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

FCC 95-167

In the Matter of

Amendment of the Commission's  
Rules to Establish New Personal  
Communications Services

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GEN Docket No. 90-314  
RM-7140, RM-7175, RM-7618

#### **FOURTH MEMORANDUM OPINION AND ORDER**

**Adopted:** April 19, 1995

**Released:** May 12, 1995

By the Commission:

#### **INTRODUCTION**

1. By this action, the Commission affirms its designation of UTAM, Inc., to manage the transition of the 1910-1930 MHz band from the Private Operational Fixed Microwave Service to unlicensed Personal Communication Service (PCS) operations. Further, we hereby accept UTAM's plan for the relocation of fixed microwave operations from this spectrum and the deployment of unlicensed PCS devices. We are requiring UTAM to submit reports at six-month intervals on the progress of the plan's implementation. UTAM's management of the transition of the 1910-1930 Mhz band will help to ensure that new and innovative unlicensed PCS devices, such as wireless PBX equipment, wireless messaging systems, wireless local area networks, and a broad range of data communication products, are made available as rapidly as possible without disrupting fixed microwave service. Access to the unlicensed PCS spectrum will help create jobs and stimulate competition as entrepreneurial companies develop new products that will operate in this spectrum.

## BACKGROUND

2. In the Notice of Proposed Rule Making and Tentative Decision in this proceeding, the Commission proposed to allocate spectrum for use by unlicensed PCS operations.<sup>1</sup> On May 14, 1993, the Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition and Management (UTAM) filed a proposal to establish a temporary open industry entity that would assume relocation and spectrum management functions for the proposed unlicensed PCS band, pursuant to Section 332(b) of the Communications Act. The Commission requested comment on UTAM's proposal in a Public Notice released May 18, 1993.<sup>2</sup> UTAM subsequently incorporated itself under the name of UTAM, Inc., in the State of Delaware as a not-for-profit corporation.

3. In its Second Report and Order in this proceeding, the Commission allocated spectrum and established service rules for broadband and unlicensed PCS.<sup>3</sup> On June 13, 1994, the Commission adopted a Memorandum Opinion and Order (MO&O) modifying these rules and policies.<sup>4</sup> In these actions, the Commission allocated the frequency band 1910-1930 MHz for unlicensed PCS devices and established administrative and technical rules for their operation.<sup>5</sup> As part of the technical rules, the Commission required unlicensed PCS devices to conform with a "spectrum etiquette" that was developed by industry. The spectrum etiquette is designed to facilitate sharing and minimize interference between unlicensed PCS devices. Under the spectrum etiquette, the 1910-1920 MHz band is designated for asynchronous communications (data) and the 1920-1930 MHz band is designated for use by isochronous (primarily voice) communications.

4. The 1910-1930 MHz band is currently occupied by 383 fixed point-to-point microwave links. In the Second Report and Order, the Commission also designated UTAM as the coordinator for the transition of the unlicensed PCS band from the fixed microwave service to unlicensed PCS, conditioned on UTAM's submission and the Commission's acceptance of: 1) a funding plan that is equitable to all prospective manufacturers of unlicensed devices, and 2) a plan for "band clearing" that will permit the implementation of nomadic devices and, in particular, nomadic data PCS devices, as promptly as possible. The Commission specified that, as a minimum, such a plan should include estimated time tables and priorities for clearing significant portions of both subbands of the unlicensed PCS spectrum. In addition, the Commission assigned UTAM responsibilities for:

- relocating incumbent microwave systems consistent with the requirements

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<sup>1</sup> See Notice of Proposed Rule Making and Tentative Decision, GEN Docket No. 90-314 and ET Docket No. 92-100, 7 FCC Rcd 5676 (1992).

<sup>2</sup> See 58 Fed. Reg. 31183 (June 1, 1993).

<sup>3</sup> See Second Report and Order, GEN Docket No. 90-314, 8 FCC Rad 7700 (1993).

<sup>4</sup> See Memorandum Opinion and Order, GEN Docket No. 90-314, 9 FCC Rad 4957 (1994).

<sup>5</sup> See 47 CFR Part 15, Subpart D.

established in ET Docket 92-9,<sup>6</sup>

- addressing concerns from fixed microwave systems about interference from unlicensed PCS operations;
- managing the deployment of "coordinatable" unlicensed PCS systems and devices prior to full band clearing;<sup>7</sup> and,
- determining which unlicensed PCS devices and systems are "coordinatable".

The Commission also:

- established equipment authorization criteria for unlicensed PCS requiring that all applicants be participants in UTAM;
- prescribed requirements for unlicensed PCS devices to qualify as coordinatable;
- established requirements to prevent unlicensed PCS devices from being activated before they are coordinated by UTAM and to ensure that such devices are disabled if they are relocated outside the coordinated area; and,
- provided that UTAM will have no further responsibilities and cease operation when the Commission determines that interference to incumbent microwave systems is no longer a concern.

5. On August 1, 1994, UTAM, Inc., submitted its plan for managing the transition of the 1910 - 1930 MHz band to use by unlicensed PCS operations.<sup>8</sup> UTAM indicates that this plan received the unanimous approval of its voting members. UTAM states that the plan affords a sound and expeditious path to deploying all forms of unlicensed PCS devices, while protecting the interests of incumbent microwave licensees.

### SUMMARY OF THE UTAM PLAN

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<sup>6</sup> See Third Report and Order in ET Docket 92-9, In the Matter of Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, 8 FCC Rcd 6589 (1993).

