

RULES and REGULATIONS

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1, 22, and 90

[WT Docket Nos. 03-103, 05-42; FCC 04-287]

Air-Ground Telecommunications Services

Wednesday, April 13, 2005

AGENCY: Federal Communications Commission.

***19293 ACTION:** Final rule.

SUMMARY: In this document, the Federal Communications Commission ("Commission") revises rules governing the four megahertz of dedicated spectrum in the 800 MHz commercial Air-Ground Radiotelephone Service band. The Commission adopts a flexible regulatory approach to determine the configuration of the band; adopts rules that enable interested parties to bid on spectrum licenses according to the band configuration that they believe will best meet their needs for the provision of air-ground services; makes available nationwide air-ground licenses in three configurations: band plan 1, comprised of two overlapping, shared, cross-polarized 3 MHz licenses (licenses A and B, respectively), band plan 2, comprised of an exclusive 3 MHz license and an exclusive 1 MHz license (licenses C and D, respectively), and band plan 3, comprised of an exclusive 1 MHz license and an exclusive 3 MHz license (licenses E and F, respectively), with the blocks at opposite ends of the band from the second configuration; and finally, the Commission revises and eliminates certain Public Mobile Services (PMS) rules that are no longer warranted as a result of technological change, increased competition in Commercial Mobile Radio Services (CMRS), supervening changes to related Commission rules, or a combination of these factors.

DATES: Effective May 13, 2005.

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SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Report and Order portion (Report and Order) of the Commission's Report and Order and Notice of Proposed Rulemaking, [FCC 04-287](#), in WT Docket Nos. 03-103 and 05-42, adopted December 15, 2004, and released February 22, 2005. Contemporaneous with this document, the Commission publishes a Notice of Proposed Rulemaking (Notice) (summarized elsewhere in this publication). The full text of this document is available for public inspection and copying during regular business hours at the FCC Reference Information Center, 445 12th St., SW., Room CY-A257, Washington, DC 20554. The complete text may be purchased from the Commission's duplicating contractor: Best Copy & Printing, Inc., 445 12th Street, SW., Room CY-B402, Washington, DC 20554, telephone 800- 378-3160, facsimile 202-488-5563, or via e-mail at fcc@bcpiweb.com. The full text may also be downloaded at: <http://www.fcc.gov>.

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Synopsis of the Report and Order

A. 800 MHz Air-Ground Radiotelephone Service

1. The Commission initiated this proceeding, inter alia, to reexamine the 800 MHz Air-Ground Radiotelephone Service band plan and service rules. Although the Commission initially licensed six 800 MHz air-ground nationwide licensees, only one licensee (Verizon Airfone) continues to provide service in the band, and our current technical rules allow it to provide only a limited range of narrowband voice and data services. This circumstance led us to question in the Notice of Proposed Rulemaking in this proceeding, [68 FR 44003](#), July 25, 2003, whether our existing rules were impeding the provision of telecommunications services desired by the public onboard aircraft. Nearly all parties commenting on these issues agree that our existing band plan and rules have hindered the efficient, competitive provision of air-ground services desired by the public. Based on our review of the record in this proceeding, we find that the public interest will be served by adopting flexible rules that will enable interested parties to bid on licenses in three possible band configurations. Each of the three band configurations includes at least one spectrum block that will permit the provision of high-speed telecommunications services to the public onboard aircraft.

2. In reexamining the current band plan and service rules, we must address both competitive issues (i.e., how many competitors can the spectrum and the market support) and technical ***19294** considerations (i.e., how much spectrum is necessary to efficiently and effectively support a range of air-ground service offerings, including voice and broadband applications, and the technical parameters to minimize the potential for air-ground systems to cause interference). We resolve these interrelated issues by adopting flexible rules to determine the best technological configuration of the band and the number of competitors for air-ground communications over multiple platforms (i.e., terrestrial and satellite). We find that reconfiguration of the 800 MHz air-ground band will facilitate competition with satellite-based offerings in the provision of high-speed air-ground services to commercial and other aircraft. We also note that other spectrum is available for the provision of air-ground communications services. Based on our review of the record developed in this proceeding and for the reasons stated below, we conclude that a flexible licensing approach coupled with flexible technical and operational rules will promote the highest valued use of the 800 MHz air-ground spectrum for the provision of air-ground services that better meet the needs of the public.

1. Background

3. In 1990, the Commission allocated four megahertz of spectrum for commercial Air-Ground Radiotelephone Service, authorizing operation at 849-851 MHz (ground stations) and 894-896 MHz (airborne mobile stations). Each band was divided into ten paired channel blocks, which are allotted to specific geographic locations (essentially a national grid). Each channel block contains 29 narrowband (6 kHz) communications channels and 6 very narrowband (3.2 kHz) control channels. Under the current service rules, each licensee has an exclusive control channel, shares all the communication channels with the other licensees in the band, and must provide nationwide service. To promote interoperable communications and to manage

interference, some of the ground station locations in North America and channel block assignments have been predetermined consistent with bilateral agreements with Mexico and with Canada. The number of communications channels limits the number of voice calls that can be simultaneously handled in a particular area, and the narrow bandwidth of these channels limits a service provider to voice and low-speed data services.

4. The current 800 MHz Air-Ground Radiotelephone Service rules contemplate six competing licensees providing voice and low-speed data services. Six entities were originally licensed under these rules, which required all systems to conform to detailed technical specifications to enable shared use of the air-ground channels. Only three of the six licensees built systems and provided service, and two of those failed for business reasons. Only Verizon Airfone remains as an incumbent in the band. The prescriptive command-and-control nature of the current air-ground service rules, the regulatory requirement to share only four megahertz of spectrum among up to six licensees, and the limited data capacity of the narrow bandwidth (6 kHz) communications (slow dial-up modem speed) preclude the provision of broadband services to the public onboard aircraft.

2. Market for Air-Ground Wireless Communications Services

5. There is substantial and rapidly growing consumer, airline, and service provider interest in access to high-speed Internet and other wireless services onboard aircraft. Market research suggests that many frequent flyers are willing to pay for high-speed access to the Internet and their corporate network.

3. Reconfiguration of the 800 MHz Air-Ground Radiotelephone Service Band

a. Available Air-Ground Band Plans

6. We have reviewed the extensive record in this proceeding and conclude that the public interest will be served by adopting a flexible framework that will enable interested parties to bid on spectrum licenses according to the band configuration that they believe will best meet their needs for the provision of air-ground services. Interested parties may bid on spectrum licenses in any of the following three band plans, including two overlapping, shared, cross-polarized spectrum licenses (band plan 1) as advocated by AirCell, Inc. and the Boeing Company and exclusive spectrum licenses (band plans 2 and 3) as proposed by Space Data Corporation and Verizon Airfone. Licenses will have a ten-year term.

Band plan 1--two overlapping, shared, cross-polarized 3 MHz licenses (licenses A and B, respectively).

Band plan 2--an exclusive 3 MHz license and an exclusive 1 MHz license (licenses C and D, respectively).

Band plan 3--an exclusive 1 MHz license and an exclusive 3 MHz license (licenses E and F, respectively), with the blocks at opposite ends of the band from the second configuration.

7. The Commission will award licenses to winning bidders for the licenses comprising the band plan that receives the highest aggregate gross bid, subject to long-form license application review. In order to further competition and ensure

maximum use of this frequency band for air-ground services, no party will be eligible to hold more than one of the spectrum licenses being made available.

8. We believe this flexible approach to configuration of the band will promote our goal in this proceeding of facilitating the highest valued use of this scarce spectrum resource, resulting in the provision of wireless communications services that better meet the needs of the traveling public onboard aircraft. We also further our strategic objective to encourage the growth and rapid deployment of innovative and efficient communications technologies and services by adopting rules that will permit licensees to deploy any current or future technology with an occupied bandwidth that fits within its assigned spectrum and to provide any kind of air-ground service to any type of aircraft. As explained below, we also provide a transition period for the incumbent system currently operated by Verizon Airfone.

9. Future licensees in the 800 MHz air-ground band, as well as other interested parties, will have the opportunity to engage in spectrum leasing under our rules. Future licensees will also be permitted to engage in partitioning and/or disaggregation of their licenses. These regulatory opportunities are intended to provide the air-ground marketplace greater flexibility to respond to consumer demand.

10. Below, we address the location of ground stations, the provision of deck-to-deck service (i.e., service from takeoff to landing), competitive considerations, and the provision of services in the air-ground band.

(i) Location of Ground Stations

11. Band plans 2 and 3 provide for exclusive spectrum licensing and will afford new licensees significant flexibility to configure and modify their systems to address current and future market conditions. For example, licensees will be able to initially configure their systems to best meet the needs of their customers, and may flexibly reconfigure or add ground stations to respond to future demand for air-ground services. An exclusive licensee also could deploy new technologies in response to changing market conditions--without having to coordinate its choice of technology with another licensee in the band. If the band ***19295** is comprised of two overlapping 3 MHz licenses (band plan 1), the new licensees will be required to jointly file a spectrum sharing and site selection plan with the Wireless Telecommunications Bureau within six months of the initial grant of their spectrum licenses and will be required to notify the Bureau of any changes to the plan. The Wireless Telecommunications Bureau will issue a public notice prior to the Commission's auction of new 800 MHz air-ground spectrum licenses in which it will specify the filing requirements for the plan. This approach would provide parties with overlapping spectrum licenses flexibility to configure their systems without having to adhere to minimum spacing requirements or site locations dictated by the Commission.

(ii) Provision of Deck-to-Deck Service

12. The record reflects that parties desire deck-to-deck service (i.e., service from terminal to terminal). We note that air-ground communications services are currently provided to Federal, State, and local agencies, including the FBI, the U.S. Department of Energy, and the U.S. Customs Service, and that the air-ground spectrum can be used to support aircraft management, other public safety services,

and homeland security communications. In view of the foregoing and in light of our statutory mandate to promote the safety of life and property, we have selected three band plans that would enable licensees to provide deck-to-deck service.

13. An exclusive licensing approach (band plans 2 and 3) would facilitate the provision of service continuously because ground stations can be located without inter-system coordination and would not have to be limited in power or sector orientation by the presence of an overlapping licensee. If a spectrum sharing approach (band plan 1) is selected by the auction winners, the record indicates that the parties will have to agree on power limits and sharing rules to facilitate the full provision of deck-to-deck service.

(iii) Competitive Considerations

14. The flexible band configuration approach that we adopt today will enable interested parties to bid on overlapping spectrum licenses (band plan 1) in the event that they believe spectrum sharing will best meet their needs for the provision of air-ground services. Under this approach, the individual licensees-- rather than the Commission-- would determine the criteria for ground station locations and other technical requirements necessary to facilitate the provision of broadband services on an overlapped basis. Moreover, in lieu of codifying their sharing plan into the Commission's rules, any sharing plan that the winning bidders develop between themselves can be modified at any time without their having to seek a change in the rules. If band plan 1 is implemented, we expect the parties to engage in good faith negotiations in developing and implementing their spectrum sharing plan. If the two licensees cannot agree on a spectrum sharing plan or if a dispute arises under their initial or amended agreement, we would encourage them to use binding arbitration or other alternative dispute resolution procedures. Alternatively, either party may request that the Commission resolve major disputes by filing, for example, a petition for declaratory ruling.

15. In developing the available band plan options, we have considered the potential harms and benefits that may accrue from the possibility of a single provider in this band versus opportunities for multiple service providers. We have also weighed the possible harms and benefits in the context of our goal in this proceeding of facilitating the highest valued use of this spectrum, resulting in the provision of wireless telecommunications services onboard aircraft that better meet the needs of the traveling public. We have considered not only the existence of emerging satellite-based competition but also the availability of other spectrum for the provision of air-ground service. In addition, we have taken into account the fact that our new air-ground band plan and rules will provide an adequate amount of spectrum for the provision of new high-speed wireless services using the 800 MHz air-ground spectrum that cannot be provided under our current rules, and we anticipate that any future provider will take advantage of the new rules to provide services that will compete more directly with broadband air-ground providers operating from different platforms. Therefore, we find that the air-ground band plan and the flexible service rules that we adopt today are likely to enhance intermodal air-ground competition even if ultimately only one entity operates in the 800 MHz air-ground band.

16. Nevertheless, in light of the very limited amount of spectrum (four megahertz) available in the 800 MHz air-ground band, we conclude that the public interest would be served by ensuring access to this spectrum by more than one entrant by

prohibiting any single party from controlling more than three megahertz of spectrum in the band. Although other spectrum and platforms will be available for the provision of domestic air-ground service, the 800 MHz air-ground band constitutes the only four megahertz of spectrum dedicated specifically to the commercial air-ground service in the United States. Thus, there is currently no guarantee that any spectrum other than the 800 MHz air-ground band and the spectrum used by satellite services will in fact be used for commercial air-ground service. We accordingly conclude that it is in the public interest to promote competition by ensuring that at least two parties will have an opportunity to provide service in the 800 MHz air-ground band. Other providers will be able to access the spectrum through secondary markets, resale or similar means. In addition, the record demonstrates that no more than three megahertz of spectrum is required to deliver high-speed air-ground services using today's broadband technologies. Permitting one party to control the entire four megahertz of spectrum comprising the band therefore could result in one megahertz of spectrum (25 percent of the band) lying fallow, which would undermine our goal of promoting the highest valued use of this spectrum. A 1 MHz spectrum block could support such applications as email service, Internet access, messaging services, avionic support, and homeland security services. Given the many potential uses of a 1MHz spectrum block, restricting the access of any single party to three megahertz of the spectrum not only will increase the air-ground service choices available to consumers, but also will ensure the efficient use of this spectrum. We also believe that promoting competition in the band and with satellite-based service providers will serve the public interest by spurring technological innovation. In light of these findings, we conclude that it is in the public interest to have two licensees in this band.

