

Excerpt from:

FCC 00-348

THIRD MEMORANDUM OPINION AND ORDER AND THIRD REPORT AND ORDER

Adopted: September 18, 2000 Released: October 10, 2000

C. Interoperability Below 512 MHz

82 In the *Third Notice*, we tentatively concluded that locating interoperability channels in the 700 MHz²⁵⁹ and 800 MHz²⁶⁰ bands alone would not provide a comprehensive solution to nationwide interoperability.²⁶¹ Citing the *PSWAC Final Report*, we noted that federal, state and local public safety agencies use a total of ten radio bands, that range from 30 MHz to over 800 MHz.²⁶² To date, the ability to operate in these bands with a single, commercial grade radio is complicated because their individual radio systems operate in different frequency bands. Consequently, communications between public safety agencies is limited. This inability to communicate hinders cooperation and coordination among public safety agencies on a day-to-day basis.²⁶³

83 To address these obstacles, we proposed to establish nationwide interoperability channels below 512 MHz, thereby providing for the development and use of shared interoperability systems and the building of gateways between technically incompatible federal, state, and local public safety systems.²⁶⁴ Accordingly, we made proposals and invited comment on interoperability channels in (1) the existing 150-174 MHz and 450-512 MHz public safety bands, (2) the 138-144 MHz band, and (3) the VHF maritime band at 156-162 MHz. We also sought comment on requiring every public safety mobile radio to have the capacity to transmit and receive on at least one nationwide interoperability channel in the band in which it is operating. Additionally, we requested comment on whether it is necessary to establish a nationwide interoperability band below 512 MHz.²⁶⁵

84 Commenters agreed with our conclusion that separate interoperability channels are needed in the Public Safety Pool below 512 MHz.²⁶⁶ Specifically, commenters supported our proposal in the *Third Notice* to designate specific VHF and UHF channels for interoperability.²⁶⁷ Moreover, several comments stated that our *Third Notice* proposals did not adequately address the need for interoperability channels below 512 MHz²⁶⁸ and some commenters also complained about the relatively severe operational limitations that would apply to some of the specific channels that we set forth in the *Third Notice*.²⁶⁹ While in the *Third Notice* we sought comment on the need for a separate interoperability band below 512 MHz and several commenters continued to promote this solution, no other spectrum identified is readily available.²⁷⁰ We believe the Rules adopted today represent a practical step toward a comprehensive solution to the issue of interoperability below 512 MHz. As described in detail below, we adopt specific channels within the existing public safety bands (150-174 MHz and 450-512 MHz) resulting from the *Refarming* proceeding for nationwide interoperability. We also designate the three VHF channel pairs set-aside for public safety in the VHF maritime band (156-162 MHz), which are located generally in the Midwest region of the country, for interoperability use. For convenience, the following table sets forth the specific channels below 512 MHz that we are designating exclusively for interoperability purposes.

Table of Public Safety Interoperability Channels Below 512 MHz²⁷¹

CHANNEL (MHz)	LABEL	NOTES
151.1375 base/mobile	VTAC 1	not available in PR/VI
154.4525 base/mobile	VTAC 2	not available in PR/VI
155.7525 base/mobile	VCALL	
158.7375 base/mobile	VTAC 3	
159.4725 base/mobile	VTAC 4	
157.250 mobile 161.850 base/mobile	RTAC 1 RTAC 1a	VPC Ch. 25 (25 kHz pair) Available in all 33 EAs
157.225 mobile 161.825 base/mobile	RTAC 2 RTAC 2a	VPC Ch. 84 (25 kHz pair) Available in 22 EAs
157.275 mobile 161.875 base/mobile	RTAC 3 RTAC 3a	VPC Ch. 85 (25 kHz pair) Available in 11 EAs
453.2125 base/mobile 458.2125 mobile	UCALLa UCALL	
453.4625 base/mobile 458.4625 mobile	UTAC 1a UTAC 1	
453.7125 base/mobile 458.7125 mobile	UTAC 2a UTAC 2	
453.8625 base/mobile 458.8625 mobile	UTAC 3a UTAC 3	

1. Interoperability Channels in the 150-174 & 450-512 MHz (Existing Public Safety Bands).

85 In the *Third Notice*, we proposed to designate ten channels in the existing public safety bands below 512 MHz for nationwide interoperability. Several commenters supported this proposal, but voiced concerns about adjacent channel assignments and bandwidth problems.²⁷² NPSTC and Arizona noted that other VHF and UHF spectrum could be reallocated nationwide, including the wideband paired channels in the 150-160 and 450-460 MHz bands (Improved Mobile Telephone Service which is now obsolete due to cellular and PCS).²⁷³ APCO, Motorola and others note that the specific UHF channels identified in *the Third Notice* are 6.25 kHz wide channels which is inconsistent with the PSWAC recommendation of 12.5 kHz for interoperability channels.²⁷⁴

86 Upon review of the comments, we adopt five VHF channels (five frequencies) and four UHF channel pairs (eight frequencies) for interoperability purposes one calling channel and four tactical channels in the existing VHF public safety band at 150-174 MHz, and one calling and three tactical channel pairs in the existing UHF public safety band at 450-512 MHz.²⁷⁵ Although some commenters indicated that we should look elsewhere (*e.g.*, Part 22, Improved Mobile Telephone Service) for interoperability channels, the record before us is insufficient to justify reallocating spectrum already allocated to other services. Moreover, we believe that designating channels in the existing public safety bands for interoperability is a practical and necessary step in addressing the lack of interoperability considering that a substantial number of federal, state, and local public safety agencies operate in these bands. While we acknowledge the difficulties associated with adjacent channel operations, which are discussed below, the

advent of 12.5 kHz “offset” channels resulting from the *Refarming* proceeding presents a significant opportunity to designate channels for nationwide interoperability purposes that we should not overlook. We realize our decisions may adversely impact existing licensees, however we believe that the benefits of providing for interoperability in these bands outweigh any adverse impact. We believe our action facilitates additional interoperability capability with minimal impact to existing licensees. Moreover, we received no comments opposing our proposal to designate interoperability channels in the public safety bands below 512 MHz