<sup>7</sup> A "coordinatable" unlicensed PCS device is defined as a PCS device whose geographical area of operation is sufficiently controlled either by necessity of operation with a fixed infrastructure or by disabling mechanisms to allow adequate coordination of their locations relative to incumbent fixed microwave facilities. See 47 CFR §15.303(b).

<sup>8</sup> See UTAM Plan for Financing and Managing 2 GHz Microwave Relocation.

6. The UTAM plan describes UTAM's organization and governance, financing plan, band clearing plan, coordination procedures, protection of proprietary information, dispute resolution procedures and UTAM's plans for ending its coordination role and dissolving itself. The various aspects of the plan are summarized in the following paragraphs.

7. In its plan, UTAM states that its membership is open to any entity with a material interest in the manufacture, sale, or distribution of unlicensed PCS products; users of unlicensed PCS products; incumbent microwave licensees; and, entities engaged in the manufacture, planning or installation of microwave systems. Full voting membership is limited to parties that share in the costs of clearing the spectrum. UTAM had 8 full voting members and 30 associate members at the time the plan was submitted.<sup>9</sup> UTAM's business affairs are to be governed by a Board of Trustees elected by the voting members. Complete details on UTAM's membership requirements, organizational structure and decision-making processes are contained in UTAM's By-laws, which are appended to the plan.<sup>10</sup>

8. UTAM's financing plan addresses the expected costs of relocating the incumbent microwave operations as well as the estimated revenues that will be available for this purpose. UTAM assumes that PCS licensees will fund one-half the costs of relocating the 383 microwave links in the unlicensed PCS spectrum because these links are paired with links in the licensed PCS spectrum. UTAM also projects it will need to fully fund the relocation of 10% of the approximately 1420 microwave links in spectrum adjacent to the 1910 - 1930 MHz band in order to avoid adjacent channel interference.<sup>11</sup> UTAM estimates that it will cost an average of \$200,000 to relocate each microwave link. Thus, UTAM estimates that it will cost approximately \$67 million to fund the relocation of microwave links.<sup>12</sup> UTAM also identifies costs for a variety of other elements such as interference analyses, an equipment location verification procedure, development of an unlicensed PCS deployment data base, a coordination subcontractor, site specific coordinations and administrative costs.

9. UTAM identifies a number of revenue sources. These include membership fees, advances from several UTAM members, clearing fees and special fees from manufacturers

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<sup>9</sup> UTAM currently has 9 voting members and 16 associate members.

<sup>10</sup> See UTAM plan at 18-23.

<sup>11</sup> The microwave links in the unlicensed PCS spectrum at 1910 - 1930 MHz are typically paired with microwave links in the licensed PCS spectrum at 1850 - 1910 MHz or 1930 - 1990 MHz. The paired links are usually either 40 MHz above or below the links in the 1910 - 1930 MHz band. However, there is no specific pairing requirement.

<sup>12</sup> See Utam plan at 29.

that are designated for clearing specific microwave links.<sup>13</sup> Clearing fees will be the primary funding mechanism. The clearing fees will be collected by assessing a fee of \$20 for each unlicensed PCS transmitter requiring an FCC identification label. Manufacturers will pay this fee through arrangements with UTAM to purchase the necessary label. UTAM will enforce compliance through contracts with UTAM members and through reliance on the Commission's requirement that all applicants for equipment authorization of unlicensed PCS devices operating in this spectrum must be participating members in UTAM. The \$20 fee was derived on the basis of a study by BIS Strategic Decisions of the scale and timing of demand for unlicensed PCS systems and devices. Based on its cost and revenue projections, UTAM estimates that all of the microwave links in the unlicensed PCS band can be relocated in six to twelve years. UTAM notes, however, that a public safety licensee availing itself of its full relocation rights could delay band clearing for up to seven years.<sup>14</sup>

10. UTAM's plan for clearing the unlicensed PCS spectrum consists of three principal elements. The plan first provides for band segment self-financing, under which clearing fees from asynchronous devices will be used to clear the asynchronous segment (1910-1920 MHz) and clearing fees from isochronous devices will be used to clear the isochronous band segment (1920-1930 MHz). Second, UTAM intends to establish priorities for clearing specific geographic areas based upon clearing the largest business population per dollar expended.

11. Finally, to ensure the rapid deployment of nomadic data PCS devices, UTAM has developed what it refers to as a "wedge" approach to clearing the spectrum. Under the "wedge" approach, UTAM will begin the band clearing process by first focusing on the relocation of microwave links at 1920 MHz, the center of the unlicensed PCS band and the dividing line between the isochronous and asynchronous segments, and then moving outward to the edges of the unlicensed allocation. UTAM states that its "wedge" approach will expedite the availability of a block of frequencies for both data and voice nomadic devices even before the entire band can be cleared. UTAM points out, however, that because our

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<sup>13</sup> See UTAM plan at 34. To be admitted to voting membership, the entity must either pay \$10,000 in advance clearing fees or begin paying fees to UTAM in connection with the actual sale of unlicensed PCS devices or systems. An associate nonvoting membership is available to any interested party for an annual fee of \$500, which covers administrative costs. Additional funds beyond \$10,000 advanced by UTAM members for start-up would also be credited towards clearing fees.

<sup>14</sup> See Second Memorandum Opinion and Order, ET Docket No. 92-9, 9 FCC Rcd 7797 (1994). Public safety microwave systems are entitled to a three-year voluntary negotiation period followed by a two-year mandatory negotiation period. Allowing a year to accomplish the actual relocation, plus an additional year to validate the performance of the new facilities, creates a total time period of seven years by which public safety microwave relocations could delay band clearing.

rules permit public safety microwave licensees to effectively protect their frequencies from unlicensed PCS deployment for up to seven years, any holdouts among public safety licensees can delay nomadic deployment. UTAM states that it is actively soliciting contributions from interested manufacturers that may be directed toward specific clearing efforts. Such contributions would be credited to manufacturers as advance clearing fees, and could hasten the deployment of nomadic data PCS devices. UTAM suggests that the best way to expedite the early deployment of nomadic devices is to ensure a strong revenue stream for band clearing. UTAM believes its plan achieves this objective.

