

because it is expected that technical innovation will produce substantial numbers of as yet unanticipated unlicensed PCS applications.

To develop revenue projections and a budget for clearing using these data, a number of additional assumptions and adjustments needed to be introduced to the projected equipment sales. First, because UTAM has determined that it will collect a fee from all Part 15.3 devices and BIS counted only the mobile or "user" devices in an unlicensed PCS system, it was necessary to project the number of fixed devices such as base stations that will be sold along with the mobile units. UTAM believes that it is reasonable to assume that these systems will be deployed at a ratio of one fixed part to every four mobile parts in the beginning, with the ratio increasing to one fixed part to six mobile parts as the number of unlicensed PCS users increases. The projected numbers of fixed part sales were then added to the BIS data.

Second, the BIS sales projections needed to be adjusted to reflect constraints on deployment and alternative spectrum homes for unlicensed PCS and similar devices. In such respects, anticipated sales figures were reduced to account for the fact that the geographic areas available for deployment of unlicensed PCS systems and devices will be limited by interference considerations, particularly in the early years of the clearing process. Moreover, some of the demand for wireless products identified by BIS will be met by

equipment utilizing spectrum other than the unlicensed PCS band. UTAM estimates that these factors will reduce the projected demand figures from 10 to almost 60 percent, with the larger reductions occurring in the earlier years of deployment.

As set out in additional detail in Attachment D, UTAM estimates that it must generate roughly \$90 million in revenue over the clearing period to cover administrative costs and complete the relocation process.³² Assuming a clearing fee of \$20 per device, this would require sales of about 4.5 million units. At these levels, and based upon the

³² As set out in Section IV.B, these costs include the following:

Administrative Costs. UTAM administrative cost estimates include provisions for staff salaries and benefits, rent, travel, insurance, legal advice, communication, microwave consultants, and other expenses. These initial operating costs will be met by the kickstart funds provided by the manufacturers. Some kickstart funds will also be used to fund the relocation of microwave incumbents. As explained earlier, these funds will be repaid with interest at the prime rate plus four percent in the form of credits for clearing fees.

Relocation Expenses. Based on the assumption that the cost for relocation will be \$200,000 on average, UTAM computed the number of links for which it will be able to begin the relocation process. The relocation of a microwave link and the initial acceptance of the alternative facilities will be completed a minimum of one year after the funds to relocate that link are designated. UTAM recognizes that, under the FCC's one year return policy, it must continue to operate for an additional period after the last links are relocated to ensure that those links have in fact been provided with comparable facilities. UTAM has budgeted a reserve to meet this requirement. When sufficient funds have been raised, UTAM will petition the FCC to reduce or discontinue the collection of clearing fees.

assumptions and adjustments described above, sufficient funds to relocate the estimated 335 microwave incumbents would be generated in five years under Scenario 1 and 11 years under Scenario 3, which translates into a time for band clearing of from six to twelve years.³³ Subject to logistical limitations, if revenues are greater or costs are lower because fewer links need to be relocated, the relocation process may be completed sooner than projected.

Obviously, these projections are dependent upon the actual number of microwave systems that will need to be relocated, which will in turn depend upon the clearing activities of PCS licensees. The timeframes are also dependent upon the accuracy of the demand projections, but UTAM is confident that actual sales will be realized within the range established by the two scenarios presented. UTAM will, of course, continue to monitor both its revenues and expenses and be prepared to make any adjustments that prove to be necessary. Progress reports will be filed with the FCC annually.

3. Payment and Control System

The FCC mandates that all unlicensed PCS devices bear identifying labels pursuant to Sections 15.19(a)(3) and 15.311 of the Rules. UTAM will require manufacturers or

³³ Because UTAM will operate on cash basis and funds will be expended for relocation only after received, the actual clearing process will extend at least one year after the time that adequate funds will have been collected.

distributors to arrange for the purchase and attachment of the labels required under Section 15.311 prior to shipping of unlicensed PCS systems or devices from the manufacturer's factory. As part of the Subscriber Agreement,³⁴ each unlicensed PCS manufacturer and distributor must agree to pay UTAM for the labels, affix them to all unlicensed PCS equipment, and provide UTAM with all information it requires to ensure compliance.