17. In view of the foregoing, we will prohibit any party from obtaining a controlling interest, either at auction or by a post-auction transaction, in more than three megahertz of spectrum (either shared or exclusive) in the 800 MHz air-ground band. Each of the three band configurations contains two licenses and each includes at least one 3 MHz license. Accordingly, no party may have a controlling interest in more than one license in the band plan implemented as a result of the Commission's auction of new air-ground licenses. For purposes of this eligibility restriction, individuals and entities with either de jure or de facto control of a licensee in the band will be considered to have a controlling ***19296** interest in the licensee. De jure control is evidenced by holdings of greater than 50 percent of the voting stock of a corporation, or in the case of a partnership, general partnership interests. De facto control is determined on a case-by-case basis.

18. We also will apply the definitions of "controlling interests" and "affiliate" currently set forth in § § 1.2110(c)(2) and 1.2110(c)(5) of the Commission's rules. These provisions have worked well to identify individuals and entities that have the ability to control applicants for Commission licenses and therefore are well-suited to our goal here of ensuring that no party will hold a controlling interest in more than three megahertz of spectrum (shared or exclusive) in the 800 MHz air-ground band. We note that § 1.2110(c)(2) includes the requirement that ownership interests generally be calculated on a fully diluted basis, and also provides that any person who manages the operations of an applicant pursuant to a management agreement, or enters into a joint marketing agreement with an applicant, shall be considered to have a controlling interest in the applicant if such person, or its affiliate, has authority to make decisions or otherwise engage in practices or activities that determine, or significantly influence, the types of services offered, or the terms or prices of such services. We find that, together with the other provisions of § §

1.2110(c)(2) and 1.2110(c)(5), these provisions will ensure that no entity will hold a controlling interest in more than three megahertz of spectrum (shared or exclusive) in the 800 MHz air-ground band.

19. We note that, like other Part 22 licensees, 800 MHz Air-Ground Radiotelephone Service licensees are classified as commercial mobile radio service (CMRS) providers and thus are subject to common carrier regulation under Title II of the Communications Act (Act). While the Commission has previously decided to forbear from applying certain provisions of Title II to CMRS providers, it has determined that it would be inappropriate to exempt CMRS providers from the competitive safeguards embodied in §§ 201 and 202 of the Act. Air-Ground licensees therefore are required to provide service upon reasonable request, and their "charges, practices, classifications, and regulations for and in connection with" service must be just and reasonable. Moreover, Air-Ground licensees may not make any unjust or unreasonable discrimination in charges, practices, classifications, regulations, facilities, or services for or in connection with a like communication service and may not afford any undue or unreasonable preference or advantage to any person or class of persons. Accordingly, if an air-ground licensee were to unreasonably discriminate in its service rates, terms, or conditions, it could be subject to enforcement action by the Commission as well as a complaint proceeding initiated pursuant to § 208 of the Act.

(iv) Air-Ground Services

20. A new licensee may provide any type of air-ground service (i.e., voice telephony, broadband Internet, data, etc.) to aircraft of any type, and serve any or all aviation markets (e.g., commercial, government, and general). A licensee must provide service to aircraft. We note that current bilateral agreements between the United States, Canada, and Mexico provide for coordinated use of air-ground frequencies over North American airspace and are based on a narrow bandwidth channel scheme, and therefore may need to be renegotiated to provide for more flexible use of this spectrum.

21. At this time, we decide not to permit a licensee to provide ancillary land mobile or fixed services in the 800 MHz air-ground spectrum.

4. Technical Standards

22. We are adopting the minimal set of technical rules for the new air-ground service necessary to implement the three alternative band plan configurations that will be subject to auction. Generally, these rules provide licensees flexibility to deploy any type of transmission technology, provided that the radio emissions produced fit within a licensee's assigned spectrum. The new technical rules limit only transmitting power and the power level of unwanted emissions. As a general matter, these new technical rules are crafted to allow sufficient power to provide robust air-ground services, while limiting the potential for harmful interference to services operating in adjacent spectrum.

23. Interference to air-ground from adjacent services. Each of the two paired bands comprising the 800 MHz air-ground allocation is adjacent to and just above spectrum allocated to the cellular radiotelephone service. The 849-851 MHz uplink band is adjacent to and just below spectrum allocated to land mobile services including public safety, which will soon become all public safety pursuant to the 800 MHz

Order. The 894-896 MHz downlink band is adjacent to and just below spectrum allocated to land mobile services including 900 MHz SMR. These services are heavily used in many areas. Base stations in these adjacent services are authorized to utilize high power levels.

24. The services adjacent to the 849-851 MHz band are subject to rules that limit their potential to cause interference to air-ground service. We do not, at this time, find a need to adopt additional or more stringent rules applicable to the adjacent service licensees to further limit interference potential to the air-ground service. We believe that, under the current rules, new air-ground systems should be able, through careful ground station site selection and technical coordination with the licensees in the adjacent services, to build out their systems. Potential licensees should plan on obtaining qualified engineering advice regarding system design and ground station site selection, taking fully into account the existing radio frequency environment at candidate sites.

25. Interference to Cellular Block B. The air-ground ground station transmit band at 849-851 MHz is adjacent to the Cellular Radiotelephone Service Block B band, which is used for cellular base station receivers. We note that no harmful interference problems between the cellular service and the commercial air-ground service have been reported to the Commission during more than ten years of air-ground service operations, despite the fact that the air-ground mobile station and ground station transmit bands are reversed from the adjacent cellular bands. We believe that several factors may explain why there have been no reported interference problems. First, both services have out of band emissions (OOBE) limits to suppress undesired signals from adjacent allocations. Second, there are far fewer ground stations in an air-ground system than in a cellular system (e.g., the entire U.S. airspace can be covered at an altitude of 20,000 feet by fewer than 200 ground stations). Third, an air-ground licensee must employ careful site selection practices for its ground stations, including an unobstructed view of the sky and consideration of the local RF environment (i.e., what other stations are nearby). Further, air-ground antennas also are typically up-tilted whereas cellular antennas are often down-tilted, adding some isolation between the two. The rule changes that we adopt to permit broadband air-ground services will not alter any of these factors and, consequently, we expect that these factors will be effective in avoiding inter-service interference under our new air-ground band plan.

26. Furthermore, we do not believe that the use of wider bandwidth ***19297** technologies in the 800 MHz air-ground spectrum will result in increased interference between air-ground operations and cellular operations. Although spread spectrum emissions typically have broader out-of-band noise skirts, the level of this noise is subject to the Commission's OOBE rules. We also note that the broadband spread spectrum based technologies used in the cellular band and those that the parties have proposed for use in the air-ground band are resistant to small amounts of out-of-band noise. In summary, we find that applying our standard OOBE rules here is adequate to limit unwanted emissions between ground stations in the air-ground service and base stations in the cellular service. We note that our standard OOBE rules also provide that the Commission may require greater attenuation of unwanted emissions in the event it is necessary to prevent interference to other services.

27. The airborne mobile transmit band (894-896 MHz) is adjacent on its lower side to the cellular telephone receivers of the Cellular B Block licensee. There have

been no reported instances of harmful interference between airborne mobile stations and cellular telephones. This stems from the large distance separation between aircraft and cellular phones on the ground, and our decision today does not change this factor. We conclude that our OOB limits and the distance separation make it likely that the mobile units in these two services will continue to operate in adjacent spectrum without harmful interference problems. Nevertheless, if an air-ground licensee elects to operate aircraft mobile transmitters on the ground or during approach and take-off, they may find it necessary in some cases to provide additional attenuation of OOB falling into the spectrum below 894 MHz, in order to avoid interference to cellular phones in use in the immediate vicinity of airports.

28. Interference to Public Safety. The upper edge of the air-ground ground station transmit band at 849-851 MHz is adjacent to what are now mobile receivers for interleaved business, industrial and land transportation, SMR, and public safety radio channels, but which will soon become the National Public Safety Plan Advisory Committee (NPSPAC) public safety channels pursuant to our recent 800 MHz Order, [69 FR 67823](#), November 22, 2004. Nextel asserts that OOB from air-ground ground stations could produce a significant amount of noise energy in nearby public safety receivers. Although we have found that emissions from cellular base stations may have contributed to interference problems with public safety and critical infrastructure mobile receivers above 851 MHz, there is no history of similar interference being caused by the existing air-ground ground stations to mobile receivers. There are again several factors that we believe may explain why air-ground caused interference is rare, including the fact that there are so few air-ground ground stations, as compared to cellular base stations, and the deployment characteristics of ground stations (e.g., up tilted antennas). Further, we note that NPSPAC operations above 851 MHz will be protected by our OOB limit rule, including the provision that allows the Commission to require greater attenuation if necessary to prevent interference.

29. Nevertheless, we believe that it is prudent to adopt a rule providing that ground stations in the Air-Ground Radiotelephone Service that operate in the 849-851 MHz range will be subject to the same interference abatement obligation rules adopted for cellular services in the 800 MHz Order. The rule we are adopting is essentially the same as that adopted for cellular in the 800 MHz Order. We will not require air-ground licensees to participate in the establishment of the electronic notification process because we anticipate that this process will be in place by the time that new air-ground licenses are issued.

30. Interference to 900 MHz SMR base receivers. The airborne mobile transmit band (894-896 MHz) is adjacent on its upper side to the base station receive band in the 900 MHz SMR service. Distance separation will normally serve to protect 900 MHz SMR base station receivers because airborne stations normally operate at altitudes well above 900 MHz SMR base stations. Nextel, however, contends that there may be a problem where its 900 MHz SMR base stations are located near airport runways, and if there are several aircraft at low altitude nearby at the same time. This possibility appears to be atypical and we find that it would be best addressed on a case-by-case basis rather than by a broad-based rule. Air-ground licensees and 900 MHz SMR licensees should cooperate to resolve any interference problems of this type.

31. Miscellaneous interference issues. We do not believe the record justifies adoption of more stringent OOB limits for the Air-Ground Radiotelephone Service. Accordingly, we will apply our harmonized flexible OOB limits rule, which currently

applies to cellular and broadband PCS, to the 800 MHz Air-Ground Radiotelephone Service. We note that, in the event that band plan 2 or 3 is implemented, the exclusive licensees would be subject to the OOB standards between their spectrum blocks, as well as outside the air-ground band.

32. Miscellaneous technical rules. The existing air-ground rules have provided particular limits on transmitter frequency tolerance and specifications for automated operating procedures. We conclude it is unnecessary to retain such a detailed frequency tolerance rule. Under the legacy band configuration, numerous closely packed air-ground channels were shared by multiple licensees, so we required a frequency tolerance rule that tightly controlled frequency stability to minimize the possibility of adjacent channel interference. By contrast, our new rules establish wider spectrum blocks and we anticipate fewer communications channels. In addition, we expect that the advanced technologies likely to be used in this band will have to be inherently stable in order to work properly, and, in the Air-Ground Radiotelephone Service, possibly to compensate for Doppler shift as well. Thus, we find that we need only require in our rules that the frequency stability of equipment used be sufficient to ensure that, after accounting for Doppler frequency shifts, the occupied bandwidth of the fundamental emissions remains within the authorized frequency bands of operation. In the event that band plan 1 is implemented and licenses for spectrum sharing are issued, the licensees may choose to agree upon any number of miscellaneous technical standards that may be needed to facilitate shared spectrum operation and include them in the spectrum sharing plan that they would file with the Wireless Telecommunications Bureau.

5. Incumbent Station KNKG804

33. Verizon Airfone Inc. is the sole incumbent currently operating in the 800 MHz air-ground band. In April 2004, the company filed an application for renewal of its authorization to operate in the band, Call Sign KNKG804. We grant Verizon Airfone Inc. a non-renewable license for a five-year term commencing on the effective date of this Report and Order.

a. Transition of Incumbent System

34. In order to ensure that the air-ground spectrum can be used to provide broadband air-ground services to the public in the near future, it is imperative to clear the incumbent narrowband system from a minimum of three megahertz of spectrum as soon as reasonably practicable. We conclude ***19298** that, given the declining and relatively low usage level of Verizon Airfone's system, and because the original 800 MHz air-ground band plan was intended to accommodate six competing licensees, the existing system can be provided comparable spectrum in one megahertz of spectrum in the air ground band.

35. Verizon Airfone's incumbent system must cease operations in the lower 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of any license, if band plan 1 or 2 is implemented; Verizon Airfone may relocate its incumbent operations to the upper 0.5 MHz portion of each 2 MHz band and may continue to operate under the renewal authorization until the end of the five-year license term. If band plan 3 is implemented, Verizon Airfone's incumbent system must cease operations in the upper 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of any new license; Verizon Airfone may relocate its incumbent operations to the lower 0.5 MHz portion of each 2 MHz band

and may continue to operate under the renewal authorization until the end of the five-year license term. We note that this transition period is consistent with Verizon Airfone's request that we provide it a "limited transitional period" for its narrowband system. In revising our current air-ground rules, we are eliminating all of the command and control technical rules, which enabled dynamic sharing of communication channels under the former licensing scheme. Verizon Airfone may reconfigure the narrowband channelization of its existing system in the upper 0.5 MHz portion of each 2 MHz band (or lower 0.5 MHz portion of each band if band plan 3 is implemented) any way it wants, including using control channel(s) of any authorized bandwidth less than 6 kHz (not limited to 3.2 kHz as they are now). We note that if Verizon Airfone acquires a new spectrum authorization as a result of competitive bidding, it could elect to continue its incumbent operations under such new authorization.

b. Reimbursement of Relocation Costs

36. We conclude that it would not be inequitable for Verizon Airfone to bear costs associated with relocating its narrowband operations within the 24-month period set out above to accommodate a new entrant in the air-ground band. The original 800 MHz air-ground band plan was intended to accommodate six competing licensees in the air-ground band, and Verizon Airfone has never had a right to exclusive use of the band. The new license that we grant Verizon Airfone today, moreover, provides the company a substantial period--two years from the initial grant of any new air-ground license--to relocate its narrowband operations to one megahertz of spectrum in the band.