²⁷¹ We note that NTIA has designated certain federally allocated radio frequencies for interoperability use under a plan it developed in cooperation with IRAC and FLEWUG. *See* National Telecommunications and Information Administration (NTIA), U.S. Department of Commerce, *Manual of Regulations and Procedures for Federal Radio Frequency Management* (January 2000 Edition) § 4.3.16.

87 As an initial matter, we adopt the five VHF channels 151.1375, 154.4525, 155.7525, 158.7375, and 159.4725 MHz as set forth in the *Third Notice*. These channels were recommended by the frequency coordinators and generally supported by commenters.²⁷⁶ Nevertheless, their use as interoperability channels presents serious operational challenges. As noted by several commenters, VHF channels are spaced 7.5 kHz apart but operations are permitted up to 12.5 kHz, and this overlap increases the potential for adjacent channel interference. Generally, this adjacent channel interference is minimized through prudent sharing of these channels during frequency coordination, *e.g.*, attempting to keep adjacent-channel VHF transmitters separated by ten miles. However, such coordination is not possible on nationwide interoperability channels, which by definition cannot be restricted geographically or operationally. Thus, adjacent channel interference will be a serious operational challenge for VHF interoperability channels. Nonetheless, the need for additional interoperability capability in the VHF band outweighs these operational challenges – some VHF interoperability capability is better than no VHF interoperability capability. Since this is a characteristic of the VHF band and no alternate channels were suggested in comments, we conclude that these channels represent a viable choice based on industry views.

88 For the UHF band, we adopt four channel pairs for interoperability purposes: 453/458.2125, 453/458.4625, 453/458.7125, and 453/458.8625 MHz. In the *Third Notice*, we proposed two UHF channel pairs (four frequencies) and sought comments on another channel pair for nationwide interoperability purposes.²⁷⁷ Although several commenters supported designating UHF channels for interoperability, they also noted that the specific channels identified in the *Third Notice* for interoperability are 6.25 kHz wide channels which would be inconsistent with the PSWAC recommendation of 12.5 kHz for interoperability channels.²⁷⁸ We agree.²⁷⁹ Relying on our experience with the five channel pairs designated at 800 MHz for interoperability, we believe four channel pairs are an appropriate number to facilitate interoperability in the UHF band.²⁸⁰ Based on a search of our database the channels we adopt today represent the least encumbered 12.5 kHz UHF channels.²⁸¹ Currently, there is a freeze on the licensing of new high power stations on the 12.5 kHz “offset” channels in the 450–470 MHz band²⁸² but the freeze on the filing of these applications in the 450-460 MHz band is to be lifted on January 29, 2001.²⁸³

89 Because our decision affects not only those licensed on the interoperability frequencies but also those on nearby channels operating with 12.5 kHz or 25 kHz equipment, we will provide a transition period through January 1, 2005 for implementation.²⁸⁴ Current licensees may continue to operate on these interoperability channels indefinitely; however, after January 1, 2005, existing users that continue to operate on these channels will do so on a secondary basis to interoperability uses.²⁸⁵ Prior to January 1, 2005, interoperability use will be permitted only on a secondary basis to existing users; that is, interoperability transmissions can be made only when the channel is clear and on a non-interference basis. This transition period, we believe, will provide existing licensees with sufficient time and notice to become aware of any potential effects on their particular operations by future interoperability use. It also provides any critical public safety operations with ample time to identify their options and determine the best course of action. We also note that some public safety operations may be such that they could be suspended during emergency situations. Specifically, an existing licensee could assign noncritical traffic to the interoperability channel and instruct its employees to use other VHF channels whenever the

90 Under our Rules, an entity must have a license to operate a base or control station on these interoperability channels.²⁸⁶ Mobile operation, however, is permitted on these channels without an individual license (*i.e.*, a blanket licensing approach).²⁸⁷ Public safety licensees who are eligible to hold a Part 90 license, or who are otherwise licensed under Part 90 of our Rules, can operate mobile units on these interoperability channels without an individual license. Additionally, as suggested in comments, we also will require, as of January 1, 2005, every newly certified public safety mobile radio unit to have the capacity to transmit and receive on at least one nationwide interoperability channel (*i.e.*, the calling channel) in the band in which it is operating.²⁸⁸ For licensing and administration of these interoperability channels, we will rely on the four public safety frequency coordinators.²⁸⁹ We envision that the four coordinators would jointly develop an interoperability plan regarding the management and nationwide use of these interoperability channels. This plan could be developed in concert with the group(s) tasked with administering the interoperability channels in the 700 MHz band. Additionally, we would expect the frequency coordinators to work with existing licensees experiencing harmful interference to critical public safety operations to find suitable replacement channels.²⁹⁰ Finally, until general interoperability provisions can be made with Canada and Mexico, interoperability operations within the Canadian and Mexican border areas will need to be coordinated on an individual basis with these countries in the usual manner.