V. BAND CLEARING PLAN

UTAM has been charged by the FCC with developing a band clearing plan that:

- is equitable to all affected interests; and
- expedites the deployment of nomadic data-PCS products.³⁵

Because of the high costs of relocation, UTAM will not be able to clear the entire band immediately. Rather, links will be relocated as funding derived from clearing fees permits. UTAM submits that the plan set out below will allow it to satisfy these obligations and relocate links in an efficient and cost effective manner as funds become available.

³⁴ See Attachment E.

³⁵ Second Report and Order, 8 FCC Rcd at 7738. Note that Section VI is dedicated solely to deployment of nomadic devices.

A. Principles and Objectives for Band Clearing

UTAM's objectives are: to coordinate and manage the transition of the 2 GHz band from microwave users to unlicensed PCS, to assure equitable unlicensed PCS industry participation in the funding and management of these tasks, and to expedite nomadic PCS deployment.³⁶ To accomplish these goals, UTAM's band clearing plan must satisfy several criteria. First, the plan must be equitable to manufacturers of equipment functioning in different bands. Second, the method of band clearing must ensure that sufficient funds are raised from the relocation funds expended to finance the timely relocation of other links. Finally, the plan must be easily understood so that relocations can occur quickly.

UTAM believes that its financial plan does provide sufficient funding to cover estimated costs. Moreover, UTAM does not anticipate that it will ever experience a short fall in funds because it will only begin relocating a microwave link after it has sufficient funds to cover the relocation costs. The actual number of links that will have to be relocated, which will determine the total costs UTAM will incur and thus the time in which the unlicensed band will be cleared, will be a function of the speed at which the licensed PCS community begins relocation of the links in the licensed bands. If the licensed PCS community moves rapidly,

³⁶ Bylaws of UTAM, Inc., a Delaware Corporation, at 1 (See Attachment C).

UTAM may be required to clear fewer links than expected, especially among the adjacent channel links. If UTAM is relocating links more quickly than the PCS licensees, UTAM may need to clear a larger number of links and the time to full clearing will be lengthened.

B. Identification of Incumbents

The unlicensed PCS spectrum allocation at 1910-1930 MHz contains approximately 386 co-channel microwave links. All of these links must be relocated for unlicensed PCS to reach its full potential. The microwave incumbent database developed for UTAM will facilitate the relocation process since it will include all microwave systems in the band and in the adjacent channels. This database will be used to identify the links which must be relocated and to assist in the development of the band clearing plan.

In addition to the approximately 386 co-channel links in the unlicensed band, UTAM has identified about 1420 links in spectrum at 1900-1910 MHz and 1930-1940 MHz adjacent to the unlicensed PCS allocation, some of which may require relocation because of adjacent channel interference concerns. As explained above, some of these microwave systems will be relocated by PCS licensees.³⁷ Others will not receive interference from unlicensed PCS because of their geographic location and others may be protected through the addition of

³⁷ See Section IV.B.1, supra.

filters. Nonetheless, the need to relocate some adjacent channel links substantially increased UTAM's anticipated costs.

C. **Priorities for Clearing**

In developing a plan for the clearing of the unlicensed band, individual companies advanced a number of alternative scenarios. The benefits and disadvantages of these alternatives as reflected in the proposed band clearing plan represent a balancing of these important issues. The following alternatives were considered by UTAM:

- **Segment Self-Financing.** Each band segment of the unlicensed PCS allocation -- the 1910-1920 MHz asynchronous band and the 1920-1930 MHz isochronous band -- would be cleared in proportion to the clearing fees raised by the sale of coordinatable products in each such band. For example, clearing revenues collected from the sale of products into the isochronous band would be used to relocate microwave systems from that band alone.
- **Geographic Clearing.** The entire unlicensed spectrum allocation and affected adjacent channel microwave operations would be cleared on an area-by-area basis. For example, the New York City area could be entirely cleared before moving to the Boston area and then to the Chicago area.
- **Population Per Dollar.** Available clearing revenues would be allocated on the basis of the potential customer population that would be made available for equipment sales per dollar expended in relocation costs. That is, areas with high population density and few microwave links likely would be targeted initially because they would yield the most cost effective increase in potential PCS consumers.
- **Sales Revenues Per Dollar.** The expenditure of clearing fees would be directed on the basis of the greatest anticipated return in equipment sales revenue per dollar expended on relocation. This

would require a judgment as to the sales potential in particular markets.