37. We do not foresee harm to the flying public flowing from Verizon Airfone bearing any relocation expenses it may have. As noted above, demand for Verizon Airfone's service has markedly declined in recent years, and the company's system is approaching technological obsolescence. We note that a new air-ground licensee could seek to negotiate and compensate Verizon Airfone to relocate earlier than required by the terms of Verizon Airfone's new license; Verizon Airfone, however, will not be obligated to engage in such negotiations. On balance, we conclude that any burden that might be incurred by Verizon Airfone to relocate its operations under the conditions we are adopting should be minimal. Accordingly, we require Verizon Airfone to bear any costs for relocating its narrowband operations in the air-ground band at the end of the 24-month transition period.

c. Renewal of Call Sign KNKG804

38. We hereby grant Verizon Airfone Inc. a non-renewable license, Call Sign KNKG804, for a five-year term subject to the following conditions:

- If band plan 1 or 2 is implemented, Verizon Airfone must cease its existing narrowband operations in the lower 1.5 MHz portion of each 2 MHz air-ground band within 24 months of the initial date of grant of a new spectrum license.
- If band plan 1 or 2 is implemented, Verizon Airfone may relocate its incumbent operations to the upper 0.5 MHz portion of each 2 MHz band (0.5 MHz at 850.500-851.000 MHz paired with 0.5 MHz at 895.500-896.000 MHz).
- If band plan 3 is implemented, Verizon Airfone must cease its existing narrowband operations in the upper 1.5 MHz portion of each 2 MHz air-ground band within 24

months of the initial date of grant of a new spectrum license.

- If band plan 3 is implemented, Verizon Airfone may relocate its incumbent operations to the lower 0.5 MHz portion of each 2 MHz band (0.5 MHz at 849.000-849.500 MHz paired with 0.5 MHz at 894.000-894.500 MHz).
- The existing [§ 22.867](#) power limits for ground stations (100 Watts ERP) and airborne mobile stations (30 Watts ERP) will become license terms. We are amending [§ 22.867](#) and it will apply to the new licensees only.
- The existing [§ 22.861](#) out-of-band and spurious emission limits will become license terms. We are amending [§ 22.861](#) and it will apply to the new licensees only.
- The authorized emission bandwidth of any transmission from the existing system may not exceed 6 kHz. This license condition replaces [§ 22.857\(a\)\(2\)](#) because we are removing [§ 22.857](#). This condition requires that the existing system remain a narrowband system.

39. Verizon Airfone must coordinate any technical changes within 885 kilometers (550 miles) of the U.S.-Canadian or U.S.-Mexican borders with the appropriate air-ground licensees in those countries prior to requesting appropriate governmental approval. Verizon Airfone may locate or relocate ground stations operating at any power level (not exceeding 100 Watts), subject only to international coordination. Verizon Airfone must maintain and provide to the FCC and the new 800 MHz air-ground licensee(s) a current list of the locations and channels used at all ground stations, which will enable the licensee(s) to provide interference protection to the existing system's operations.

40. During the period that the existing system continues to operate and provide service, the licensee of a new spectrum license must not cause harmful interference to it. Protection from interference requires that the signals of the new licensee(s) must not exceed the current adjacent channel emission limit, which is a ground station received power of -130 dBm in 6 kHz, assuming a 0 dBi vertically polarized antenna. This limit will provide full interference protection to the existing system.

6. Construction Requirements

41. We find that a five-year substantial service construction requirement for any new spectrum license--other than the 1 MHz spectrum licenses D and E--will serve the public interest and is consistent with our statutory mandate to prevent stockpiling or warehousing by licensees, and to promote investment in and rapid deployment of new technologies and services. At the end of the five-year construction period, a licensee must provide substantial service to aircraft. We define substantial service as service that is sound, favorable, and substantially above a level of mediocre service that would barely warrant renewal. We establish two safe harbors that would satisfy this substantial service obligation. First, construction and operation of 20 base stations, with at least one base station in each of the ten FAA regions, at the five-year ***19299** benchmark would constitute substantial service. Alternatively, the construction and operation of base stations capable of serving the airspace of at least 25 of the 50 busiest airports (as measured by annual passenger boardings) at the five-year benchmark would constitute substantial service.

42. We do not establish a construction requirement for spectrum licenses D and E. If either of these licenses is acquired, the licensee would have to share spectrum with Verizon Airfone's incumbent system until the expiration of Verizon Airfone's non-renewable license term. Depending on system configuration, a licensee of spectrum block D or E might not find it technically desirable to operate an air-ground system while sharing spectrum with the incumbent system. Under these circumstances, a construction requirement could result in a licensee deploying a less than optimal system.

B. 400 MHz Air-Ground Radiotelephone Service

43. The general aviation air-ground service operates in the 454.675-454.975 and 459.675-459.975 MHz bands and involves the provision of telecommunications service to private aircraft such as small single engine craft and corporate jets. As explained by one of the commenters in this proceeding, the channels licensed in this service are used for emergency and other purposes. These channels are interconnected with the public switched telephone network. Pursuant to our biennial review of regulations in the Notice, we are revising and eliminating certain rules governing this service. In addition to the rules revised or eliminated as discussed below, we take this opportunity to update and reorganize the general aviation air-ground rules. In particular, we redesignate current [§ 22.803](#) of the general rules as new [§ 22.807](#) of the general aviation air-ground rules, and delete certain superfluous language therein that relates to the Rural Radiotelephone Service.

1. Form 409, Airborne Mobile Radio Telephone License Application

44. In contrast to most part 22 services, [§ 22.3\(b\)\(1\)](#) requires an individual authorization to operate a general aviation airborne mobile station—an end user unit—in the Air-Ground Radiotelephone Service. This requirement is also reflected in [§ 1.903\(c\)](#) of our rules. Individuals must file FCC Form 409 (Airborne Mobile Radio Telephone License Application) to apply for authority to operate an airborne station or to modify or renew an existing license.

45. We do not believe that the continued licensing of individual airborne mobile stations is warranted. At present, and likely for the foreseeable future, members of the public desiring service using the current Air-Ground Radiotelephone Automated Service (AGRAS) system must first purchase and install an AGRAS-compatible mobile telephone aboard their aircraft. Such mobile units are considerably more expensive and not as readily available as mobile telephones typically used with land-based public mobile systems. Coupled with the fact that the number of general aviation users is relatively small, the probability of unauthorized users is minimal.

46. More importantly, a potential air-ground subscriber must first register with the billing service utilized by the various air-ground licensees to obtain an aircraft telephone number in order to receive service. Therefore, the licensee's own billing service would know the number and identification of legitimate users of the air-ground AGRAS system. Presumably, if an un-registered user attempted to place calls over the AGRAS system, service would be denied.

47. In addition, the Commission has received few complaints regarding these stations. Air-Ground equipment is used to communicate with ground facilities that are otherwise licensed by the Commission. Moreover, we believe that the requirement

to file Form 409 imposes an unnecessary regulatory burden on end users, because it involves preparation of a form as well as payment of a \$50 fee for each subscriber unit.

48. Therefore, in keeping with the Commission's policy of simplifying, where appropriate, its licensing procedures and easing the administrative burden on licensees and other users of Wireless Radio Services, we eliminate, by revising [§ § 1.903\(c\)](#) and [22.3\(b\)](#), the requirement that an authorization be obtained to operate general aviation airborne mobile stations in the Air-Ground Radiotelephone Service. We also eliminate FCC Form 409 and delete references to that form in [§ § 1.1102](#) and [1.2003](#) of our rules.

2. Idle Tone

49. [Section 22.811](#) provides that, when a ground station transmitter authorized to transmit on any Air-Ground Radiotelephone Service channel listed in [§ 22.805](#) (for general aviation air-ground service) is available for service but idle, it must continuously transmit a modulated signal on that channel with a power between 10 and 20 dB lower than the normal transmitting power. We continue to believe that the deletion of [§ 22.811](#) from our rules is warranted. We take this opportunity to point out that the removal of this rule in no way prohibits carriers from employing the idle control tone. To the contrary, the action we take today is permissive. To the extent that idle tone transmissions are deemed valuable by system operators, they are free to continue to use it. In light of today's automated system, however, we do not believe that mandating its continued use is warranted.

3. Construction Period for General Aviation Ground Stations

50. [Section 22.815](#) provides that "[t]he construction period (see [§ 22.142](#)) for general aviation ground stations is 12 months." We correct the reference in [§ 22.815](#) to specify the actual rule section, [§ 1.946](#).

4. AGRAS

51. [Section 22.819](#) provides that, after January 1, 1996, stations transmitting on the general aviation air-ground service channels must operate in compliance with the requirements set forth in the document, "Technical Reference, Air-ground Radiotelephone Automated Service (AGRAS), System Operation and Equipment Characteristics," dated April 12, 1985. The industry is currently developing a new operating technology that may be superior to AGRAS.

52. We delete [§ 22.819](#). Our deletion of the rule does not mean that the AGRAS protocols are prohibited. To the contrary, technological advancements in this area may continue to utilize AGRAS protocols if developers believe it would be appropriate. We are unwilling at this time to mandate the use of a particular technology when the market is more suited to make these decisions. We also believe that it is unlikely that the industry would simply forsake the current users of these systems.

C. Revision of Part 22 Non-Cellular Rules

1. Scope and Authority

a. Authorization Required, General Eligibility, and Definitions

53. [Section 22.3\(b\)](#) provides that, except for certain stations in the Rural Radiotelephone Service and the Air-Ground Radiotelephone Service, the operation by subscribers of mobile or fixed stations in the Public Mobile Services is covered by the authorization held by the common carrier providing service to them. Part 22 also contains other rules that use the term "common carrier." [Section 22.7](#) states that, *19300 "except as otherwise provided in this part, existing and proposed common carriers are eligible to hold authorizations in the Public Mobile Services." We also pointed out that several of the definitions contained in [§ 22.99](#) include references to the term "common carrier." Finally, we observed that the distinctions previously drawn between a radio common carrier and a wireline common carrier under the part 22 rules became obsolete in 1984.

54. We revise [§ 22.3\(b\)](#), [22.7](#), and [22.99](#) by replacing the term "common carrier" with the term "licensee," and thus deleting the requirement that licensees in part 22 services be common carriers. We also revise [§ 22.1\(b\)](#) to delete the reference to "domestic common carrier," and [§ 22.401](#) to delete the words "Communications common carriers" and replace with the words "Eligible entities (see [§ 22.7](#))." [Section 22.351](#), regarding channel assignments, should be similarly amended. Finally, we delete the definitions for Radio Common Carrier and Wireline Common Carrier, as these terms are no longer used in part 22, and correct references to the term "Air-ground Radiotelephone Service" contained in several definitions in [§ 22.99](#) to read "Air-Ground Radiotelephone Service."

2. Licensing Requirements and Procedures

a. Construction Prior to Grant of Application

55. [Section 22.143\(d\)\(4\)](#) of our rules provides that, for any pre-grant construction or alteration that would exceed the requirements of [§ 17.7](#), the licensee must notify the FAA and file a request for antenna height clearance and obstruction and marking specifications (FCC Form 854) with the FCC, PRB, Support Services Branch, Gettysburg, PA 17325. The correct filing location for FCC Form 854 is WTB, Spectrum Management Resources and Technologies Division, 1270 Fairfield Road, Gettysburg, PA 17325. We revise FCC Form 854 accordingly, and we amend [§ 22.143\(d\)\(4\)](#) of our rules to include this updated address.

b. Computation of Distance

56. We recodify [§ 22.157](#) as new [§ 1.958](#) in part 1, subpart F. This will make the [§ 22.157](#) distance calculation method applicable to all Wireless Radio Services described in parts 1 (except parts 21 and 101 as explained below), 20, 22, 24, 27, 80, 87, 90, 95, and 97, and supersede any conflicting regulations in these parts. We note that software used by the Commission to process applications under parts 21 (Domestic Public Fixed Radio Services) and 101 (Fixed Microwave Services) is programmed to round the result of a distance calculation to the nearest tenth of a kilometer. Accordingly, we include language in new [§ 1.958](#) to indicate that distance calculations for applications under these parts must be rounded to the nearest tenth of a kilometer.

c. Computation of Terrain Elevation

57. We recodify [§ 22.159](#) as new [§ 1.959](#) in part 1, subpart F. Part 90 services in the 470-512 MHz band, due to their proximity to TV operations, will continue to be governed by [§ 90.309\(a\)\(4\)](#). Thus, all wireless services under parts 1, 20, 22, 24, 27, 80, 87, 90 (except the 470-512 MHz band), 95, 97 and 101 will be subject to the same computation methodology.

d. ASSB

58. [Section 22.161](#) sets forth application requirements for base stations in the Paging and Radiotelephone Service, Rural Radiotelephone Service, and Offshore Radiotelephone Service where the applicant proposes to employ amplitude compandored single sideband modulation (ASSB). We delete [§ 22.161](#). This rule section is obsolete in light of [§ 22.357](#), which permits part 22 licensees to use any emission type that complies with applicable emission limits.

