Section 73.699 curves.[80] However, the Vega Report does not provide an analysis of the data to support such a claim. Nor does SMR explain its statement, in referring to the data provided in the Vega Report, that "as can be seen by the tabulated results . . . the readings at the 28 dBu contour point consistently showed reliable service." In the absence of such analysis or explanation, and because of our concerns about the data that was collected (*see* paras. 46-47, *supra*) we could not consider use of this data to support any recalculation or reevaluation of the 220 MHz service contour.

49. SMR also asserts that Commission's decision in the *220 MHz Third Report and Order* to protect the 38 dBu contour of incumbent licensees is "inconsistent with actions taken with respect to incumbent licensees in substantially similar radio services."[81] In support of this contention, SMR discusses previous Commission actions — such as the decision to employ a 32 dBu contour in determining a cellular licensee's Cellular Geographic Service Area,[82] and the decision to modify the protection criteria for Multipoint Distribution Service stations[83] — and claims that because of the Commission's actions in these decisions, we must take similar actions in the 220 MHz service.

50. We do not disagree with SMR's observation that the Commission has in the past made adjustments to the contours that it has employed in other services. The Commission has done so in instances where it believed such adjustments were appropriate and justified. As we indicate throughout this discussion, however, we do not believe that the petitioners and commenters in this proceeding have provided adequate support for their various requests to modify the service contour for the 220 MHz service.

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[80] If this were the case, it could be considered justification for revising our determination of the location of predicted field strength contours for the 220 MHz service.

[81] SMR Third Order Petition at 4.

[82] *See* Amendment of Part 22 of the Commission's Rules To Provide for Filing and Processing of Applications for Unserved Areas in the Cellular Service and To Modify Other Cellular Rules, CC Docket No. 90-6, Second Report and Order, 7 FCC Rcd 2449 (1992).

[83] *See* Amendment of Parts 21, 43, 74, 78 and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands Affecting Private Operational Fixed Microwave Service, Multipoint Distribution Service, Multichannel Multipoint Distribution Service, Instructional Television Fixed Service, and Cable Television Relay Service, Second Order on Reconsideration, Gen. Docket Nos. 90-54 and 80-113, 10 FCC Rcd 7074 (1995).

(c) TCG Report and PERS Comments

51. INTEK, in its reply comments, furnishes a report by the Trott Communications Group (TCG Report)[84] designed to "analyze the effects of both the FCC's existing co-channel protection rules and those proposed by INTEK and other parties."[85] The TCG Report, in attempting to justify the use of the 28 dBu protected service contour for the 220 MHz service, observes that the receiver input power for a 28 dBu field strength at 220 MHz is roughly equivalent to the receiver input power for a 40 dBu field strength at 855 MHz,[86] and therefore concludes that "at the service area boundary of 40 dBu at 855 MHz, the same level of performance can be expected as at a service area boundary of 28 dBu at 220 MHz."[87] The TCG Report also provides a pictorial view of the predicted 28 dBu signal of a Roamer One, Inc.[88] base station in the St. Louis, Missouri, area, calculated using the station's operating parameters and the Section 73.699 curves (Figure 10), and overlays a "propagation plot" using the same operating parameters and the Okumura/Hata Extended propagation model. The TCG Report observes that "the 28 dBu service contour closely approximates the actual coverage area expected from this site at these operational parameters."[89] Based on these showings, the TCG Report concludes that the protected service area for 220 MHz stations should be defined at the 28 dBu contour.

52. The mathematical calculations in the TCG Report indicate a similarity between the received power of a 28 dBu signal at 220 MHz and a 40 dBu signal at 855 MHz. However, as we have discussed in connection with the Grade A and Grade B contours,[90] there are a number of factors, in addition to operating frequency, that must be taken into account in determining a system's appropriate service contour. It is also interesting to note that when the 120 km separation distance, along with the 38 dBu protection criteria, were developed by the Commission in 1991 in the *220 MHz Report and Order*, petitioners could have sought reconsideration of those decisions based on this plausible "mathematical" argument (as presented in the TCG Report). In the absence of "real world" data from 220 MHz systems

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[84] We cite this submission as the "TCG Report."