- **Incumbent Loading.** The unlicensed allocation would be cleared in 10 MHz blocks, starting with the band segments housing the fewest microwave links and moving to those with the greatest number of links.³⁸

After thorough deliberations, taking into account the pros and cons of each of these alternatives as well as combinations thereof, the UTAM Board of Trustees unanimously adopted a band clearing strategy predicated upon a melding of the various approaches. First, because of the substantial revenues that will need to be generated to cover the relocation costs, the Board determined that adoption of segment self-financing would be required to generate the greatest amount of clearing revenue for application in the markets experiencing the greatest demand. Second, the Board mandated that the clearing revenues generated within each band be expended in the most efficient manner, i.e., based upon the greatest gain in business population that would be added to the permissible unlicensed PCS market in that band for every relocation dollar spent.³⁹

In a critically important modification to these principles, the Board decided to begin the relocation process

³⁸ This alternative was largely rendered moot by the reduction in allocated spectrum on reconsideration.

³⁹ It was recognized from UTAM's initial interference study that many rural and less populated areas contain fewer if any microwave links and, thus, could be immediately open for limited deployment.

with in-band links operating on the interior frequencies of the unlicensed allocation, the asynchronous and isochronous frequencies nearest to 1920 MHz. As a result, each clearing dollar expended initially will benefit both bands because, for example, clearing in-band frequencies close to 1920 MHz from the asynchronous band would necessarily clear adjacent channel frequencies for the isochronous band and vice versa. As discussed in greater detail below, this clearing strategy will generate the further benefit of freeing up a portion of the unlicensed spectrum for nomadic deployment long before the entire band can reasonably be expected to be cleared.⁴⁰

UTAM believes that its band clearing proposal represents the best synthesis of the available options. Segment self-financing represents a market driven approach that will result in the most expeditious clearing of the spectrum utilized by the fastest selling products. It also results in fair treatment of all products and manufacturers by avoiding subsidies that would distort the marketplace for unlicensed PCS equipment. Finally, segment self-financing is consistent with the BIS demand study commissioned by UTAM, which reveals that there is a relatively equal split in demand for asynchronous and isochronous products.

The introduction of a geographic focus to the clearing plan based on business population made available for sales

⁴⁰ See Section VI, infra.

represents a logical and efficiency enhancing refinement of the alternatives initially presented. Such an approach will direct clearing resources to the locations which promise the greatest return in potential sales, while avoiding the measurement difficulties associated with predicting actual sales revenues for those areas. Moreover, concentrating relocation efforts in this manner within each band is anticipated to permit the earliest possible clearing of blocks of spectrum to facilitate deployment. In sum, UTAM submits that its proposed microwave relocation strategy will result in the most efficient, expeditious, and equitable band clearing process which will, in turn, best promote the development of the market for unlicensed PCS equipment.

D. Relocation Process

To initiate the relocation process for a microwave system, UTAM will issue a written notice to a microwave licensee, which triggers the mandatory negotiation period.⁴¹ UTAM will then hold discussions with the microwave licensee to reach a relocation agreement within the one-year negotiation period. Under such an agreement, the licensee will be entitled to comparable facilities that are as good as or superior to its current facilities.⁴² UTAM will either use

⁴¹ Third Report and Order, 8 FCC Rcd at 6598.

⁴² Id. at 6603.

its own personnel or hire outside consultants to conduct the negotiations with the microwave incumbents.

Additional elements of the relocation process that will be addressed under the agreement include:

- assignment of the new frequency or alternative media;
- coordination of the new frequency;
- engineering costs;
- satisfaction of federal, state, and local requirements; and
- validation of the new system.