3. Operational and Technical Requirements

a. Channel Assignment Policy

59. [Section 22.351](#) sets forth the general policy for the assignment of PMS channels. The third sentence of this section uses the term "common carrier." We amend [§ 22.351](#) to replace the term "common carrier" with the term "licensee."

b. Interference Protection

60. [Section 22.352](#) provides, in pertinent part, that PMS licensees shall be considered non-interfering if they operate in accordance with FCC rules that provide technical channel assignment criteria for the radio service or channels involved, all other applicable FCC rules, and the terms and conditions of their authorizations. We modify the relevant portion of [§ 22.352](#) to read "Public Mobile Service stations operating in accordance with applicable FCC rules and the terms and conditions of their authorizations are normally considered to be non-interfering." The streamlined wording we adopt more accurately reflects how the Commission currently addresses interference issues, as we make clear that operation consistent with Commission rules and the applicable authorization-- whether on a site-by-site basis or on a geographic area basis--creates a presumption of non-interfering operation.

c. Emission Types and Emission Masks

61. An emission mask is defined as "[t]he design limits imposed, as a condition or certification, on the mean power of emissions as a function of frequency both within the authorized bandwidth and in the adjacent spectrum." [Section 22.357](#) provides that any authorized PMS station may use any type of emission provided that it complies with the appropriate emission mask. [Section 22.359](#) is the general emission mask rule. [Section 22.861](#) is the emission limitations and mask rule for commercial aviation air-ground systems. At the time the Commission adopted the part 22 rules, it generally used the emission mask approach to regulate in-band energy distribution. Recently, however, the Commission has been decreasing its reliance on the use of emission masks as a means to limit interference and, instead, increased its reliance on the use of out-of-band emission (OOBE) limits. The salient difference between emission masks and OOBE limits is that OOBE limits do not limit emission levels within a particular frequency band. Rather, they are intended to

limit emissions outside of the authorized bandwidth.

62. Consistent with the recent increased use of OOB limits, we replace the emission mask requirements found in [§§ 22.357](#), [22.359](#), and [22.861](#) with an OOB limitation. We believe that OOB limitations are preferable to emission masks for the PMS because OOB limitations do not need to be revised every time a new technology is implemented (unlike emission masks). Moreover, OOB limitations make more sense with channels that are often combined in blocks, since there is no need for a single licensee on adjacent channels to be required to use an emission mask on each channel to protect itself. OOB limitations protect services operating beyond the outer edges of the channel block. Emission masks require protection of each individual channel within the block.

d. Standby Facilities

63. [Section 22.361](#) permits PMS licensees to install standby transmitters, without separate authorization, to continue service in the event of transmitter failure or during transmitter maintenance. It is now universally understood in the wireless industry that licensees are not required to obtain a separate authorization to install standby *19301 transmitters. Eliminating [§ 22.361](#) is warranted. We also note that doing so is in line with our desire to streamline or eliminate rules that are no longer necessary. Thus, we eliminate [§ 22.361](#).

e. Directional Antennas

64. [Section 22.363](#) and Table C-2 to [§ 22.361](#) set forth directional antenna technical requirements. These requirements were adopted at a time when the Commission generally considered fixed wireless operations to be secondary to mobile operations. These regulations appear to no longer be necessary because, when the Commission licenses spectrum today, it provides greater flexibility to licensees to use the spectrum for mobile or fixed operations. We eliminate [§ 22.363](#) and Table C-2 to [§ 22.361](#).

f. Wave Polarization

65. [Section 22.367](#) sets forth polarization requirements for the electromagnetic waves radiated by PMS providers. Where fixed and mobile services operate on a co-channel basis, the polarization restrictions may no longer be necessary or effective in reducing interference. We delete [§ 22.367](#).

g. Access to Transmitters

66. [Section 22.373](#) generally requires PMS transmitters to be accessible only to persons authorized by the licensee. We remove [§ 22.373](#) from our rules. We believe that the rule is unnecessary due to the fact that licensees have an economic self-interest to prevent unauthorized access to their transmitters.

h. Replacement of Equipment

67. [Section 22.379](#) permits PMS licensees to replace equipment without notifying the Commission, provided that such equipment meets certain technical requirements. Licensees have known since the rule change in 1994 that applications are not required for replacement equipment.

68. We therefore eliminate [§ 22.379](#).

i. Auxiliary Test Transmitters

69. [Section 22.381](#) limits the use of auxiliary test transmitters to testing the performance of fixed receiving equipment located remotely from the control point. [Section 22.381](#) further provides that such transmitters may only transmit on channels designated for mobile transmitters. We believe that [§ 22.381](#) unnecessarily restricts the use of test equipment, and therefore we eliminate this section from our rules. We are aware of no harm that would arise from operating auxiliary test transmitters on any authorized channel, whether base or mobile, and no commenters have suggested otherwise.

4. Developmental Authorizations

70. Part 22, subpart D--which includes [§ § 22.401, 22.403, 22.409, 22.411, 22.413, 22.415, and 22.417](#)--governs grant of developmental authorizations in the PMS. As pointed out in the Notice, a review of Commission records indicates that these rules are seldom used and, instead, parties frequently file waiver requests that are tantamount to requests for developmental authorizations.

a. Developmental Authorization of 43 MHz Paging Transmitters

71. [Sections 22.411 and 22.531\(a\)](#) provide that 43 MHz channels can be initially assigned only as developmental authorizations. The requirements of [§ § 22.411 and 22.531\(a\)](#) are intended to mitigate interference with the intermediate frequency stages of receivers in television sets and video recorders. [Section 22.411](#) also requires licensees to conduct and file semi-annual surveys during the first two years of operation to determine the extent of any interference to broadcast television receivers. We believe that [§ § 22.411 and 22.531\(a\)](#) are no longer required. Modern NTSC televisions are no longer particularly vulnerable to interference from the 43 MHz paging frequencies. Previously, television sets utilized an intermediate frequency amplifier that converted the received channel to a frequency between 40 and 46 MHz. New television sets, on the other hand, no longer employ this type of technology. In addition, the number of licensees and new applications for these paging channels is minimal. Consequently, it appears that there is no need for developmental authorizations for 43 MHz paging transmitters, and we delete these sections of our rules.

b. Developmental Authorization of 928-960 MHz Fixed Transmitters

72. [Section 22.415](#) provides that channels in the 928-931 and 952-960 MHz ranges may be assigned to fixed transmitters in point-to-multipoint systems at short-spaced locations (i.e., those that do not meet the 70-mile separation requirement of [§ 22.625\(a\)](#)). The Commission cannot issue any developmental authorizations under [§ 22.415](#) unless it waives the licensing prohibition of [§ 22.621](#). This language would no longer be necessary were we to adopt our proposal to eliminate [§ 22.415](#). In light of the prohibition in [§ 22.621](#) against licensing any new 900 MHz frequencies, we eliminate [§ 22.415](#) and modify [§ 22.625\(a\)](#) by eliminating all text following the first sentence that pertains to short-spaced developmental authorizations under [§ 22.415](#).

c. Developmental Authorization of Meteor Burst Systems

73. [Section 22.417](#) provides that Rural Radiotelephone Service (RRS) central office and rural subscriber stations in Alaska may use "meteor burst" propagation modes. Meteor burst systems bounce radio signals off the ionized trails of evaporating space rocks to receivers up to 1,000 miles away. Meteor burst technology, however, only works in brief spurts because a typical meteor trail has an average duration of a few hundred milliseconds, while wait times between suitable trails can range from a few seconds to minutes. As such, the technology is well-suited for bursty data transmissions but is not suitable for a continuous voice call. [Section 22.725\(c\)](#) provides that channels 42.40, 44.10, 44.20 and 45.90 MHz may be used for such purposes in Alaska. [Section 22.729](#) governs station operations using meteor burst propagation modes on these channels. There are no part 22 licensees on these channels in Alaska, although there are some licenses issued under part 90.

74. We do not believe that RRS stations in Alaska would benefit from maintaining the licensing option under [§ § 22.417, 22.725\(c\), and 22.729](#), and we delete these section from our rules. Currently, there are no licensees taking advantage of these rules. In addition, as a practical matter, meteor burst propagation cannot be used to transmit voice calls, which is at the core of the RRS. We also delete the definition of "meteor burst propagation mode" in [§ 22.99](#), the [§ 22.313\(a\)\(3\)](#) station identification requirements for Rural Radiotelephone Service subscriber stations using meteor burst propagation, and the [§ 22.727\(f\)](#) limits on transmitter output power for meteor burst stations.

5. Paging and Radiotelephone Service Rules

a. Composite Interference Contour Over Water

75. Under [§ 1.929\(c\)\(1\)](#), any increase in the composite interference contour (CIC) of a site-based licensee in the Paging and Radiotelephone Service, Rural Radiotelephone Service, or 800 MHz Specialized Mobile Radio Service is a major modification of license that requires prior Commission approval. In March 2001, the Wireless Telecommunications Bureau conditionally waived [§ 1.929\(c\)\(1\)](#) to *19302 permit expansion of paging CICs over water on a secondary basis.

76. We amend [§ 1.929\(c\)\(1\)](#) and treat expansions of the CIC of a site-based licensee in the Paging and Radiotelephone Service, Rural Radiotelephone Service, or 800 MHz Specialized Mobile Radio Service over water, on a secondary, non-interference basis to any geographic area licensee in the same area, as a minor, not major, modification of license. We also define the term "over water" as "over bodies of water that extend beyond county boundaries including, but not limited to, oceans, the Gulf of Mexico, and the Great Lakes." As a result, such expansions of the CIC are permissive and no notification to the Commission is required. The classification of these modifications as major can hamper a carrier's ability to respond to unexpected disruptions or to meet changes in consumer demand. Licensees providing service in coastal areas often need to relocate or adjust transmitting facilities in order to maintain and improve coverage. Moreover, CIC expansions that take place solely over water should pose no risk of interference to other systems on land, and Commission records indicate that we have not received any interference complaints arising from our current temporary policy of conditionally waiving [§ 1.929\(c\)\(1\)](#). We also note the benefits to both licensees and the Bureau derived from the removal of these particular regulatory filing requirements. We believe that our action here

will facilitate the provision of PMS services to the public.

b. Nationwide Network Paging Channels

77. [Section 22.531\(b\)](#) provides that frequencies 931.8875, 931.9125, and 931.9375 MHz may only be used for nationwide network paging service. [Section 22.551](#) specifies the application process for such channels in the event one should become available for licensing, and provides additional rules for nationwide network paging service.

78. We believe that allowing licensees on these channels to provide services other than nationwide network paging is in line with our policy to facilitate flexible service offerings, our attempts to achieve regulatory parity among competing wireless services, and the highly competitive state of the paging industry. Similarly, we will apply our general paging licensing rules, including competitive bidding procedures, to license these channels in the event that one becomes available for licensing. Therefore, we delete [§ § 22.313\(a\)\(5\)](#), [22.531\(b\)](#) and [22.551](#) from our rules.

c. Additional Channel Policies

79. [Sections 22.539](#) and [22.569](#) govern the processing of applications for additional paging and mobile channels, respectively. In particular, these rules implement the Commission's general policy to assign only one paging or two mobile channels in an area to a carrier per application cycle. Carriers that seek to add channels to their systems in the same geographic service area may thus do so one at a time (two for mobile channels). Before applying for another channel, carriers must certify that service has commenced on the previously-granted channel(s).

80. We delete [§ § 22.539](#) and [22.569](#) from our rules. Today, the part 22 paging channels set forth in these rule sections are licensed on a geographic area basis rather than assigned on a site-by-site basis. We no longer place a blanket restriction on the amount of spectrum that a single entity may hold in one area (although we review competitive issues involving paging licensees on a case-by-case basis). Incumbents operating on a site-by-site basis may expand their systems by assignment or transfer of a license or by participating in a spectrum auction. In addition, under our current licensing scheme for paging channels, we place no blanket restrictions on the number of overlapping part 22 paging channels that a particular entity may hold in one area. Consequently, we believe that maintaining these rules is unnecessary.

d. Provision of Rural Radiotelephone Service on Paging Channels

81. [Section 22.563](#) requires stations in the Paging and Radiotelephone Service that provide two-way public mobile service on certain channels to also provide Rural Radiotelephone Service (RRS) upon request from a subscriber. These channels are now predominantly assigned for use by one-way paging systems that are technically incapable of providing RRS. We believe that [§ 22.563](#) is no longer needed. Not only are most of these channels assigned for one-way paging use, there are now a number of wireless telephone service alternatives to RRS (e.g., cellular, PCS, and some SMR). Moreover, consumers in many areas-- including rural areas--have begun to substitute cellular, PCS, and some SMR service for landline service. This nascent trend is driven in part by wireless service plans that include the price of long distance service that may reduce a consumer's aggregate charges for local and toll

service. In light of these circumstances and the fact that rural subscribers may readily obtain fixed basic telephone services from a variety of sources, we delete [§ 22.563](#) from our rules.

e. Transmission Power Limits

82. [Section 22.565\(g\)](#) limits the effective radiated power (ERP) of dispatch and auxiliary test transmitters to 100 watts. We delete [§ 22.565\(g\)](#) so that test transmitters may operate, pursuant to [§ 22.565\(a\)](#), at a limit of 150 watts. We note that because we have decided to permit auxiliary test transmitters to operate on both base and mobile frequencies, licensees can now choose to operate on either the base or the mobile side of the frequency subject to the 150-watt limit under [§ 22.565\(a\)](#).

f. Dispatch Service

83. [Section 22.577](#) governs the provision of dispatch service. We believe that the deletion of [§ 22.577](#) of our rules is warranted. We find that the rule is outdated and no longer necessary. Moreover, "limits on output power and the functionality of the dispatch transmitter" are out of line with the Commission's emphasis on "flexible spectrum use." In addition, part 90 dispatch operations are not subject to such restrictions, and that the removal of [§ 22.577](#) will "expand the choices to wireless end users." We therefore delete [§ 22.577](#).

g. Channels for Point-to-Point Operation--Microwave Channels

84. [Section 22.591](#) also includes a table of 2110-2130 and 2160-2180 MHz microwave channels. In 1992, the Commission allocated these bands for use by emerging technologies (ET) services and no new systems may be authorized on these channels under part 22. Recently, the Commission allocated, inter alia, the 2110-2130 MHz band for Advanced Wireless Services (AWS). At present, both the 2110-2130 and 2160-2180 MHz bands are widely used for common carrier fixed microwave service.