12. The UTAM plan also provides detailed information on how deployment of unlicensed PCS devices will be coordinated to avoid causing interference to incumbent microwave operations. UTAM intends to designate individual areas, probably coincident with counties, as Zone 1 or Zone 2. In Zone 1 areas, early deployment would be allowed subject to a limit on aggregate power levels from the unlicensed PCS devices in the zone.<sup>15</sup> A detailed coordination study using the guidelines from TIA Bulletin 10-F and its successors will be commissioned to define the Zone 1 areas available for deployment of coordinatable devices after UTAM's plan is approved.<sup>16</sup> UTAM would include a margin of 10 percent in its calculations as a further safeguard against interference. The power of the unlicensed devices in an area would be aggregated as they are installed and activated to make sure that the maximum permitted power levels are not exceeded. As the aggregate power limit is approached, UTAM would restrict any further deployment of unlicensed PCS devices in that zone until the affected microwave link is relocated. Zone 2 areas are those in which it would be necessary to coordinate the site of each individual unlicensed PCS system. UTAM terms these "site specific" coordinations. The guidelines in TIA Bulletin 10-F would also be used for "site specific" coordinations.

13. UTAM would ensure that unlicensed PCS devices are properly deployed in the coordinated areas through what it terms a location verification process. UTAM notes that the Commission has provided UTAM with considerable latitude in the method used to verify the location of installed systems. In this regard, the UTAM plan sets forth location verification procedures and a device disablement procedure intended to ensure compliance with Sections 15.307(d) and (e) of the rules.<sup>17</sup> The UTAM location verification and device disablement

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<sup>15</sup> The aggregate power limit would vary among the Zone 1 areas depending on such factors as the proximity and orientation of microwave links in the vicinity of the zone.

<sup>16</sup> TSB10-F was adopted on May 31, 1994; TIA Telecommunications Systems Bulletin Number 10-F, Interference Criteria for Microwave Systems, May 1994, (TSB10-F). The Commission permits use of the procedures in this bulletin to determine the interference potential from licensed PCS systems to fixed microwave systems.

<sup>17</sup> See 47 CFR Section 15.307. Section 15.307(d) provides that: "[a] coordinatable PCS device is required to incorporate means that ensure that it cannot be activated until its location has been coordinated by UTAM, Inc. The application for certification shall contain an

procedures would ensure that a device is not activated before confirmation is made that its geographic location is in a coordinated area and that the equipment's operation will be disabled if it is relocated to a non-coordinated area.<sup>18</sup> Manufacturers will be permitted to develop their own mechanisms or procedures for location verification. The sufficiency of such mechanisms and procedures will be evaluated in accordance with the device disablement procedures. Further, as part of the equipment authorization process, the Commission's staff will review closely the technical aspects of each unlicensed device, including all technical matters related to the device's ability to comply with the coordination procedures.

14. UTAM states that it intends to resolve disputes arising from contractual agreements with its members through binding arbitration, if initial negotiations fail and the contract so provides, or through the courts. With regard to resolution of potential disputes with incumbent microwave licensees, UTAM expresses its commitment to pursue good faith private negotiations and alternative dispute resolution procedures to the greatest extent possible. UTAM states that it will also use its best efforts to assist parties in addressing interference complaints. Interference disputes that cannot be resolved will be brought to the Commission's attention for appropriate action. UTAM notes that, as part of the coordination and clearing fee process, it will need to receive confidential information on individual companies' sales and customer installations. UTAM plans to take steps to prevent unauthorized disclosure and use of such information.<sup>19</sup> Finally, UTAM states that its coordination role will end and it will be dissolved upon the occurrence of two events: the

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explanation of all measures taken to prevent unauthorized operation. This explanation shall include all procedural safeguards, such as the mandatory use of licensed technicians to install the equipment, and a complete description of all technical features controlling activation of the device." Section 15.307(e) provides that: "[a] coordinatable PCS device shall incorporate an automatic mechanism for disabling operation in the event it is moved outside the geographic area where its operation has been coordinated by UTAM, Inc. The application for certification shall contain a full description of the safeguards against unauthorized relocation and must satisfy the Commission that the safeguards cannot be easily defeated."

<sup>18</sup> The UTAM device disablement procedure provides separate tests to ensure disablement of fixed and mobile equipment. Briefly, the tests for the fixed equipment are designed to show that it will cease to operate within one minute unless the location verification process has been successfully completed. Further, after the fixed equipment has been made operational through the location verification process, UTAM requires that the power be disconnected and the equipment must be packed in the shipping cartons for eight hours. The equipment is then retested to ensure that it will not operate unless the location verification process is accomplished again. This process also applies to any radiating elements located more than 8000 meters from fixed equipment that acts as a central control unit. The tests for mobile equipment are designed to ensure that it will cease operation within one minute if the signal from the associated base unit is no longer detected.