UTAM will give microwave licensees the choice of a range of options, from allowing UTAM to deliver a turnkey replacement system to accepting an agreed upon sum and completing the relocation themselves within the time periods agreed to by UTAM and the incumbent microwave licensee.

UTAM will use essentially the same procedures in its negotiations with public safety licensees. Although these licensees are entitled to a four year voluntary negotiation period,⁴³ UTAM will attempt to reach agreements with them as quickly as possible. Further, as required by the rules, "[i]f within one year after the relocation to new facilities the 2 GHz microwave licensee demonstrates that the new facilities are not comparable to the former facilities, the emerging technology service entity [or UTAM] must remedy the

⁴³ Spectrum Redevelopment MO&O, 9 FCC Rcd at 1947-48.

defects or pay to relocate the microwave licensee back to its former or equivalent 2 GHz frequencies".⁴⁴

UTAM fully intends to preserve the opportunity to relocate an incumbent back to its original 2 GHz frequency should the new facilities prove not to be comparable and UTAM is unable to remedy the defect. To that end, UTAM will continue to protect the microwave path for up to one year after the system has actually been relocated from the 2 GHz band unless otherwise provided by agreement of the parties. Because UTAM is committed to clearing the entire band, it will work with the microwave community to ensure that relocations are acceptable and, as discussed in more detail below, will fulfill its FCC-designated role to be the first forum for resolution of disputes.⁴⁵

E. Timing Expectations for Clearing

As discussed in Section IV above, UTAM's financial plan would generate sufficient funds to clear the spectrum in six to twelve years. This is deemed reasonable in view of commercial realities and the FCC's transition rules, particularly those governing relocation of public safety microwave systems. Those systems, which constitute 20-25 percent of the links in the band, enjoy a four year voluntary

⁴⁴ Third Report and Order, 8 FCC Rcd at 6614 (to be codified at 47 C.F.R. § 21.50(e)).

⁴⁵ Second Report and Order, 8 FCC Rcd at 7738. See Section IX on dispute resolution procedures.

negotiation period followed by a one year mandatory negotiation period.⁴⁶ Assuming UTAM is financially and logistically prepared to commence relocation of the last remaining public safety systems at the close of the negotiation periods, it will still require approximately one additional year to complete the relocations and another year to validate the performance of the new facilities under the rules. As a result, the minimum period under the FCC's rules within which UTAM can be assured of clearing the public safety links is seven years.

VI. SATISFACTION OF OBLIGATION TO EXPEDITE DEPLOYMENT OF NOMADIC ASYNCHRONOUS DEVICES

As explained above, UTAM is required to prepare a band clearing plan "that will permit the implementation of non-coordinatable (nomadic) devices and, in particular, non-coordinatable data PCS devices, as promptly as possible."⁴⁷ In furtherance of this obligation, UTAM has adopted a band clearing philosophy that will maximize the revenues available for microwave relocation in order to expedite the deployment of nomadic devices for both voice and data applications. Indeed it is axiomatic that the greater the amount of funds collected and the earlier they are available, the sooner the band can be cleared.

⁴⁶ See Spectrum Redevelopment Order, 9 FCC Rcd at 1948.

⁴⁷ Memorandum Opinion and Order, app. A at 6 (to be codified at 47 C.F.R. § 15.307(a)).

As discussed above, however, the Emerging Technologies rules permit public safety licensees to protect their frequencies from unlicensed PCS deployment for up to seven years, given (1) the four plus one year negotiations periods; (2) the time required to construct and test the comparable alternative facilities, and (3) the right to be returned to their original frequency if the new systems prove to be inadequate within the first year. Any hold outs among the public safety licensees can, therefore, delay nomadic deployment during these periods.

UTAM is nonetheless investigating options to allow earlier non-coordinatable deployment prior to full clearing of all of the unlicensed spectrum. This will be facilitated by beginning the clearing process with microwave systems using the frequencies closest to 1920 MHz both in the asynchronous and isochronous bands. Such a "wedge" approach would minimize adjacent channel concerns for a portion of the spectrum, thus potentially expediting the availability of a block of these interior frequencies for nomadic data and voice PCS deployment even before the entire band can be cleared. UTAM hopes to be able to facilitate this process through the use of guardbands, which are currently being investigated. Any such deployment of noncoordinatable devices prior to total band clearing will be consistent with FCC rules and UTAM's obligation to prevent interference to microwave links.