85. In addition, [§ 22.601](#) specifies rules for modification of previously authorized part 22 stations on the 2110-2130 and 2160-2180 MHz channels. [Section 22.602](#) sets forth rules governing a transition period for Paging and Radiotelephone Service licensees on the microwave channels listed in [§ 22.591](#) to relocate to other frequencies. We delete the microwave channels from the [§ 22.591](#) table and delete [§ 22.591\(b\)](#) regarding the assignment of such channels. We will allow the licenses to expire at the end of their current authorizations, and we will not renew them for another license term. These microwave incumbents will, in the meantime, continue to be subject to ***19303** [§ § 22.601](#) and [22.602](#) (although once their license terms end, these sections will become superfluous). We will delete the cross-reference to [§ 22.591](#) in [§ § 22.601](#) and [22.602](#) and, instead, reference the 2110-2130 and 2160-2180 MHz channels.

h. Effective Radiated Power Limits

86. [Section 22.593](#) specifies power limits for the channels enumerated in [§ 22.591](#). Although we are deleting the microwave channels listed in [§ 22.591](#), these microwave licensees are still subject to [§ 22.593](#), which specifies the EIRP of the microwave channels listed in [§ 22.591](#). Consequently, we will not amend this rule until after the subject licenses have expired.

i. Channel Usage Reports

87. [Section 22.655](#) requires a subcategory of paging licensees--470-512 MHz band licensees--to submit defined channel usage reports every three months. Only two carriers must still file these reports; they have maintained mobile usage of the channels for some time, and loading reporting requirements for other paging operators have been eliminated.

88. We eliminate [§ 22.655](#) so that we no longer require licensees engaged in trunked mobile operations to measure and report channel usage. The continuation of this reporting requirement is burdensome and no longer necessary. Moreover, there are only two licensees that currently remain subject to this requirement, while the majority of CMRS licensees using the 470-512 MHz band do not have to submit these quarterly reports. Given these circumstances, we do not believe that the continued channel usage reporting requirements are warranted.

6. Rural Radiotelephone Service Rules-Channels for Basic Exchange Telephone Radio Systems

89. [Section 22.757](#) specifies channels (in addition to those listed in [§ 22.725](#)) in the frequency ranges 816.0125-820.2375 MHz and 861.0125-865.2375 MHz that are allocated for paired assignment to basic exchange telephone radio systems (BETRS). The Commission auctioned these channels on a geographic area basis in Auction 16, and that they are no longer available for assignment to BETRS. We therefore eliminate [§ 22.757](#) and amend the first sentence of [§ 22.725](#) to provide that the channels listed therein are available for paired assignment to BETRS.

7. Offshore Radiotelephone Service Rules

90. Subpart I of part 22--which includes [§ § 22.1001, 22.1003, 22.1005, 22.1007, 22.1009, 22.1011, 22.1013, 22.1015, 22.1025, 22.1031, 22.1035, and 22.1037](#)--governs the licensing and operation of Offshore Radiotelephone Service (ORS) stations. These stations provide telephone service to subscribers located on oil exploration and production platforms in the Gulf of Mexico. At this time, we take no action on the majority of the rules in this Subpart, and we will revisit the ORS rules at another time. We also revise [§ 22.1003](#), to revise the eligibility requirements to eliminate references to "common carriers" and instead to rely on language similar to that used in parts 24 and 27 ("[a]ny entity, other than those precluded by section 310 of the Communications Act of 1934, as amended, [47 U.S.C. 310](#), * * * is eligible to hold a license under this part").

Procedural Matters

Final Regulatory Flexibility Analysis

91. As required by the Regulatory Flexibility Act of 1980, as amended (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the Notice of Proposed Rulemaking (Notice) in this proceeding, WT Docket No. 03- 103. The Commission sought written public comment on the proposals in the Notice, including comment on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.

D. Need for, and Objectives of, the Report and Order

92. The Report and Order addresses revision of the rules and spectrum band plan for the 800 MHz commercial Air-Ground Radiotelephone Service spectrum. A total of four megahertz of spectrum is currently allocated for this service. Although the Commission originally licensed six operators to provide service in this band on a shared basis using narrowband channels, only one licensee (Verizon Airfone) continues to operate in the band. Its operations are subject to a number of specific technical requirements designed to facilitate sharing among licensees. Given the constraints on current operations in this band and the changing demands of the public with respect to wireless telecommunications services, the Notice requested comment on how best to reconfigure this band and revise the related service rules in order to meet consumer needs and promote flexible, competitive use of this spectrum.

93. The Report and Order makes available new nationwide air-ground licenses in three band configurations: (1) Band plan 1, comprised of two overlapping, shared, cross-polarized 3 MHz licenses (licenses A and B, respectively), (2) band plan 2, comprised of an exclusive 3 MHz license and an exclusive 1 MHz license (licenses C and D, respectively), and (3) band plan 3, comprised of an exclusive 1 MHz license and an exclusive 3 MHz license (licenses E and F, respectively), with the blocks at opposite ends of the band from the second configuration. Licenses will have a 10-year term. Licenses will be awarded to winning bidders for the licenses comprising the configuration that receives the highest aggregate gross bid, subject to long-form license application review.

94. The Report and Order also takes action on a range of proposals for updating the Commission's part 1, 22, and 90 rules. Some of these steps are taken pursuant to the Commission's biennial review obligations as well as to implement the results of staff review of the part 22 non-cellular rules. The Report and Order revises and eliminates many rule sections in light of technological change, increased competition in Commercial Mobile Radio Services, supervening changes to the Commission's rules, or a combination of factors. These rule changes also include actions to harmonize the treatment of various wireless services.

E. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

95. We received no comments in response to the IRFA. As described in section E below, we have nonetheless considered potential significant economic impacts of our actions on small entities.

F. Description and Estimate of the Number of Small Entities to Which Rules Will Apply

96. The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein. The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction." In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act. A "small business concern" is one which: (1) Is independently owned and operated; (2) is not dominant in its field of operation; *19304 and (3) satisfies any additional criteria established by the Small Business Administration (SBA).

97. Wireless Service Providers. The SBA has developed a small business size standard for wireless firms within the two broad economic census categories of "Paging" and "Cellular and Other Wireless Telecommunications." Under both SBA categories, a wireless business is small if it has 1,500 or fewer employees. For the census category of Paging, Census Bureau data for 1997 show that there were 1,320 firms in this category, total, that operated for the entire year. Of this total, 1,303 firms had employment of 999 or fewer employees, and an additional 17 firms had employment of 1,000 employees or more. Thus, under this category and associated small business size standard, the great majority of firms can be considered small. For the census category Cellular and Other Wireless Telecommunications, Census Bureau data for 1997 show that there were 977 firms in this category, total, that operated for the entire year. Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more. Thus, under this second category and size standard, the great majority of firms can, again, be considered small.

98. Cellular Licensees. As noted, the SBA has developed a small business size standard for wireless firms within the broad economic census category "Cellular and Other Wireless Telecommunications." Under this SBA category, a wireless business is small if it has 1,500 or fewer employees. For the census category Cellular and Other Wireless Telecommunications firms, Census Bureau data for 1997 show that there were 977 firms in this category, total, that operated for the entire year. Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more. Thus, under this category and size standard, the great majority of firms can be considered small. According to the most recent Trends in Telephone Service data, 719 carriers reported that they were engaged in the provision of cellular service, personal communications service, or specialized mobile radio telephony services, which are placed together in the data. We have estimated that 294 of these are small, under the SBA small business size standard.

99. Common Carrier Paging. The SBA has developed a small business size standard for wireless firms within the broad economic census categories of "Cellular and Other Wireless Telecommunications." Under this SBA category, a wireless business is small if it has 1,500 or fewer employees. For the census category of Paging, Census Bureau data for 1997 show that there were 1,320 firms in this category, total, that operated for the entire year. Of this total, 1,303 firms had employment of 999 or fewer employees, and an additional 17 firms had employment of 1,000 employees or more. Thus, under this category and associated small business size standard, the great majority of firms can be considered small.

100. In the Paging Second Report and Order, [62 FR 11616](#), March 12, 1997, the Commission adopted a size standard for "small businesses" for purposes of determining their eligibility for special provisions such as bidding credits and installment payments. A small business is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$15 million for the preceding three years. The SBA has approved this definition. An auction of Metropolitan Economic Area (MEA) licenses commenced on February 24, 2000, and closed on March 2, 2000. Of the 2,499 licenses auctioned, 985 were sold. Fifty-seven companies claiming small business status won 440 licenses. An auction of MEA and Economic Area (EA) licenses commenced on October 30, 2001, and closed on December 5, 2001. Of the 15,514 licenses auctioned, 5,323 were sold. One hundred thirty-two companies claiming small business status purchased 3,724 licenses. A third auction, consisting of 8,874 licenses in each of 175 EAs and 1,328 licenses in

all but three of the 51 MEAs commenced on May 13, 2003, and closed on May 28, 2003. Seventy-seven bidders claiming small or very small business status won 2,093 licenses. Currently, there are approximately 74,000 Common Carrier Paging licenses. According to the most recent Trends in Telephone Service, 608 private and common carriers reported that they were engaged in the provision of either paging or "other mobile" services. Of these, we estimate that 589 are small, under the SBA-approved small business size standard. We estimate that the majority of common carrier paging providers would qualify as small entities under the SBA definition.

101. Offshore Radiotelephone Service. This service operates on several ultra high frequency (UHF) television broadcast channels that are not used for television broadcasting in the coastal areas of states bordering the Gulf of Mexico. There are currently approximately 55 licensees in this service. We are unable to estimate at this time the number of licensees that would qualify as small under the SBA's small business size standard for "Cellular and Other Wireless Telecommunications" services. Under that SBA small business size standard, a business is small if it has 1,500 or fewer employees.

102. Rural Radiotelephone Service. The Commission has not adopted a size standard for small businesses specific to the Rural Radiotelephone Service. A significant subset of the Rural Radiotelephone Service is the Basic Exchange Telephone Radio System (BETRS). The Commission uses the SBA's small business size standard applicable to "Cellular and Other Wireless Telecommunications," i.e., an entity employing no more than 1,500 persons. There are approximately 1,000 licensees in the Rural Radiotelephone Service, and the Commission estimates that there are 1,000 or fewer small entity licensees in the Rural Radiotelephone Service that may be affected by the rules and policies proposed herein.

103. Air-Ground Radiotelephone Service. The Commission has not adopted a small business size standard specific to the Air-Ground Radiotelephone Service. Again, we note that SBA has a small business size standard applicable to "Cellular and Other Wireless Telecommunications," i.e., an entity employing no more than 1,500 persons. There are approximately 100 licensees in the Air-Ground Radiotelephone Service, and we estimate that almost all of them qualify as small under the SBA small business size standard. (See also the Notice and associated IRFA in this proceeding, which describe two proposed small business size standards for the commercial Air-Ground Radiotelephone Service.)

104. Wireless Communications Equipment Manufacturers. Some of the actions in the Report and Order could also benefit equipment manufacturers. The SBA has established a small business size standard for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing. Examples of products in this category include "transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment" and may include other devices that transmit and receive IP-enabled services, such as personal digital assistants (PDAs). Under the SBA size standard, firms are considered small if they have 750 or fewer ***19305** employees. According to Census Bureau data for 1997, there were 1,215 establishments in this category that operated for the entire year. Of those, there were 1,150 that had employment of under 500, and an additional 37 that had employment of 500 to 999. The percentage of wireless equipment manufacturers in this category was approximately 61.35%, so we estimate that the number of wireless equipment manufacturers with employment of under 500 was actually closer to 706,

with and additional 23 establishments having employment of between 500 and 999. Consequently, we estimate that the majority of wireless communications equipment manufacturers are small entities that may be affected by our action.

G. Description of Projected Reporting, Recordkeeping and Other Compliance Requirements

105. In this Report and Order, we are not adopting any new rules that would add reporting, recordkeeping, or other compliance requirements. We only modify or eliminate certain rules, thereby eliminating economic burdens for small and other sized entities. For example, we amend [§ 1.929\(c\)\(1\)](#) of our rules to specify that expansion of a composite interference contour (CIC) of a site-based licensee in the Paging and Radiotelephone Service--as well as the Rural Radiotelephone Service and 800 MHz Specialized Mobile Radio Service--over water on a secondary, non-interference basis should be classified as a minor (rather than major) modification of license. Such reclassification should substantially reduce the filing requirements associated with these license modifications.

H. Steps Taken To Minimize Significant Economic Impact on Small Entities, And Significant Alternatives Considered

106. The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."

107. We do not anticipate any adverse impact on small entities resulting from either reconfiguration of the 800 MHz Air-Ground Radiotelephone Service band plan or revision of the related service rules. Currently, there is only one licensee in this band and demand for its service has markedly declined. The flexible approach to reconfiguration of the 800 MHz air-ground band adopted in the Report and Order will promote our goal of facilitating the highest valued use of this spectrum, resulting in the provision of wireless communications services that better meet the needs of the traveling public onboard aircraft.

108. In order to promote competition in the 800 MHz air-ground band, the Report and Order prohibits any party from obtaining a controlling interest, either at auction or by a post-auction transaction, in more than three megahertz of spectrum (either shared or exclusive) in the band. No single entity, therefore, may hold more than one license in any of the available band configurations. The Report and Order adopts limited technical constraints in order to provide the eventual licensees with significant operational flexibility to provide broadband telecommunications services to commercial airline passengers and others while onboard aircraft. We note that the technical rules will, among other things, ensure that operations in this band do not cause harmful interference to adjacent bands, including cellular, SMR, and public safety. The Report and Order provides that future licensees in the 800 MHz air-ground band, as well as other interested parties, will have the opportunity to engage in spectrum leasing under the Commission's rules. Future licensees will also be permitted to engage in partitioning and/or disaggregation of their licenses.