<sup>19</sup> See UTAM plan at 68.

unlicensed spectrum is cleared or it can be shown that there is little risk of interference to the remaining incumbents; and, the costs of microwave relocation have been fully recovered.<sup>20</sup>

## COMMENTS ON THE UTAM PLAN

15. On August 11, 1994, the Commission released a Public Notice<sup>21</sup> soliciting public comment on the UTAM plan. Nine parties filed comments and six parties filed reply comments. These parties are listed in Appendix A. Most of the parties filing comments on the plan generally support UTAM's efforts and believe its plan is appropriate for managing the relocation of 1910 - 1930 MHz microwave operations and the deployment of unlicensed PCS systems. However, a number of these parties express concerns with regard to certain elements of the plan or argue that the plan needs additional specifications. AT&T Corp. (AT&T) and the North American Telecommunications Association (NATA) fully support the UTAM plan. Incumbent microwave interests, including the American Petroleum Institute (API), the Association of American Railroads (AAR) and the Utilities Communications Council (UTC) raise concerns about the reliability of the funding plan, band clearing priorities and potential interference. Hewlett-Packard raises concerns about aspects of the plan related to band clearing and deployment of equipment. Spectralink argues that the UTAM plan lacks sufficient detail to address the many financial and administrative issues and requests that we accept the plan as a "work in progress" that must be supplemented and re-submitted before UTAM receives the Commission's final approval. Apple Computer (Apple) and the South Florida Water Management District (SFWMD) believe the plan does not comply with the Commission's mandate and should be rejected outright.<sup>22</sup> The specific issues raised by the commenting parties are discussed below.

## DISCUSSION

16. Funding Plan. Several commenting parties express concerns that UTAM has underestimated costs and overestimated revenues. Apple and API argue that UTAM's assumption that PCS licensees will pay a substantial share of band-clearing costs is unlikely to be valid. Apple contends that PCS licenses may not be awarded in some areas and some licensees may delay the need for incumbent relocation through the use of frequency sharing techniques.<sup>23</sup> API argues that it is unlikely that there will be any symmetry between the implementation of licensed and unlicensed PCS systems. According to API, UTAM will be

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<sup>20</sup> See UTAM plan at 72.

<sup>21</sup> See Public Notice, DA 94-873, August 11, 1994.

<sup>22</sup> See Apple comments at 2, reply comments at 2; SFWMD comments at 8.

<sup>23</sup> See Apple comments at 6.

faced initially with the need to bear the full relocation costs in some areas and will have to attempt to obtain reimbursement from the licensed PCS provider at a later time.<sup>24</sup> API is concerned that, if UTAM funds are inadequate, incumbent microwave licensees could be requested to relocate only to have funds evaporate during the negotiation and relocation process. Further, API is concerned that funds may be unavailable to relocate microwave links in areas where UTAM fails to adequately control interference from deployment of unlicensed PCS devices.<sup>25</sup> API contends that UTAM should either revise its cost estimates upwards or demonstrate that it has a contingency fund to cover any insufficiency of relocation funds. Additionally, API states that UTAM should be required to demonstrate firm financial commitments from its manufacturer members for startup costs. UTC echoes these concerns.<sup>26</sup>

17. SpectraLink Corporation (SpectraLink) expresses concern that UTAM has overestimated revenues from device deployment because UTAM's market penetration predictions do not adequately consider alternatives to unlicensed PCS devices that could reduce demand.<sup>27</sup> Apple argues that UTAM's plan would fund at least some coordination costs through general administrative funds and that this would constitute a *de facto* forced subsidy of manufacturers of coordinatable devices by participating manufacturers of nomadic devices.<sup>28</sup> It maintains that, if a potential supplier of nomadic data devices were to contribute funds to UTAM, some of those funds would almost certainly be used to support early deployment of coordinatable isochronous devices without the proceeds from such deployment being used to support band clearing for nomadic asynchronous devices.

18. UTAM responds that its estimates of the costs and revenues associated with the relocation process are conservative. UTAM argues that it is reasonable to assume that PCS licensees will seek to clear spectrum at least as quickly as UTAM in order to begin earning returns on their substantial investments and to satisfy the Commission's build-out requirements. Further, UTAM believes that the licensed PCS community will find it necessary to relocate most of the links in their service areas because the 1640 watts maximum e. i. r. p. for licensed PCS base stations will require a 400 km coordination distance. UTAM also points out that its estimate of an average relocation cost of \$200,000 per link well exceeds the Commission's staff estimates of \$125,000 - \$150,000 per link.<sup>29</sup> It states that funds substantially in excess of those required to complete the relocation process will be

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<sup>24</sup> See API comments at 5.

<sup>25</sup> Ibid.

<sup>26</sup> See UTC Reply Comments at 7.

<sup>27</sup> See Spectralink comments at 5.

<sup>28</sup> See Apple comments at 6.

<sup>29</sup> See UTAM reply comments at 3.

available under all the scenarios it has investigated. Thus, UTAM believes that band clearing will not be materially delayed, even if there is a moderate increase in the percentage of links to be cleared by UTAM.<sup>30</sup>

19. In response to API's and UTC's concerns, UTAM states that no microwave link will be asked to relocate until UTAM has the funds to complete the move. Further, UTAM maintains that its procedures are designed to safeguard microwave incumbents against interference, and therefore does not expect that it will need to relocate links prematurely.<sup>31</sup> With regard to Spectralink's concerns, UTAM points out that the BIS study already takes into account the impact of demand that can be met by other means.<sup>32</sup> In response to Apple, UTAM states that donated funds may be designated for clearing any part of the spectrum that the donor chooses and will be credited as an advance against clearing fees.<sup>33</sup> UTAM maintains that its plan provides that such designated funds may be directed to clearing either particular frequencies or particular geographical areas.