Moreover, recognizing that there will be a time lag before significant clearing fees are raised, UTAM is actively soliciting contributions in addition to those already expected from interested manufacturers and hopes that this will provide an important mechanism for accelerating the band clearing process and hastening the deployment of nomadic data PCS devices. These funds may be directed to specific relocation efforts, such as clearing of the asynchronous band and, as explained previously, will be credited to manufacturers as advance clearing fees. They are separate from the clearing fees that will be collected from the deployment of coordinatable devices. But, the time frame for band clearing will still remain principally dependent upon the success of individual manufacturers in creating and marketing unlicensed PCS products that can provide a source of necessary revenues from clearing fees to fund the relocation process.

VII. COORDINATION OF UNLICENSED PCS DEVICES

A. Rationale for Early Deployment

Many unlicensed PCS devices are highly portable or "nomadic" and cannot be broadly introduced into the marketplace until the unlicensed PCS spectrum is completely cleared. However, as discussed above, limited deployment of certain devices and systems on a spectrum sharing basis will be permitted during the relocation process, subject to non-interference and coordination requirements. Such deployment is advantageous for several reasons. *First*, early deployment

expedites delivery of the benefits of unlicensed PCS to the public.⁴⁸ Second, the limited deployment of non-nomadic devices and systems during the interim period will raise revenues necessary to fund the microwave relocation process and, together with manufacturers' advance contributions, permit disbursements to relocating microwave users to begin immediately, thus expediting the process of band clearing.⁴⁹

B. Requirements of FCC Rules

The FCC has recognized a special class of "coordinatable" unlicensed PCS systems and devices. Coordinatable devices are those

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.⁵⁰

Coordinatable unlicensed PCS systems may include associated portable or mobile devices provided that those devices have been designed to operate only within the limited service area of the system's fixed base station or comparable infrastructure component.⁵¹ In addition, a coordinatable PCS device is required to incorporate:

⁴⁸ See Section II.A.

⁴⁹ See Section IV.

⁵⁰ Second Report and Order, 8 FCC Rcd at 7791 (to be codified at 47 C.F.R. § 15.303(b)).

⁵¹ Id. at 7738-39.

- "measures that ensure that it cannot be activated until its location has been coordinated by UTAM, Inc."; and
- "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.." ⁵²

To ensure that customers are fully apprised of these requirements, all unlicensed PCS systems and devices must prominently display a label stating that "[i]nstallation of this equipment is subject to notification and coordination with UTAM, Inc. Any relocation of this equipment must be coordinated through, and approved by UTAM." ⁵³ Users will be notified that deployment is subject to the following conditions:

(1) the device or system may not cause interference to licensed microwave services; (2) the device or system must accept any interference received from licensed microwave services; (3) the user may not change materially the location, frequency or parameters of operation of any such base station absent prior coordination with the responsible Entity; and (4) in the event harmful interference to licensed microwave operations results, the user must take all necessary steps to cure such

⁵² Memorandum Opinion and Order, App. A at 6 (to be codified at 47 C.F.R. §§ 15.307(d) and (e)). An application for equipment authorization for sale of an unlicensed PCS system or device "shall contain a full explanation of the operation of the [relocation] disabling mechanism and must satisfy the Commission that this mechanism cannot be easily defeated."

⁵³ Id., App. A at 7 (to be codified at 47 C.F.R. § 15.311). A toll free number for contacting UTAM will also be provided on the label.

interference at the user's own expense and may be liable for failing to do so.⁵⁴

As the frequency coordinator for the unlicensed PCS band, UTAM will be responsible for establishing a database of existing microwave links and unlicensed PCS deployments in the band against which proposed installations of coordinatable systems or devices can be evaluated for their interference potential.⁵⁵ UTAM's proposed coordination process is discussed in more detail below. Once a location is coordinated, the limited geographic scope of coordinatable device operations and the required disabling mechanisms ensure that an installed system cannot be moved to another area without recoordination.⁵⁶

C. Transborder Issues

The deployment of unlicensed PCS devices at locations near the Canadian and Mexican borders will be affected by the existing fixed microwave facilities operating across these borders. Although there is no regulatory impediment to the deployment of unlicensed PCS devices along either border, UTAM intends to work closely with the FCC to develop

⁵⁴ See Recommendations of the Unlicensed PCS Ad Hoc Committee at App. D.