These regulatory opportunities are intended to provide the air-ground marketplace greater flexibility to respond to consumer demand. The regulatory approach adopted in the Report and Order will benefit both small and large entities.

109. Regarding the modification or elimination of rules stemming from our Biennial Regulatory Review responsibilities, we do not anticipate any adverse impact on small entities. To the contrary, to the extent that there is any direct impact at all, streamlining and harmonizing technical and operational rules should result in decreasing regulatory burdens that benefit both small and large entities.

I. Report to Congress

110. The Commission will send a copy of the Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act. In addition, the Commission will send a copy of the Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA.

Ordering Clauses

111. Pursuant to the authority contained in sections 1, 4(i), 11, 303(r) and (y), 308, 309, and 332 of the Communications Act of 1934, as amended, [47 U.S.C. 151](#), [154\(i\)](#), [161](#), [303\(r\)](#), [303\(y\)](#), [308](#), [309](#), and [332](#), this Report and Order is hereby adopted, and parts 1, 22, and 90 of the Commission's rules are amended accordingly.

112. Pursuant to sections 4(i), 301, and 307 of the Communications Act, as amended, [47 U.S.C. 154\(i\)](#), [301](#), and [307](#), a new license for Station KNKG804, is granted to Verizon Airfone Inc. for a five-year non-renewable term in accordance with the terms and conditions set forth above (file no. 0001716212).

List of Subjects

47 CFR Part 1

Administrative practice and procedure, Communications common carriers, Radio, Reporting and Recordkeeping requirements, Telecommunications.

47 CFR Part 22

Communications common carriers, Radio.

47 CFR Part 90

Business and Industry, Common carriers, Radio, Reporting and recordkeeping requirements.

Federal Communications Commission.

Marlene H. Dortch,

Secretary.

Rule Changes

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR parts 1, 22, and 90 as follows:

PART 1--PRACTICE AND PROCEDURE

1. The authority citation for part 1 continues to read as follows:

Authority: [15 U.S.C. 79](#) et seq.; [47 U.S.C. 151](#), [154\(i\)](#), [154\(j\)](#), [155](#), [157](#), [225](#), and [303\(r\)](#).

[47 CFR § 1.903](#)

2. In [§ 1.903](#), revise paragraph (c) to read as follows:

[47 CFR § 1.903](#)

[§ 1.903](#) Authorization required.

* * * * *

(c) Subscribers. Authority for subscribers to operate mobile or fixed stations in the Wireless Radio Services, ***19306** except for certain stations in the Rural Radiotelephone Service, is included in the authorization held by the licensee providing service to them. Subscribers are not required to apply for, and the Commission does not accept, applications from subscribers for individual mobile or fixed station authorizations in the Wireless Radio Services. Individual authorizations are required to operate rural subscriber stations in the Rural Radiotelephone Service, except as provided in § 22.703 of this chapter. Individual authorizations are required for end users of certain Specialized Mobile Radio Systems as provided in § 90.655 of this chapter. In addition, certain ships and aircraft are required to be individually licensed under parts 80 and 87 of this chapter. See §§ 80.13, 87.18 of this chapter.

[47 CFR § 1.929](#)

3. In [§ 1.929](#), revise paragraph (c)(1) to read as follows:

[47 CFR § 1.929](#)

[§ 1.929](#) Classification of filings as major or minor.

* * * * *

(c) * * *

(1) In the Paging and Radiotelephone Service, Rural Radiotelephone Service and 800 MHz Specialized Mobile Radio Service (SMR), any change that would increase or expand the applicant's existing composite interference contour, except extensions of a composite interference contour over bodies of water that extend beyond county boundaries (i.e., including but not limited to oceans, the Gulf of Mexico, and the Great Lakes) on a secondary basis.

* * * * *

[47 CFR § 1.958](#)

4. Add [§ 1.958](#) to read as follows:

[47 CFR § 1.958](#)

[§ 1.958](#) Distance computation.

The method given in this section must be used to compute the distance between any two locations, except that, for computation of distance involving stations in Canada and Mexico, methods for distance computation specified in the applicable international agreement, if any, must be used instead. The result of a distance calculation under parts 21 and 101 of this chapter must be rounded to the nearest tenth of a kilometer. The method set forth in this paragraph is considered to be sufficiently accurate for distances not exceeding 475 km (295 miles).

(a) Convert the latitudes and longitudes of each reference point from degree-minute-second format to degree-decimal format by dividing minutes by 60 and seconds by 3600, then adding the results to degrees.

$$\text{LATX}_{\text{dd}} = \text{DD} + \frac{\text{MM}}{60} + \frac{\text{SS}}{3600}$$

$$\text{LONX}_{\text{dd}} = \text{DDD} + \frac{\text{MM}}{60} + \frac{\text{SS}}{3600}$$

(b) Calculate the mean geodetic latitude between the two reference points by averaging the two latitudes:

$$\text{ML} = \frac{\text{LAT1}_{\text{dd}} + \text{LAT2}_{\text{dd}}}{2}$$

(c) Calculate the number of kilometers per degree latitude difference for the mean geodetic latitude calculated in paragraph (b) of this section as follows:

$$\text{KPD}_{\text{lat}} = 111.13209 - 0.56605 \cos 2\text{ML} + 0.00120 \cos 4\text{ML}$$

(d) Calculate the number of kilometers per degree of longitude difference for the mean geodetic latitude calculated in paragraph (b) of this section as follows:

$$\text{KPD}_{\text{lon}} = 111.41513 \cos 5\text{ML} - 0.09455 \cos 3\text{ML} + 0.00012 \cos 5\text{ML}$$

(e) Calculate the North-South distance in kilometers as follows:

$$\text{NS} = \text{KPD}_{\text{lat}} \times (\text{LAT1}_{\text{dd}} - \text{LAT2}_{\text{dd}})$$

(f) Calculate the East-West distance in kilometers as follows:

$$\text{EW} = \text{KPD}_{\text{lon}} \times (\text{LON1}_{\text{dd}} - \text{LON2}_{\text{dd}})$$

(g) Calculate the distance between the locations by taking the square root of the sum of the squares of the East-West and North-South distances:

$$\text{DIST} = \sqrt{\text{NS}^2 + \text{EW}^2}$$

(h) Terms used in this section are defined as follows:

- (1) LAT_{1dd} and LON_{1dd} are the coordinates of the first location in degree-decimal format.
- (2) LAT_{2dd} and LON_{2dd} are the coordinates of the second location in degree-decimal format.
- (3) ML is the mean geodetic latitude in degree-decimal format.
- (4) KPD_{lat} is the number of kilometers per degree of latitude at a given mean geodetic latitude.
- (5) KPD_{lon} is the number of kilometers per degree of longitude at a given mean geodetic latitude.
- (6) NS is the North-South distance in kilometers.
- (7) EW is the East-West distance in kilometers.
- (8) DIST is the distance between the two locations, in kilometers.

[47 CFR § 1.959](#)

5. Add [§ 1.959](#) to read as follows:

[47 CFR § 1.959](#)

[§ 1.959](#) Computation of average terrain elevation.

Except as otherwise specified in [§ 90.309\(a\)\(4\)](#) of this chapter, average terrain elevation must be calculated by computer using elevations from a 30 second point or better topographic data file. The file must be identified. If a 30 second point data file is used, the elevation data must be processed for intermediate points using interpolation techniques; otherwise, the nearest point may be used. In cases of dispute, average terrain elevation determinations can also be done manually, if the results differ significantly from the computer derived averages.

(a) Radial average terrain elevation is calculated as the average of the elevation along a straight line path from 3 to 16 kilometers (2 and 10 miles) extending radially from the antenna site. If a portion of the radial path extends over foreign territory or water, such portion must not be included in the computation of average elevation unless the radial path again passes over United States land between 16 and 134 kilometers (10 and 83 miles) away from the station. At least 50 evenly spaced data points for each radial should be used in the computation.

(b) Average terrain elevation is the average of the eight radial average terrain elevations (for the eight cardinal radials).

(c) For locations in Dade and Broward Counties, Florida, the method prescribed above may be used or average terrain elevation may be assumed to be 3 meters (10 feet).

[47 CFR § 1.1102](#)

[§ 1.1102](#) [Amended][47 CFR § 1.1102](#)

6. In the table in [§ 1.1102](#), revise page 19 of the table by removing row entry 16.h. "Air Ground Individual". The revised page 19 is set forth below.

17. Cellular a. New; Major Mod. Additional Facility; Major Renewal/Mod (Per Call Sign) (Electronic Filing Required)	601 & 159	\$340.00	CMC	Federal Communications Commission Wireless Bureau Applications (ELT) P.O. Box 358994 Pittsburgh, PA 15251-5994
b. Minor Modification; Minor Renewal/Mod (Per Call Sign) (Electronic Filing Required)	601 & 159	\$90.00	CDC	Federal Communications Commission Wireless Bureau Applications (FLT) P.O. Box 358994 Pittsburgh, PA 15251-5994
c. Assignment of License; Transfer of Control (Full or Partial) (Per Call Sign) Spectrum Leasing (Electronic Filing Required)	603 & 159 603-T & 159	\$340.00	CMC	Federal Communications Commission Wireless Bureau Applications (ELT) P.O. Box 358994 Pittsburgh, PA 15251-5994
d. Notice of Extension of Time to Complete Construction; (Per Request) Renewal (Per Call Sign) (Electronic Filing Required)	601 & 159	\$55.00	CAC	Federal Communications Commission Wireless Bureau Applications (ELT) P.O. Box 358994 Pittsburgh, PA 15251-5994
e. Special Temporary Authority (Per Request)	601 & 159	\$295.00	CLC	Federal Communications Commission Wireless Bureau Applications P.O. Box 358130 Pittsburgh, PA 15251-5130
f. Special Temporary Authority (Per Request) (Electronic Filing)	601 & 159	\$295.00	CLC	Federal Communications Commission Wireless Bureau Applications (ELT) P.O. Box 358994 Pittsburgh, PA 15251-5994
g. Combining Cellular Geographic Areas (Per Area) (Electronic Filing Required)	601 & 159	\$75.00	CBC	Federal Communications Commission Wireless Bureau Applications (ELT) P.O. Box 358994 Pittsburgh, PA 15251-5994

[47 CFR § 1.2003](#)[§ 1.2003](#) [Amended][47 CFR § 1.2003](#)

*19307 7. In [§ 1.2003](#), remove the entry for "FCC 409 Airborne Mobile Radio Telephone License Application;".

PART 22--PUBLIC MOBILE SERVICES

8. The authority citation for part 22 continues to read as follows:

Authority: [47 U.S.C. 154](#), [222](#), [303](#), [309](#) and [332](#).

[47 CFR § 22.1](#)

9. In [§ 22.1](#), revise paragraph (b) to read as follows:

[47 CFR § 22.1](#)

[§ 22.1](#) Basis and purpose.

* * * * *

(b) Purpose. The purpose of these rules is to establish the requirements and conditions under which radio stations may be licensed and used in the Public Mobile Services.

[47 CFR § 22.3](#)

10. In [§ 22.3](#), revise paragraph (b) to read as follows:

[47 CFR § 22.3](#)

[§ 22.3](#) Authorization required.

* * * * *

(b) Authority for subscribers to operate mobile or fixed stations in the Public Mobile Services, except for certain stations in the Rural Radiotelephone Service, is included in the authorization held by the licensee providing service to them. Subscribers are not required to apply for, and the FCC does not accept applications from subscribers for, individual mobile or fixed station authorizations in the Public Mobile Services, except that individual authorizations are required to operate rural subscriber stations in the Rural Radiotelephone Service under certain circumstances. See [§ 22.703](#).

[47 CFR § 22.7](#)

11. Revise [§ 22.7](#) to read as follows:

[47 CFR § 22.7](#)

[§ 22.7](#) General eligibility.

Any entity, other than those precluded by section 310 of the Communications Act of 1934, as amended, [47 U.S.C. 310](#), is eligible to hold a license under this part. Applications are granted only if the applicant is legally, financially, technically and otherwise qualified to render the proposed service.

[47 CFR § 22.99](#)

12. Amend in [§ 22.99](#), by revising the definitions for "Air-Ground Radiotelephone Service", "Cellular Radiotelephone Service", "Channel", "Communications channel", "Control *19308 channel", "Ground station", "Offshore Radiotelephone Service", "Public Mobile Services", and "Rural Radiotelephone Service", and by removing the terms "Meteor burst propagation mode", "Radio Common Carrier", and "Wireline Common Carrier" to read as follows:

[47 CFR § 22.99](#)

[§ 22.99](#) Definitions.

Air-Ground Radiotelephone Service. A radio service in which licensees are authorized to offer and provide radio telecommunications service for hire to subscribers in aircraft.

* * * * *

Cellular Radiotelephone Service. A radio service in which licensees are authorized to offer and provide cellular service for hire to the general public. This service was formerly titled Domestic Public Cellular Radio Telecommunications Service.

* * * * *

Channel. The portion of the electromagnetic spectrum assigned by the FCC for one emission. In certain circumstances, however, more than one emission may be transmitted on a channel.

* * * * *

Communications channel. In the Cellular Radiotelephone and Air-Ground Radiotelephone Services, a channel used to carry subscriber communications.

* * * * *

Control channel. In the Cellular Radiotelephone Service and the Air-Ground Radiotelephone Service, a channel used to transmit information necessary to establish or maintain communications. In the other Public Mobile Services, a channel that may be assigned to a control transmitter.

* * * * *

Ground station. In the Air-Ground Radiotelephone Service, a stationary transmitter that provides service to airborne mobile stations.

* * * * *

Offshore Radiotelephone Service. A radio service in which licensees are authorized to offer and provide radio telecommunication services for hire to subscribers on structures in the offshore coastal waters of the Gulf of Mexico.