20. We find that UTAM's cost and revenue projections are reasonable. These projections appear to be based on conservative estimates and to allow for situations where a revenue source may develop somewhat slowly. While we recognize that there is always some uncertainty in making such projections, we are convinced that there will eventually be sufficient revenues to totally fund relocation of the microwave incumbents. It seems fair to assume the PCS licensees will bear approximately half the cost of relocating the incumbent microwave links in the 1910 - 1930 MHz band, since these links are paired with links in the licensed PCS spectrum. We agree with UTAM that its estimate of the cost for relocating each link is conservative, which should provide some margin if UTAM is faced with relocating more links than it anticipates. We do not agree with API and UTC's argument that the relocation of links would be disrupted if there are funding shortfalls. We note, in particular, that UTAM will not initiate relocation negotiations until adequate funding is available. Further, we believe that UTAM is taking adequate steps to control interference so as to avoid the need to relocate microwave links prematurely. We also see no need to require UTAM to establish a contingency fund for such situations. We are satisfied that the BIS study provides a reasonable estimate of unlicensed PCS device deployment and takes due account of demand that may be satisfied through other equipment or services. Even if demand for unlicensed PCS devices does not fall within the range predicted by the BIS study, or if licensed PCS penetration lags or negotiations with incumbents take longer than anticipated, the safeguards included in the plan ensure that the only consequence will be that band clearing will simply take longer. With regard to Apple's concerns about equity in the

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<sup>30</sup> Ibid., note 11.

<sup>31</sup> Ibid., at 7 and 8.

<sup>32</sup> Ibid., at 8.

<sup>33</sup> Ibid. at 19; UTAM Plan at 56.

band clearing process, we agree with UTAM that the plan clearly indicates that donated funds may be designated for clearing any part of the spectrum that the donor chooses and will be credited as an advance against the donor's clearing fees. Thus, no company interested in clearing the asynchronous band segment for deployment of nomadic products will be forced to subsidize coordination activities.

21. Band-Clearing Plan. Apple argues that UTAM's plan fails to provide for the prompt deployment of nomadic data PCS devices.<sup>34</sup> Apple contends that the UTAM plan merely pays lip service to the Commission's direction that the plan provide for the deployment of nomadic devices as promptly as possible, and that UTAM's proposal for nomadic device deployment is hazy at best and hopeless at worst. It further maintains that UTAM has failed to consider alternative approaches such as in-band retuning of incumbent links. Apple criticizes the "wedge" and "segment self-financing" clearing approaches as unworkable because they ignore the fact that most microwave links in the unlicensed PCS band are centered either on 1915 or 1925 MHz, not on 1920 MHz, and have wide transmitter and receiver bandwidths.

22. API, AAR and UTC express concern about the possibility that nomadic devices could be deployed prior to complete clearing of the unlicensed PCS band.<sup>35</sup> These parties seek assurance that such deployment will not take place without formal Commission approval after public notice and comment. API and AAR also comment that UTAM should propose a procedure for coordinating multiple-link system negotiations with PCS licensees, rather than relying on multiple negotiations over a multi-year period to relocate individual links of a microwave incumbent with a complex system.<sup>36</sup> Hewlett-Packard Company (HP) notes the absence of any assignment of relative priority to the clearing of coordination zones.<sup>37</sup> HP also suggests that, as microwave links are relocated, UTAM should review the possibilities for upgrading Zone 2 areas to Zone 1.

23. In its reply comments, UTAM maintains that it has thoroughly explored all realistic alternatives for expediting deployment of nomadic devices.<sup>38</sup> UTAM believes that it has devised a workable strategy for achieving that objective within the constraints of funding availability and the five-year negotiation process permitted for public safety microwave licensees. It asserts that its approach will maximize the revenues available for clearing, thus permitting nomadic deployment as promptly as possible. UTAM defends its "wedge"

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<sup>34</sup> See Apple comments at 2.

<sup>35</sup> See API comments at 10; AAR comments at 4; UTC reply comments at 7.

<sup>36</sup> See API comments at 7, AAR comments at 6.

<sup>37</sup> See HP comments at 3.

<sup>38</sup> See UTAM reply comments at 16.

approach, arguing that the "wedge" approach, together with the use of guard bands, may permit some nomadic deployment prior to complete band clearing. In defending "segment self-financing" UTAM points out that the BIS demand study found a relatively equal split in demand for asynchronous and isochronous products. Further, it argues that, through the wedge approach, links relocated under segment self-financing will benefit both band segments because each relocated link will be co-channel to one segment and adjacent-channel to the other.

24. Responding to the concerns of API, AAR, and UTC, UTAM observes that the Commission's rules currently permit deployment of nomadic devices when there is no longer any significant risk of interference.<sup>39</sup> UTAM states, however, that it expects to seek Commission approval of any interim measures it may develop for nomadic deployment, pursuant to whatever procedures the Commission deems appropriate. UTAM also maintains that it is sensitive to the incumbent microwave community's need for coordination with PCS licensees to negotiate system-wide relocations and states that it is willing to negotiate system-wide moves on a voluntary basis where appropriate.<sup>40</sup> UTAM states that HP's concerns about clearing priorities will be addressed by following the principle of directing clearing efforts toward the largest increase in business sales opportunities per relocation dollar expended.<sup>41</sup> In response to HP's suggestion regarding zones, UTAM states that it intends to update its database and change zone status as appropriate to reflect band-clearing progress.