⁵⁵ Second Report and Order, 8 FCC Rcd at 7739-40 & n.79.

⁵⁶ Id. at 7739-40.

international coordination procedures for unlicensed PCS.⁵⁷ This will be essential to ensuring an interference free environment.

With respect to Canada, use of the 1850-1990 MHz frequency band within 35 miles of the common border is subject to existing coordination procedures.⁵⁸ UTAM therefore recommends an approach that relies upon these existing procedures to coordinate the deployment of PCS devices in individual U.S. areas located within the relevant coordination zone. With Mexico, this approach is complicated by the fact that there are no existing coordination procedures. UTAM intends to refine its recommendations as formal negotiations between the countries advance.

D. The Coordination Process

UTAM has established a two-step process for coordinating the early deployment of coordinatable unlicensed PCS systems and devices. First, UTAM will be commissioning further microwave interference studies to classify each county, MSA, or other geographic area according to its interference potential as Zone 1 or Zone 2. Those categories reflect the

⁵⁷ Also, UTAM intends to be proactive in informing the Canadian and Mexican governments about the benefits of an unlicensed PCS allocation in order to convince those countries to adopt a similar PCS allocation plan.

⁵⁸ Coordination and Use of Frequencies Above 30 Megacycles per Second (Arrangement A), Oct. 24, 1962, U.S.-Can., 13 U.S.T. 2418. These coordination procedures do not, however, necessarily apply to low power unlicensed devices.

degree of incumbent microwave susceptibility to interference and the deployment options. UTAM will use standard PCN procedures to advise affected incumbents of the proposed permitted aggregated power levels in the area.

Second, UTAM will review site specific interference analyses where the study indicates that such an additional coordination requirement is necessary based upon area classifications. This process will follow standard, established coordination procedures and methods according to recognized guidelines such as TIA Bulletin 10-F, adjusted for any unique attributes of unlicensed PCS which may affect its interference potential.

1. Interference Assessment Analyses

As described above, UTAM will be arranging for the preparation of interference assessment analyses depicting the interference environment facing early deployment of unlicensed PCS systems and devices in each county, MSA, and other geographic area in the United States.⁵⁹ In determining what the size of the market area should be, UTAM must balance a number of requirements. First, the area should have readily identifiable boundaries. Second, the area should be large enough to form an economically viable sales area, but also small enough so that there is a large probability that many areas will be viable for early

⁵⁹ See Second Report and Order, 8 FCC Rcd at 7739-40 & n.79.

deployment of coordinatable devices. UTAM has chosen the county as the basic area for the initial interference analyses because it appears to exhibit the best balance between the key requirements, but may expand that area for the final study. The methodologies used parallel those used in current practice.

The analyses will assign each area to one of the following classifications:

a. Zone 1 - Approved for Limited Deployment

Limited deployment of coordinatable devices will be permitted in Zone 1 areas subject to the constraint that the number of devices deployed does not exceed precoordinated power levels. Many of these areas will be rural or otherwise located outside of major urban concentrations. The incumbent microwave receivers within the coordination distance will be evaluated using accepted frequency coordination methodology and guidelines in Bulletin 10-F to determine what power levels could be permitted in each market area without creating unacceptable levels of interference. UTAM will aggregate the power of the unlicensed devices as they are installed and activated by the Location Verification Process⁶⁰ to make sure that the maximum permitted power levels are not exceeded.

⁶⁰ See Section VII.D.2.a.

As part of the Location Verification Process, manufacturers will be required to report the installed user capacity as systems are deployed in each area. UTAM will receive this deployment data, aggregate the data by area and issue regular updates as to the current aggregated power level in each deployment area. Subsequent increases in installed capacity must be reported to UTAM and must follow the Location Verification Process.