* * * * *

Public Mobile Services. Radio services in which licensees are authorized to offer and provide mobile and related fixed radio telecommunication services for hire to the public.

* * * * *

Rural Radiotelephone Service. A radio service in which licensees are authorized to

offer and provide radio telecommunication services for hire to subscribers in areas where it is not feasible to provide communication services by wire or other means.

* * * * *

[47 CFR § 22.143](#)

13. Revise paragraph (d)(4) of [§ 22.143](#) to read as follows:

[47 CFR § 22.143](#)

[§ 22.143](#) Construction prior to grant of application.

* * * * *

(d) * * *

(4) For any construction or alteration that would exceed the requirements of § 17.7 of this chapter, the licensee has notified the appropriate Regional Office of the Federal Aviation Administration (FAA Form 7460-1), filed a request for antenna height clearance and obstruction marking and lighting specifications (FCC Form 854) with the FCC at WTB, Spectrum Management Resources and Technologies Division, 1270 Fairfield Road, Gettysburg, PA 17325, or electronically via the FCC Antenna Structure Registration home page, wireless.fcc.gov/antenna/.

* * * * *

[47 CFR § 22.157](#)

[§ 22.157](#) [Removed]

[47 CFR § 22.157](#)

14. Remove [§ 22.157](#).

[47 CFR § 22.159](#)

[§ 22.159](#) [Removed]

[47 CFR § 22.159](#)

15. Remove [§ 22.159](#).

[47 CFR § 22.161](#)

[§ 22.161](#) [Removed]

[47 CFR § 22.161](#)

16. Remove [§ 22.161](#).

[47 CFR § 22.313](#)

[§ 22.313](#) [Amended]

[47 CFR § 22.313](#)

17. Remove and reserve paragraphs (a)(3) and (a)(5) of [§ 22.313](#).

[47 CFR § 22.351](#)

18. Revise [§ 22.351](#) to read as follows:

[47 CFR § 22.351](#)

[§ 22.351](#) Channel assignment policy.

The channels allocated for use in the Public Mobile Services are listed in the applicable subparts of this part. Channels and channel blocks are assigned in such a manner as to facilitate the rendition of service on an interference-free basis in each service area. Except as otherwise provided in this part, each channel or channel block is assigned exclusively to one licensee in each service area. All applicants for, and licensees of, stations in the Public Mobile Services shall cooperate in the selection and use of channels in order to minimize interference and obtain the most efficient use of the allocated spectrum.

[47 CFR § 22.352](#)

19. In [§ 22.352](#), revise the first sentence of the introductory text, to read as follows:

[47 CFR § 22.352](#)

[§ 22.352](#) Protection from interference.

Public Mobile Service stations operating in accordance with applicable FCC rules and the terms and conditions of their authorizations are normally considered to be non-interfering. * * *

* * * * *

[47 CFR § 22.357](#)

20. Revise [§ 22.357](#) to read as follows:

[47 CFR § 22.357](#)

[§ 22.357](#) Emission types.

Any authorized station in the Public Mobile Services may transmit emissions of any type(s) that comply with the applicable emission rule, i.e. [§ 22.359](#), [§ 22.861](#) or [§ 22.917](#).

[47 CFR § 22.359](#)

21. Revise [§ 22.359](#) to read as follows:

[47 CFR § 22.359](#)

[§ 22.359](#) Emission limitations.

The rules in this section govern the spectral characteristics of emissions in the Public Mobile Services, except for the Air-Ground Radiotelephone Service (see [§ 22.861](#), instead) and the Cellular Radiotelephone Service (see [§ 22.917](#), instead).

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 30 kHz or more. In the 60 kHz bands immediately outside and adjacent to the authorized frequency range or channel, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 30 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) Alternative out of band emission limit. Licensees in the Public Mobile Services may establish an alternative out of band emission limit to be used at specified frequencies (band edges) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) Interference caused by out of band emissions. If any emission from a ***19309** transmitter operating in any of the Public Mobile Services results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

[47 CFR § 22.361](#)

[§ 22.361](#) [Removed]

[47 CFR § 22.361](#)

22. Remove [§ 22.361](#).

[47 CFR § 22.363](#)

[§ 22.363](#) [Removed]

[47 CFR § 22.363](#)

23. Remove [§ 22.363](#).

[47 CFR § 22.367](#)

[§ 22.367](#) [Removed]

[47 CFR § 22.367](#)

24. Remove [§ 22.367](#).

[47 CFR § 22.373](#)

[§ 22.373](#) [Removed]

[47 CFR § 22.373](#)

25. Remove [§ 22.373](#).

[47 CFR § 22.379](#)

[§ 22.379](#) [Removed]

[47 CFR § 22.379](#)

26. Remove [§ 22.379](#).

[47 CFR § 22.381](#)

[§ 22.381](#) [Removed]

[47 CFR § 22.381](#)

27. Remove [§ 22.381](#).

[47 CFR § 22.401](#)

28. In [§ 22.401](#), the first sentence of the introductory text is revised to read as follows:

[47 CFR § 22.401](#)

[§ 22.401](#) Description and purposes of developmental authorizations.

Eligible entities (see [§ 22.7](#)) may apply for, and the FCC may grant, authority to construct and operate one or more transmitters subject to the rules in this subpart and other limitations, waivers and/or conditions that may be prescribed. * * *

* * * * *

[47 CFR § 22.411](#)

[§ 22.411](#) [Removed]

[47 CFR § 22.411](#)

29. Remove [§ 22.411](#).

[47 CFR § 22.415](#)

[§ 22.415](#) [Removed]

[47 CFR § 22.415](#)

30. Remove [§ 22.415](#).

[47 CFR § 22.417](#)

[§ 22.417](#) [Removed]

[47 CFR § 22.417](#)

31. Remove [§ 22.417](#).

[47 CFR § 22.531](#)

[§ 22.531](#) [Amended]

[47 CFR § 22.531](#)

32. Remove and reserve paragraphs (a) and (b) of [§ 22.531](#).

[47 CFR § 22.539](#)

[§ 22.539](#) [Removed]

[47 CFR § 22.539](#)

33. Remove [§ 22.539](#).

[47 CFR § 22.551](#)

[§ 22.551](#) [Removed]

[47 CFR § 22.551](#)

34. Remove [§ 22.551](#).

[47 CFR § 22.563](#)

[§ 22.563](#) [Removed]

[47 CFR § 22.563](#)

35. Remove [§ 22.563](#).

[47 CFR § 22.565](#)

[§ 22.565](#) [Amended]

[47 CFR § 22.565](#)

36. Remove paragraph (g) of [§ 22.565](#).

[47 CFR § 22.569](#)

[§ 22.569](#) [Removed]

[47 CFR § 22.569](#)

37. Remove [§ 22.569](#).

[47 CFR § 22.577](#)

[§ 22.577](#) [Removed]

[47 CFR § 22.577](#)

38. Remove [§ 22.577](#).

[47 CFR § 22.591](#)

[§ 22.591](#) [Amended]

[47 CFR § 22.591](#)

39. In [§ 22.591](#), in the introductory text, remove the table entitled "Microwave channels", and remove and reserve paragraph (b).

[47 CFR § 22.593](#)

40. Revise [§ 22.593](#) to read as follows:

[47 CFR § 22.593](#)

[§ 22.593](#) Effective radiated power limits.

The effective radiated power of fixed stations operating on the channels listed in [§ 22.591](#) must not exceed 150 Watts. The equivalent isotropically radiated power of existing fixed microwave stations (2110-2130 and 2160-2180 MHz) licensed under this part (pursuant to former rules) must not exceed the applicable limits set forth in § 101.113 of this chapter.

[47 CFR § 22.601](#)

41. Revise the section heading and introductory text of [§ 22.601](#) to read as follows:

[47 CFR § 22.601](#)

[§ 22.601](#) Existing microwave stations licensed under this part.

Existing microwave stations (2110-2130 and 2160-2180 MHz) licensed under this part (pursuant to former rules) are subject to the transition rules in [§ 22.602](#). No new microwave systems will be authorized under this part.

* * * * *

[47 CFR § 22.602](#)

42. Revise the introductory paragraph of [§ 22.602](#) to read as follows:

[47 CFR § 22.602](#)

[§ 22.602](#) Transition of the 2110-2130 and 2160-2180 MHz channels to emerging technologies.

The 2110-2130 and 2160-2180 MHz microwave channels formerly listed in [§ 22.591](#) have been re-allocated for use by emerging technologies (ET) services. No new systems will be authorized under this part. The rules in this section provide for a transition period during which existing Paging and Radiotelephone Service (PARS) licensees using these channels may relocate operations to other media or to other fixed channels, including those in other microwave bands. For PARS licensees relocating operations to other microwave bands, authorization must be obtained under part 101 of this chapter.

* * * * *

[47 CFR § 22.625](#)

43. Revise paragraph (a) of [§ 22.625](#) to read as follows:

[47 CFR § 22.625](#)

[§ 22.625](#) Transmitter locations.

* * * * *

(a) 928-960 MHz. In this frequency range, the required minimum distance separation between co-channel fixed transmitters is 113 kilometers (70 miles).

* * * * *

[47 CFR § 22.655](#)

[§ 22.655](#) [Removed]

[47 CFR § 22.655](#)

44. Remove [§ 22.655](#).

[47 CFR § 22.725](#)

45. In [§ 22.725](#), revise section heading, the first sentence of the introductory text, and by removing paragraph (c) to read as follows:

[47 CFR § 22.725](#)

[§ 22.725](#) Channels for conventional rural radiotelephone stations and basic exchange telephone radio systems.

The following channels are allocated for paired assignment to transmitters that provide conventional rural radiotelephone service and to transmitters in basic exchange telephone radio systems. * * *

* * * * *

[47 CFR § 22.727](#)

[§ 22.727](#) [Amended]

[47 CFR § 22.727](#)

46. Remove paragraph (f) of [§ 22.727](#).

[47 CFR § 22.729](#)

[§ 22.729](#) [Removed]

[47 CFR § 22.729](#)

47. Remove [§ 22.729](#).

[47 CFR § 22.757](#)

48. Revise [§ 22.757](#) to read as follows:

[47 CFR § 22.757](#)

[§ 22.757](#) Channels for basic exchange telephone radio systems.

The channels listed in [§ 22.725](#) are also allocated for paired assignment to transmitters in basic exchange telephone radio systems.

[47 CFR § 22.801](#)

49. Revise [§ 22.801](#) to read as follows:

[47 CFR § 22.801](#)

[§ 22.801](#) Scope.

The rules in this subpart govern the licensing and operation of air-ground stations and systems. The licensing and operation of these stations and systems is also subject to rules elsewhere in this part and in part 1 of this chapter that generally apply to the Public Mobile Services. In case of conflict, however, the rules in this subpart govern.

[47 CFR § 22.803](#)

[47 CFR § 22.807](#)

50. [Section 22.803](#) is amended as follows:

- a. Redesignate [§ 22.803](#) as [§ 22.807](#).
- b. Revise the newly designated section heading.
- c. Revise the introductory text.
- d. Revise paragraphs (b)(1) and (b)(2).
- e. Remove paragraph (c).

The revisions read as follows:

[47 CFR § 22.807](#)

[§ 22.807](#) General aviation air-ground station application requirements.

In addition to the information required by subparts B and D of this part, FCC Form 601 applications for authorization to operate a general aviation air-ground station must contain the applicable supplementary information described in this section.

* * * * *

(b) Technical information. The following information is required by FCC Form 601.

(1) Location description, city, county, state, geographic coordinates (NAD83) correct to <plus-minus>1 second, site elevation above mean sea level, proximity to adjacent market boundaries and international borders;

***19310** (2) Antenna height to tip above ground level, antenna gain in the maximum lobe, the electric field polarization of the wave emitted by the antenna when installed as proposed;

* * * * *

[47 CFR § 22.811](#)

[§ 22.811](#) [Removed]

[47 CFR § 22.811](#)

51. Remove [§ 22.811](#).

[47 CFR § 22.815](#)

52. Revise [§ 22.815](#) to read as follows:

[47 CFR § 22.815](#)

[§ 22.815](#) Construction period for general aviation ground stations.

The construction period (see § 1.946 of this chapter) for general aviation ground stations is 12 months.

[47 CFR § 22.819](#)

[§ 22.819](#) [Removed]

[47 CFR § 22.819](#)

53. Remove [§ 22.819](#).

[47 CFR § 22.853](#)

54. Add [§ 22.853](#) to read as follows:

[47 CFR § 22.853](#)

[§ 22.853](#) Eligibility to hold interest in licenses limited to 3 MHz of spectrum.

No individual or entity may hold, directly or indirectly, a controlling interest in licenses authorizing the use of more than three megahertz of spectrum (either shared or exclusive) in the 800 MHz commercial aviation Air-Ground Radiotelephone Service frequency bands (see [§ 22.857](#)). Individuals and entities with either de jure or de facto control of a licensee in these bands will be considered to have a controlling interest in its license(s). For purposes of this rule, the definitions of "controlling interests" and "affiliate" set forth in paragraphs (c)(2) and (c)(5) of § 1.2110 of this chapter shall apply.

[47 CFR § 22.857](#)

55. Revise [§ 22.857](#) introductory text to read as follows:

[47 CFR § 22.857](#)

[§ 22.857](#) Frequency bands.

The 849-851 MHz and 894-896 MHz frequency bands are designated for paired nationwide exclusive assignment to the licensee or licensees of systems providing radio telecommunications service, including voice and/or data service, to persons on board aircraft. Air-ground systems operating in these frequency bands are referred to in this part as "commercial aviation" systems.

* * * * *

[47 CFR § 22.859](#)

56. Revise [§ 22.859](#) to read as follows:

[47 CFR § 22.859](#)

[§ 22.859](#) Incumbent commercial aviation air-ground systems.