[85] INTEK Third Order Reply at 3.

[86] This frequency approximates the mean frequency of 800 MHz and 900 MHz systems.

[87] TCG Report at 1-2 (unpaginated).

[88] INTEK is the parent company of Roamer One, Inc. *See* note 24, *supra*.

[89] TCG Report at 2 (unpaginated).

[90] *See* paras. 37-42, *supra*.

(because such systems were not yet in use at that time) petitioners could have used this argument as being an appropriate criterion for distinguishing the 220 MHz band from the 800 MHz and 900 MHz bands. Yet, they did not.[91]

53. As to the claim in the TCG Report that the "28 dBu service contour closely approximates the actual coverage area expected" at the St. Louis base station site, we observe that the predicted 28 dBu contour based on the Section 73.699 curves is approximately 27 miles in radius. The predicted plot shown of the 28 dBu signal using the Okumura/Hata model, which takes into account the terrain surrounding the base station, indicates a non-circular coverage area that, on average, extends about 27 miles from the base station site. We do not see the connection between this showing, which indicates that the predicted coverage of the station based on the actual terrain surrounding the station is similar to the predicted coverage of the station based on the Section 73.699 curves, and the TCG Report's call for the adoption of a 28 dBu protected service contour. In our view, the showing only confirms the validity of the field strength curves in Section 73.699 and does not provide justification for modifying the Commission's existing 38 dBu service contour for the 220 MHz service.

54. PERS asks that we "adopt co-channel separation that properly protects the performance of all [Phase I and Phase II] systems based on the real-world operation of these systems,"[92] and provides a showing to support its argument that we revisit our Phase I/Phase II separation criteria. Specifically, PERS provides three figures that show predicted field strength values in the areas surrounding three different base station sites in the New England area using an unspecified terrain model.[93] Additional figures show the predicted 38 dBu and 28 dBu service contours in the vicinity of these stations, calculated using the Section 73.699 curves.

55. PERS states that the "28 dBu contour comes the closest to the actual real-world coverage in the actual propagation study . . . ."[94] However, PERS's showings only demonstrate that in areas surrounding a base station where the terrain lends itself to greater signal propagation, the 28 dBu signal level as shown by PERS extends beyond the predicted 28 dBu contour as determined by the Section 73.699 curves; while in areas where the terrain lends itself to weaker signal propagation, the 28 dBu signal level as shown by PERS extends less than the distance of the predicted 28 dBu contour as determined by the Section 73.699

[91] *See also* note 34, *supra.*

[92] PERS Third Order Comments at 3 (unpaginated).

[93] *Id.* at Exhibits 1A, 1B, and 1C. PERS indicates that these figures provide "a propagation study done using formulations refined and verified over the past three years." *Id.* at 4 (unpaginated).

[94] *Id.* at 4 (unpaginated).

curves. As we previously concluded with regard to the TCG Report, we do not see how this type of showing justifies modification of the existing 38 dBu service contour for the 220 MHz service.

(2) Use of Single Sideband Technology

56. AMTA contends that the 220 MHz protection criteria should be changed because of the use by Phase I licensees of single sideband (SSB), rather than FM technology.[95] In particular, AMTA asserts that mobile stations are more likely to suffer from interference due to their use of SSB instead of FM, because FM, with its "capture" effect, enables mobile stations to hear only the desired signal "as long as the undesired signal is at least 10 dB down," while mobile stations using SSB "hear both signals in areas of overlap, irrespective of the relative signal strength of the signals."[96] Petitioners, however, beyond making these observations, do not explain why the use of SSB technology by licensees in the 220 MHz band is reason for changing the 220 MHz service contour from 38 dBu to 28 dBu. In the absence of such explanations, we conclude that petitioners' observations do not provide a sufficient basis for modification of the Commission's protection criteria.