25. We believe that UTAM's band clearing plan is workable and appropriate. While we understand Apple's concerns for the need to make spectrum available for nomadic operations promptly, we also recognize the practical difficulties UTAM faces in clearing the 1910 - 1930 MHz band. We believe that UTAM has devised a workable strategy for expediting nomadic device deployment given the existing constraints, such as the need to fund and negotiate the relocation of the incumbent microwave links, and the fact that incumbent public safety licensees are not required to relocate for five years. While we are sympathetic to Apple's desire for a more rapid deployment scheme for nomadic data devices in this spectrum, none is apparent. While Apple suggests that a solution may lie in retuning of the existing microwave links, it does not provide any details as to how this approach would work. We believe that the only way to make the band fully available to nomadic devices is to completely clear it. The most effective way to do so is to enable non-nomadic devices to be deployed so that the fees from such deployment can be used to complete the band clearing process as rapidly as possible. While we share Apple's doubts regarding the potential of the "wedge" clearing approach to make significant amounts of spectrum available to nomadic devices prior to complete band clearing, this approach appears to be the soundest plan given the constraints. As an alternative for those developers of nomadic devices whose needs could

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<sup>39</sup> Ibid. at 17. See 47 CFR § 15.307(c) - (f).

<sup>40</sup> Ibid., at 7.

<sup>41</sup> Ibid., note 5.

not be accommodated by the UTAM plan, we note that we recently allocated additional spectrum at 2390 - 2400 MHz for unlicensed data PCS devices, and this spectrum will not require clearing. We believe that the immediate needs of unlicensed nomadic data PCS devices can be accommodated in this spectrum.<sup>42</sup> Operation in the 2390 - 2400 MHz band will not require participation in UTAM and will not be governed by the UTAM plan.

26. With regard to AAR, API and UTC's concerns, we addressed the matter of providing for deployment of nomadic devices prior to complete band clearing in the Memorandum Opinion and Order.<sup>43</sup> We stated therein that when we have determined that spectrum is available, or will soon be available, for deployment of nomadic devices, we will issue a Public Notice announcing the date upon which we will begin accepting and processing applications for certification of such devices. We believe that this plan will adequately ensure that nomadic operations do not cause interference to fixed microwave operations. We believe UTAM's commitment to voluntarily address the concerns of the incumbent microwave community regarding coordination with PCS licensees to negotiate microwave relocations on a system-wide basis where possible and appropriate will further the relocation process. Such system-wide coordination and negotiation activities will promote more rapid availability of spectrum and minimize the relocation burden for incumbent microwave licensees. We believe that it is neither necessary nor practical for the Commission to require such system-wide negotiations. Similarly, we believe that UTAM has adequately responded to HP's concerns about clearing priorities and updating of the zone status.

27. Coordination. AAR, API, SFWMD and UTC express concerns about UTAM's coordination plans for Zone 1 areas. These parties are generally concerned that UTAM will not be able to control deployment of equipment in Zone 1 areas. Accordingly, they state that UTAM's safety margin should be increased from 10 percent to 50 percent to account for devices that may be deployed without being coordinated. UTC suggests alternatively that the Commission disallow the "Zone 1" concept and require site-by-site coordination. HP requests that UTAM provide advance notice of, and seek Commission approval for, impending notices to stop deployment in Zone 1 areas where the cumulative power cap is being approached.<sup>44</sup>

28. Several parties express dissatisfaction with UTAM's proposed location verification process (LVP) for ensuring that unlicensed PCS systems are installed only at their coordinated locations. API suggests that UTAM develop a standard LVP for all manufacturers, rather than permitting UTAM approval of procedures developed by individual manufacturers. API

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<sup>42</sup> See First Report and Order and Second Notice of Proposed Rule Making in ET Docket No. 94-32, adopted February 7, 1995, 60 FR 13071 (1995).

<sup>43</sup> See Memorandum Opinion and Order, *supra*, at para. 218.

<sup>44</sup> See HP comments at 1.

argues that this was the Commission's intent.<sup>45</sup> SFWMD goes further in insisting that the Commission intended that the plan specify the technology that manufacturers must incorporate to prevent unauthorized deployment.<sup>46</sup> UTC expresses concern that UTAM has proposed no means to confirm if a manufacturer is following its location verification process.<sup>47</sup> AT&T suggests that manufacturers installing equipment in Zone 1 be required to report exact location of deployment, rather than just the county, to enable more precise determination of potential for interference to individual microwave incumbents and to allow location of sources of interference.<sup>48</sup>

29. API maintains that, for Zone 2 deployments, fixed transmitting equipment remotely located from the main fixed unit of a system should be required to be disabled if it is removed from the coordinated location by more than 300-400 meters.<sup>49</sup> Further, API believes that UTAM must be able to demonstrate that mobile units will disable themselves when out of range of the associated base station and be incapable of reactivation until back within range of that facility. SFWMD and UTC argue that UTAM's proposed device disablement procedure will allow mechanisms that are too easily defeated by the user.<sup>50</sup> UTC states that UTAM's proposed disablement tests would permit use of mechanisms that can be easily defeated by simply relocating the device within eight hours or ensuring that the device is not disconnected from a commercial power source for more than eight hours at a time.

30. In its reply, UTAM notes that industry has already accepted its interference analysis methodology and incorporated it into TIA Bulletin 10F.<sup>51</sup> UTAM points out that when a system is deployed in a Zone 1 area, it will be coordinated at the maximum capacity of the installed system (i.e., a wireless PBX system will be coordinated on the basis of the maximum number of wireless telephones it can handle). Since systems are initially operated at less than 50 percent of their installed capacity, UTAM argues that there is already a built-in safety margin. Additionally, UTAM plans to set the permitted aggregated power level 10 percent lower than the interference threshold to account for any deployments in progress. UTAM states that it fully understands the concern about the effect of "stop deployment"

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<sup>45</sup> See API comments at 13-14.

<sup>46</sup> See SFWMD comments at 5.

<sup>47</sup> See UTC comments at 5.