This section contains rules concerning continued operation of commercial aviation air-ground systems that were originally authorized prior to January 1, 2004 to provide radiotelephone service using narrowband (6 kHz) channels, and that have been providing service continuously since the original commencement of service (hereinafter "incumbent systems").

(a) An incumbent system may continue to operate under its authorization, for the remaining term of such authorization, subject to the terms and conditions attached thereto. Wherever such technical and operational conditions differ from technical and operational rules in this subpart, those conditions shall govern its operations.

(b) Notwithstanding any other provision in this chapter, the licensee of an incumbent system shall not be entitled to an expectation of renewal of said authorization.

(c) During the period that an incumbent system continues to operate and provide service pursuant to paragraph (a) of this section, air-ground systems of licensees holding a new authorization for the spectrum within which the incumbent system operates must not cause interference to the incumbent system. Protection from interference requires that the signals of the new systems must not exceed a ground station received power of -130 dBm within a 6 kHz receive bandwidth, calculated assuming a 0 dBi vertically polarized receive antenna.

[47 CFR § 22.861](#)

57. Revise [§ 22.861](#) to read as follows:

[47 CFR § 22.861](#)

[§ 22.861](#) Emission limitations.

The rules in this section govern the spectral characteristics of emissions for commercial aviation systems in the Air-Ground Radiotelephone Service. Commercial aviation air-ground systems may use any type of emission or technology that complies with the technical rules in this subpart.

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) Alternative out of band emission limit. The licensee(s) of commercial aviation air-ground systems, together with affected licensees of Cellular Radiotelephone Service systems operating in the spectrum immediately below and adjacent to the commercial aviation air-ground bands, may establish an alternative out of band emission limit to be used at the 849 MHz and 894 MHz band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) Interference caused by out of band emissions. If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

[47 CFR § 22.863](#)

58. Revise [§ 22.863](#) to read as follows:

[47 CFR § 22.863](#)

[§ 22.863](#) Frequency stability.

The frequency stability of equipment used under this subpart shall be sufficient to ensure that, after accounting for Doppler frequency shifts, the occupied bandwidth of the fundamental emissions remains within the authorized frequency bands of operation.

[47 CFR § 22.865](#)

[§ 22.865](#) [Removed]

[47 CFR § 22.865](#)

59. Remove [§ 22.865](#).

[47 CFR § 22.867](#)

60. Revise [§ 22.867](#) to read as follows:

[47 CFR § 22.867](#)

[§ 22.867](#) Effective radiated power limits.

The effective radiated power (ERP) of ground and airborne stations operating on the frequency ranges listed in [§ 22.857](#) must not exceed the limits in this section.

(a) The peak ERP of airborne mobile station transmitters must not exceed 12 Watts.

(b) The peak ERP of ground station transmitters must not exceed 500 Watts.

[47 CFR § 22.869](#)

[§ 22.869](#) [Removed]

[47 CFR § 22.869](#)

61. Remove [§ 22.869](#).

[47 CFR § 22.871](#)

[§ 22.871](#) [Removed]

[47 CFR § 22.871](#)

62. Remove [§ 22.871](#).

[47 CFR § 22.873](#)

63. Revise [§ 22.873](#) to read as follows:

[47 CFR § 22.873](#)

[§ 22.873](#) Construction requirements for commercial aviation air-ground systems.

Licensees authorized to use more than one megahertz (1 MHz) of the 800 MHz commercial aviation air-ground *19311 spectrum allocation (see [§ 22.857](#)) must make a showing of "substantial service" as set forth in this section. Failure by any such licensee to meet this requirement will result in forfeiture of the license and the licensee will be ineligible to regain it. Licensees authorized to use one megahertz or less of the 800 MHz commercial aviation air-ground spectrum allocation are not subject to the requirements in this section.

(a) "Substantial service" is defined as service that is sound, favorable, and substantially above a level of mediocre service that just might minimally warrant renewal.

(b) Each commercial aviation air-ground system subject to the requirements of this section must demonstrate substantial service within 5 years after grant of the authorization. Substantial service may be demonstrated by, but is not limited to, either of the following "safe harbor" provisions:

(1) Construction and operation of 20 ground stations, with at least one ground station located in each of the 10 Federal Aviation Administration regions; or,

(2) Provision of service to the airspace of 25 of the 50 busiest airports (as measured by annual passenger boardings).

[47 CFR § 22.875](#)

[§ 22.875](#) [Removed]

[47 CFR § 22.875](#)

64. Remove [§ 22.875](#).

[47 CFR § 22.877](#)

65. Add [§ 22.877](#) to read as follows:

[47 CFR § 22.877](#)

[§ 22.877](#) Unacceptable interference to Part 90 non-cellular 800 MHz licensees from commercial aviation air-ground systems.

The definition of unacceptable interference to non-cellular part 90 licensees in the 800 MHz band from commercial aviation air-ground systems is the same as the definition set forth in § 22.970 which is applicable to Cellular Radiotelephone Service systems.

[47 CFR § 22.878](#)

66. Add [§ 22.878](#) to read as follows:

[47 CFR § 22.878](#)

[§ 22.878](#) Obligation to abate unacceptable interference.

This section applies only to commercial aviation ground stations transmitting in the 849-851 MHz band, other than commercial aviation ground stations operating under the authority of a license originally granted prior to January 1, 2004.

(a) Strict responsibility. Any licensee who, knowingly or unknowingly, directly or indirectly, causes or contributes to causing unacceptable interference to a non-cellular part 90 licensee in the 800 MHz band, as defined in [§ 22.877](#), shall be strictly accountable to abate the interference, with full cooperation and utmost diligence, in the shortest time practicable. Interfering licensees shall consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in [§ 22.879](#). This strict responsibility obligation applies to all forms of interference, including out-of-band emissions and intermodulation.

(b) Joint and Several responsibility. If two or more licensees, whether in the commercial aviation air-ground radiotelephone service or in the Cellular Radiotelephone Service (see § 22.971), knowingly or unknowingly, directly or indirectly, cause or contribute to causing unacceptable interference to a non-cellular part 90 licensee in the 800 MHz band, as defined in [§ 22.877](#), such licensees shall be jointly and severally responsible for abating interference, with full cooperation and utmost diligence, in the shortest practicable time.

(1) This joint and several responsibility rule requires interfering licensees to consider all feasible interference abatement measures, including, but not limited to, the remedies specified in the interference resolution procedures set forth in [§ 22.879\(c\)](#). This joint and several responsibility rule applies to all forms of interference, including out-of-band emissions and intermodulation.

(2) Any licensee that can show that its signal does not directly or indirectly cause or contribute to causing unacceptable interference to a non-cellular part 90

licensee in the 800 MHz band, as defined in [§ 22.877](#), shall not be held responsible for resolving unacceptable interference. Notwithstanding, any licensee that receives an interference complaint from a public safety/CII licensee shall respond to such complaint consistent with the interference resolution procedures set forth in [§ 22.879](#).

[47 CFR § 22.879](#)

67. Add [§ 22.879](#) to read as follows:

[47 CFR § 22.879](#)

[§ 22.879](#) Interference resolution procedures.

This section applies only to commercial aviation ground stations transmitting in the 849-851 MHz band, other than commercial aviation ground stations operating under the authority of a license originally granted prior to January 1, 2004.

(a) Initial notification. Commercial aviation air-ground system licensees may receive initial notification of interference from non-cellular part 90 licensees in the 800 MHz band pursuant to § 90.674(a) of this chapter.

(1) Commercial aviation air-ground system licensees shall join with part 90 ESMR licensees and Cellular Radiotelephone Service licensees in utilizing an electronic means of receiving the initial notification described in § 90.674(a) of this chapter. See § 22.972.

(2) Commercial aviation air-ground system licensees must respond to the initial notification described in § 90.674(a) of this chapter as soon as possible and no later than 24 hours after receipt of notification from a part 90 public safety/CII licensee. This response time may be extended to 48 hours after receipt from other part 90 non-cellular licensees provided affected communications on these systems are not safety related.

(b) Interference analysis. Commercial aviation air-ground system licensees-- who receive an initial notification described in § 90.674(a) of this chapter-- shall perform a timely analysis of the interference to identify the possible source. Immediate on-site visits may be conducted when necessary to complete timely analysis. Interference analysis must be completed and corrective action initiated within 48 hours of the initial complaint from a part 90 public safety/CII licensee. This response time may be extended to 96 hours after the initial complaint from other part 90 non-cellular licensees provided affected communications on these systems are not safety related. Corrective action may be delayed if the affected licensee agrees in writing (which may be, but is not required to be, recorded via e-mail or other electronic means) to a longer period.

(c) Mitigation steps. Any commercial aviation air-ground system that is responsible for causing unacceptable interference to non-cellular part 90 licensees in the 800 MHz band shall take affirmative measures to resolve such interference.

(1) Commercial aviation air-ground system licensees found to contribute to unacceptable interference, as defined in [§ 22.877](#), shall resolve such interference in the shortest time practicable. Commercial aviation air-ground system licensees

must provide all necessary test apparatus and technical personnel skilled in the operation of such equipment as may be necessary to determine the most appropriate means of timely eliminating the interference. However, the means whereby interference is abated or the technical parameters that may need to be adjusted is left to the discretion of the commercial aviation air-ground system licensee, whose affirmative measures *19312 may include, but not be limited to, the following techniques:

- (i) Increasing the desired power of the public safety/CII signal;
 - (ii) Decreasing the power of the commercial aviation air-ground system signal;
 - (iii) Modifying the commercial aviation air-ground system antenna height;
 - (iv) Modifying the commercial aviation air-ground system antenna characteristics;
 - (v) Incorporating filters into the commercial aviation air-ground system transmission equipment;
 - (vi) Changing commercial aviation air-ground system frequencies; and
 - (vii) Supplying interference-resistant receivers to the affected public safety/CII licensee(s). If this technique is used, in all circumstances, commercial aviation air-ground system licensees shall be responsible for all costs thereof.
- (2) Whenever short-term interference abatement measures prove inadequate, the affected part 90 non-cellular licensee shall, consistent with but not compromising safety, make all necessary concessions to accepting interference until a longer-term remedy can be implemented.
- (3) When a part 90 public safety licensee determines that a continuing presence of interference constitutes a clear and imminent danger to life or property, the licensee causing the interference must discontinue the associated operation immediately, until a remedy can be identified and applied. The determination that a continuing presence exists that constitutes a clear and imminent danger to life or property, must be made by written statement that:
- (i) Is in the form of a declaration, notarized affidavit, or statement under penalty or perjury, from an officer or executive of the affected public safety licensee;
 - (ii) Thoroughly describes the basis of the claim of clear and imminent danger;
 - (iii) Was formulated on the basis of either personal knowledge or belief after due diligence;
 - (iv) Is not proffered by a contractor or other third party; and,
 - (v) Has been approved by the Chief of the Wireless Telecommunication Bureau or other designated Commission official. Prior to the authorized official making a determination that a clear and imminent danger exists, the associated written statement must be served by hand-delivery or receipted fax on the applicable offending licensee, with a copy transmitted by the fastest available means to the

Washington, DC office of the Commission's Wireless Telecommunications Bureau.

[47 CFR § 22.880](#)

68. Add [§ 22.880](#) to read as follows:

[47 CFR § 22.880](#)

[§ 22.880](#) Information exchange.

(a) Prior notification. Public safety/CII licensees may notify a commercial aviation air-ground system licensee that they wish to receive prior notification of the activation or modification of a commercial aviation air-ground system ground station site in their area. Thereafter, the commercial aviation air-ground system licensee must provide the following information to the public safety/CII licensee at least 10 business days before a new ground station is activated or an existing ground station is modified:

- (1) Location;
- (2) Effective radiated power;
- (3) Antenna manufacturer, model number, height above ground level and up tilt angle, as installed;
- (4) Channels available for use.

(b) Purpose of prior notification. The prior notification of ground station activation or modification is for informational purposes only: public safety/CII licensees are not afforded the right to accept or reject the activation of a proposed ground station or to unilaterally require changes in its operating parameters. The principal purposes of prior notification are to:

- (1) Allow a public safety licensee to advise the commercial aviation air-ground system licensee whether it believes a proposed ground station will generate unacceptable interference;
- (2) Permit commercial aviation air-ground system licensee(s) to make voluntary changes in ground station parameters when a public safety licensee alerts them to possible interference; and
- (3) Rapidly identify the source if interference is encountered when the ground station is activated.

[47 CFR § 22.1003](#)

69. Revise [§ 22.1003](#) to read as follows:

[47 CFR § 22.1003](#)

[§ 22.1003](#) Eligibility.

Any eligible entity (see [§ 22.7](#)) may apply for central station license(s) and/or

offshore subscriber licenses under this subpart.

PART 90--PRIVATE LAND MOBILE RADIO SERVICES

70. The authority citation for part 90 continues to read as follows:

Authority: Sections 4(i), 11, 303(g), 303(r), and 332(c)(7) of the Communications Act of 1934, as amended, [47 U.S.C. 154\(i\)](#), [161](#), [303\(g\)](#), [303\(r\)](#), [332\(c\)\(7\)](#).

[47 CFR § 90.309](#)

71. Revise [§ 90.309\(a\)\(1\)](#) to read as follows:

[47 CFR § 90.309](#)

[§ 90.309](#) Tables and figures.

(a) * * *

(1) Using the method specified in [§ 1.958](#) of this chapter, determine the distances between the proposed land mobile base station and the protected co-channel television station and between the proposed land mobile base station and the protected adjacent channel television station. If the exact mileage does not appear in table A for protected co-channel television stations (or table B for channel 15 in New York and Cleveland and channel 16 in Detroit) or table E for protected adjacent channel television stations, the next lower mileage separation figure is to be used.

* * * * *

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