There will be a minimum 10% safety margin in the permitted maximum aggregated power level for each area. When the power level approaches the permitted maximum, UTAM will issue a specific stop deployment order to all manufacturers. The safety margin is intended to guard against the possibility of deployment of devices after the stop deployment order has been issued due to "sales-in-progress."

b. Zone 2 - Restricted Deployment

In a Zone 2 area, microwave incumbents may receive harmful interference regardless of realistic power level restrictions because of the relatively large area of coordination (e.g., county), nature of the microwave systems in or near that area, their locations, and their antenna directions. Thus, deployment can occur only where specific site coordination shows no interference will be caused to incumbent receivers.

Site specific coordination for unlicensed PCS deployment will follow accepted coordination models and procedures,

adjusted to accommodate certain unique needs of unlicensed PCS. Expected differences include:

- The unlicensed PCS power level is a factor of the aggregate number of devices rather than a fixed figure.
- The size of the site to be coordinated will generally be larger than for a microwave site.
- Unlicensed PCS usage will tend to be heavily concentrated within the typical business day instead of round-the-clock.
- Unlicensed PCS will be used predominantly within buildings, rather than in outside locations.

The guidelines in TIA Bulletin 10-F, which will be used to establish the interference calculation methodology for unlicensed PCS, are expected to incorporate these factors.

2. Location Verification and Disablement Compliance Testing Procedures

The FCC has mandated that coordinatable unlicensed PCS equipment deployed before the unlicensed spectrum is fully cleared be subject to disablement requirements that will ensure that incumbent microwave systems do not experience harmful interference from such deployments. As discussed above, to qualify as "coordinatable" an unlicensed PCS system or device must satisfy the following three disablement requirements:

- Any mobile part of a coordinatable system (such as a handset, a PDA or a notebook computer) must be disabled from operating when it leaves the system's coordinated environment.
- Coordinatable systems and devices may not begin operation until installation at UTAM approved locations is confirmed.

- A coordinatable system or device that is moved from its coordinated location must be disabled and prevented from operating until installation at a new UTAM approved coordinated location is confirmed.

With respect to the relocation disablement requirement, an application for equipment certification shall contain a full explanation of the operation of the disabling mechanism and must satisfy the Commission that this mechanism cannot be easily defeated.

a. Location Verification Process

An important element of the Commission's coordinatability requirements is the obligation of UTAM to verify the locations at which unlicensed PCS systems and devices are initially installed and to which they may on occasion be relocated. Manufacturers will be permitted to develop their own mechanisms or procedures for enabling UTAM to make such verifications.⁶¹ The sufficiency of such mechanisms and procedures will initially be passed upon by UTAM in connection with its certification that an applicant for equipment authorization is a participating member of UTAM.⁶² Further, as part of the equipment authorization process, the FCC "will review closely the technical aspects of each unlicensed device" including "all technical matters related

⁶¹ Of course, if a manufacturer changes its location verification process after receiving such approval, it would be expected to resubmit the new process to UTAM and the FCC.

⁶² Memorandum Opinion and Order, ¶¶ 220-21 & n. 333.

to the device's ability to be coordinated . . . [and] other measures that may be imposed by UTAM on the operation of the device."⁶³

The Location Verification Process must satisfy the following criteria:

- It must be specific to each system, where system is defined as any group of fixed parts that exchange messages;
- The process must have a uniqueness feature that would be different each time the process is used;
- The process must not be readily replicable by unauthorized personnel either by random operation or informed operation (e.g. by observing the procedures);
- The process cannot be disabled or removed with generally available tools without rendering the equipment unusable;
- It must contain a function that reports the system size, unit power output and county of installation. If the county is a Zone 2 area or a Zone 1 area that has been "capped" by UTAM due to power aggregation limit, the process must preclude the installed equipment from operating; and
- The process must effectively prevent unauthorized operation of radiating devices.

b. Disablement Compliance Testing

It is expected that unlicensed PCS manufacturers similarly will be permitted to devise their own means for implementing the disablement requirements for coordinatable devices. To assist the industry, UTAM has explored the development of testing procedures that could be used to

⁶³ Id., ¶ 221