<sup>48</sup> See AT&T comments at 4.

<sup>49</sup> See API comments at 16.

<sup>50</sup> See SFWMD comments at 6; UTC comments at 7.

<sup>51</sup> See UTAM reply comments at 10-11.

orders on manufacturers and is exploring acceptable mechanisms for addressing this issue. UTAM plans to provide timely updates regarding the interference environment facing unlicensed PCS manufacturers.<sup>52</sup>

31. Responding to API and SFWMD regarding the lack of a standard LVP or technology, UTAM points out that the Commission's rules explicitly permit manufacturers to develop their own procedures.<sup>53</sup> It also points out, in response to UTC and AT&T, that it intends to monitor compliance with the LVP and to collect all information necessary to do so.<sup>54</sup> UTAM states that if a manufacturer changes its LVP or disablement measures, the manufacturer will be required to submit the changes for re-evaluation by UTAM and review by the FCC.<sup>55</sup>

32. UTAM maintains that a requirement for demonstrating that a device will be disabled when out of range of its associated coordinated base station has been included in the device disablement procedure appended to the plan.<sup>56</sup> Further, UTAM argues that API has misinterpreted the UTAM disablement criteria for equipment located more than 8000 meters from the associated base station. This limit applies only to Zone 1 deployments; each removable and fixed part of a Zone 2 deployment must be coordinated at its particular location consistent with TIA 14.11 requirements. UTAM maintains, in defending its device disablement procedures, that it is appropriate to require disablement only after the device has been disconnected from electrical power for eight hours. UTAM states that this procedure was developed as the result of extensive discussions with the microwave industry, and chosen so that large numbers of unlicensed PCS systems would not need to be reinitialized in the event of a short-duration power outage.<sup>57</sup>

33. We believe that UTAM has adequately responded to the concerns that have been raised. Its explanation that appropriate adjustments have already been incorporated into the TIA Bulletin 10F criteria and stated intention to coordinate systems deployed in Zone 1 areas at maximum system capacity appear to adequately address the concerns of the microwave community. We also note that UTAM is taking steps to respond to the concerns of HP and other manufacturers regarding the necessity for advance warning for "stop deployment" orders. We are similarly convinced that UTAM will be gathering sufficient information to

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<sup>52</sup> Ibid., note 5.

<sup>53</sup> Ibid., at 13.

<sup>54</sup> Ibid., at 11-12.

<sup>55</sup> Ibid., at 14.

<sup>56</sup> Ibid., at 14.

<sup>57</sup> Ibid., at 15.

monitor manufacturer compliance with its LVP and to expeditiously locate any source of interference, should it occur. We disagree with API and SFWMD that we intended that UTAM develop and specify a standard procedure or specific technology to prevent unauthorized deployment of unlicensed PCS devices. In fact, we previously stated that we would allow UTAM broad flexibility in establishing the means it uses to fulfill its responsibility for ensuring that unlicensed devices do not interfere with existing microwave operations.<sup>58</sup> We continue to believe that this is the appropriate approach. We believe that the standards for disablement mechanisms outlined in the plan, with the clarifications provided by UTAM in its response to the comments, will adequately protect incumbent microwave operations from potential interference caused by unauthorized relocation of unlicensed devices. We also agree with UTAM that further requirements would not prevent those who wish to intentionally violate the rules from doing so.

34. Enforcement and Dispute Resolution. AT&T suggests that UTAM report all violations of its procedures to the Commission and that the Commission make clear in its rules that noncompliance with UTAM requirements violates Section 302 of the Communications Act and subjects the violator to forfeitures and other penalties.<sup>59</sup> API and AAR request clarification of UTAM's dispute resolution procedures.<sup>60</sup> API states that the UTAM plan provides little specific information about how UTAM will resolve interference complaints. It requests that UTAM propose a specific interference resolution procedure and provide a process, including point of contact, time frames for resolution and other information necessary for incumbent licensees to properly evaluate and comment upon the interference resolution methods to be employed by UTAM. API states that, because of timing difficulties, use of alternative dispute resolution processes could create situations in which incumbent licensees who have legitimate migration disputes could be required to make large scale system changes on an expedited time frame and under tremendous pressure. API seeks assurances that specific dispute resolution methods and extended timetables, where necessary, will be available. AAR states that, at the very least, UTAM's dispute resolution process ought to include access by fixed microwave incumbents to the UTAM database of unlicensed PCS deployments.

35. UTAM states in its reply that it agrees with AT&T and will report all violations of which it becomes aware to the Commission.<sup>61</sup> UTAM also clarifies its dispute resolution procedures by assuring that it will work with affected parties to deal with interference problems, including resorting to measures such as emissions adjustments and filters. In dealing with cases of suspected interference, UTAM states that it will make available to

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<sup>58</sup> See Memorandum Opinion and Order, at para. 220.

<sup>59</sup> See AT&T comments at 5.

<sup>60</sup> See API comments at 18; AAR comments at 8.

<sup>61</sup> See UTAM reply comments at 12.

affected microwave licensees as much information about unlicensed PCS deployments as possible, consistent with the need to protect the confidentiality of information supplied by manufacturers.

36. We believe that the requirements of Section 15.307(b) of the Commission's rules are adequate to ensure manufacturers' compliance with the procedures established by UTAM, and that no additional rules are necessary or desirable.<sup>62</sup> We fully intend to take appropriate enforcement action against parties that violate the rules and procedures we have established with regard to operation in the unlicensed spectrum at 1910-1930 MHz. We further believe that the clarifications UTAM provides regarding its dispute resolution procedures in its response to API and AAR remove any confusion over UTAM's intent to work in good faith to resolve any disputes that may arise.

