized frequency deviation in the case of frequency or phase modulated emission, shall be as follows:

Frequencies	Maximum Authorized bandwidth (kHz)	Maximum Frequency deviation (kHz)
MHz: 25.87 to 26.03.....	40.....	10

26.07 to 26.47.....	20.....		5
152.8625 to 153.3575 \1\.....	30/60.....		5/10
160.860 to 161.400.....	60.....		10
161.625 to 161.775.....	30.....		5
166.25 and 170.15.....	12.5.....		2.5
450.00625 to 450.99375.....	25.....	5	
455.00625 to 455.99375.....	25.....	5	
450.03125 to 450.61875			
455.03125 to 455.61875.....	Up to 25.....		5
450.6375 to 450.8625			
455.6375 to 455.8625.....	50.....		10
450.900, 450.950			
455.900, 455.950.....	100.....		35

1. New or modified licenses for use of the frequencies will not be granted to utilize transmitters on board aircraft, or to use a bandwidth in excess of 30 kHz and maximum deviation exceeding 5 kHz

(c) For emissions on frequencies above 25 MHz with authorized bandwidths up to 30 kHz, the emissions shall comply with the emission mask and transient frequency behavior requirements of Sec. Sec. 90.210 and 90.214 of this chapter. For all other emissions, the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(1) On any frequency removed from the assignment frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB:

(2) On any frequency removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;

(3) On any frequency removed from the assigned frequency by more than 250 percent on the authorized bandwidth; at least 43 plus $10 \log_{10}$ (mean output power, in watts) dB.

(d) In the event a station's emissions outside its authorized channel causes harmful interference, the Commission may, at its discretion, require the licensee to take such further steps as may be necessary to eliminate the interference.