37. Overall Adequacy of Plan and Designation of Coordinator. AT&T, NATA and UTAM fully support the plan and urge that we accept it immediately as submitted.<sup>63</sup> API, AAR, SpectraLink, and UTC, generally support UTAM's efforts in developing the plan, but do not feel that the plan should be accepted until the it is amended to address the issues discussed above.<sup>64</sup> SpectraLink is concerned that UTAM's funding predictions are overly optimistic and requests that we identify an alternative entity to be responsible for coordination should UTAM cease operation.<sup>65</sup> Apple states that, in view of the deficiencies it sees in UTAM's plan, the Commission should reject the plan. Apple argues that we should either revoke UTAM's conditional authorization as the designated coordinator for the unlicensed PCS band, or alternatively, limit UTAM's authority to managing the transition of only the isochronous portion of the band.<sup>66</sup> Apple also raises concerns with regard to UTAM's governance, particularly with regard to the strong authority given to the Board of Trustees. SFWMD requests that we reject UTAM's plan because it does not adequately protect incumbent microwave interests. In its reply comments, UTAM maintains that the level of detail in the plan is more than sufficient for the Commission to issue an informed decision on

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<sup>62</sup> Section 15.307(b) states: "... In the event a grantee fails to fulfill the obligations attendant to participation in UTAM, Inc., the Commission may invoke administrative sanctions as necessary to preclude continued marketing and installation of devices covered by the grant of certification, including but not limited to revoking certification."

<sup>63</sup> See AT&T comments at 1; NATA comments at 4; UTAM reply comments at 3.

<sup>64</sup> See API comments at 18, reply comments at 7; AAR comments at 8, reply comments at 5; SpectraLink comments at 1; UTC comments at 9, reply comments at 10.

<sup>65</sup> See SpectraLink comments at 4.

<sup>66</sup> See Apple reply comments at 6.

its merits.<sup>67</sup>

38. We find that UTAM has provided adequate and sufficient information to satisfy the conditions laid out in the Second Report and Order. As explained above, we believe that UTAM has adequately addressed all of the relevant issues. We find no merit in Apple's arguments that UTAM's authorization should be revoked or limited. While Apple challenges UTAM's governance, it offers no specifics as to how the governance procedures should be changed or otherwise improved. Further, we disagree with SpectraLink that it is necessary or desirable to identify an alternative entity at this time to manage the band transition should UTAM cease operation. We note that no alternative to UTAM has been suggested or come forward. Therefore, we are reaffirming UTAM as the coordinator for the transition of the 1910 - 1930 MHz band from fixed microwave services to use by unlicensed PCS.

39. We do not believe it is necessary to require UTAM to submit a revised plan that includes the additional information presented in its reply comments. We recognize that, to some extent, the plan and details of its implementation are a work in progress. Accordingly, we believe the appropriate course of action is to monitor UTAM's implementation of the plan. We are requiring UTAM to furnish biannual reports on its progress in implementing the plan. The first report will be due July 1, 1995, and every six months thereafter. The reports should provide an update on the status of the financial and band clearing plans, the extent of incumbent microwave relocation, and the extent of unlicensed PCS device deployment. Additionally, the reports should provide updated projections of future band clearing and unlicensed PCS implementation based on the best and most current data available at the time the report is prepared. We also are requiring that the report provide information on any problems or difficulties encountered in implementing the plan and how they are being resolved.

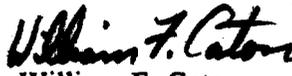
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<sup>67</sup> See UTAM reply comments at note 4.

## ORDERING CLAUSES

40. Accordingly, IT IS ORDERED, pursuant to Sections 4(i), 7(a), 302, 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, U.S.C. Sections 154(i), 157(a), 302, 303(c), 303(f), 303(g), and 303(r), that UTAM, Inc. is designated to coordinate and manage the transition of the 1910 -1930 MHz band from the Private Operational Fixed Microwave Service to unlicensed PCS operations. IT IS FURTHER ORDERED, that UTAM, Inc., shall submit to the Commission reports on its progress in implementing its plan beginning on July 1, 1995, and every six months thereafter. IT IS FURTHER ORDERED, that Part 15 is amended as shown in Appendix B to remove the conditions attached to UTAM's designation as the coordinator for unlicensed PCS operations in the 1910 -1930 MHz band.

FEDERAL COMMUNICATIONS COMMISSION



William F. Caton,  
Acting Secretary

## **APPENDIX A**

### **List of Commenting Parties**

#### **Comments:**

American Petroleum Institute  
Apple Computer  
Association of American Railroads  
AT&T Corporation  
Hewlett-Packard Company  
North American Telephone Association  
South Florida Water Management District  
SpectraLink Corporation  
Utilities Telecommunications Council

#### **Reply Comments:**

American Petroleum Institute  
Apple Computer  
Association of American Railroads  
SpectraLink Corporation  
UTAM, Inc.  
Utilities Telecommunications Council

APPENDIX B

Part 15 of Chapter I of Title 47 of the Code of Federal Regulations is amended to read as follows:

**PART 15 -- RADIO FREQUENCY DEVICES**

1. The authority citation continues to read as follows:

**AUTHORITY:** Sec. 4, 302, 303, 304, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. sections 154, 302, 303, 304, and 307.

1. Section 15.307 is revised to read as follows:

**§ 15.307 Coordination with fixed microwave service.**

(a) UTAM, Inc., is designated to coordinate and manage the transition of the 1910 - 1930 MHz band from Private Operational- Fixed Microwave Service (OFS) operating under Part 94 of this Chapter to unlicensed PCS operations.

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