(3) Minimum Co-Channel Distance

57. In its reply comments, SMR asserts that "in order to provide 10 dBu [*sic*] interference protection to the Phase I licensee's 28 dBu contour" we should provide a minimum co-channel distance of 170 km unless "unique terrain or other features justify a lesser distance separation," in which case the Phase II licensee "should be permitted to demonstrate that it could provide 10 dB protection to the 28 dBu contour of the Phase I licensee at the lesser distance."[97]

58. The Commission's rules call for a "standard" 120 km distance separation between co-channel 220 MHz stations, but allow Phase II licensees to afford less than 120 km protection to Phase I stations if they provide 10 dB protection to the 38 dBu contour of the Phase I stations. The 120 km distance results when both the Phase I and Phase II stations are

[95] AMTA Third Order Petition at 7.

[96] *Id.* PERS also notes that "the prevalent use of single-sideband rather than conventional FM technology to meet the technical requirements the Commission established for its 220-222 MHz allocation demands greater co-channel protection to achieve the appropriate service level," and that "the mere fact that sideband operation does not provide the receiver capture effect of FM should underscore the need for further consideration." PERS Third Order Comments at 4 (unpaginated).

[97] SMR Third Order Reply at 7-8.

operating at maximum facilities (*i.e.*, 500 watts ERP and 150 meters HAAT).[98] The provision that allows Phase II licensees to provide 10 dB protection to the 38 dBu contour of the Phase I station[99] enables Phase II licensees to take into consideration the fact that their station or the Phase I station (or both) may be operating at less than maximum facilities, and therefore enables these licensees to locate their stations at a distance less than 120 km from the Phase I station.[100]

59. AMTA, INTEK, SMR, and PERS, in their petitions, call for a change to this rule to require Phase II licensees to provide 10 dB protection to the 28 dBu contour of the Phase I licensee. If such a rule were adopted, the 120 km distance separation, which was based on the provision of 10 dB protection to a 38 dBu contour using the maximum allowable power and antenna height for the 220 MHz service, would have to be recalculated to reflect a separation based on 10 dB protection to a 28 dBu contour. Assuming use of the same maximum allowable power and antenna height, this separation would be the 170 km distance that SMR proposes. It is not clear, however, from SMR's reply comments whether it is simply proposing that, in conjunction with a change of the protected contour from 38 dBu to 28 dBu, we should: (1) concurrently change the "standard" separation distance from 120 km to 170 km; or (2) provide for a *uniform* 170 km separation (regardless of either licensee's power level or antenna height) — with distances of less than 170 km allowed only in areas that contain "unique terrain or other features."

60. The former interpretation of SMR's petition, *i.e.*, changing the standard separation distance, would be a logical consequence if we decided to change the protected contour for Phase I stations from 38 dBu to 28 dBu.[101] The latter interpretation would require a Phase II licensee operating at somewhat less than maximum allowable power and antenna height to protect a Phase I licensee as if both licensees were operating *at* the maximum allowable

[98] Using the Section 73.699 curves, the distance of the 38 dBu F(50,50) contour of a protected station operating at 500 watts ERP and 150 meters is calculated to be 45 km, and the distance of the 28 dBu F(50,10) contour of an interfering station operating at 500 watts ERP and 150 meters is calculated to be 75 km. These figures, when added together, produce the 120 km co-channel separation distance.

[99] *See* Section 90.763(b)(1) of the Commission's Rules, 47 C.F.R. § 90.763(b)(1).

[100] This is accomplished by employing the Section 73.699 curves (Figures 10 and 10a) to calculate the appropriate separation distance, based on the use of the 38 dBu F(50,50) contour for the Phase I station and the 28 dBu F(50,10) contour for the Phase II station.

[101] Because we have decided not to change the protected contour for Phase I stations, we have not changed the standard separation distance between Phase I and Phase II stations.

parameters.[102] If SMR is proposing that Phase II licensees uniformly provide 170 km protection to Phase I licensees, except in areas of "unique terrain or other features," it does not provide an explanation for requesting this degree of protection.

(4) Provision of Greater Than 10 dB Protection

61. PCIA and SEA contend that in order to adequately protect Phase I stations, we should provide greater than 10 dB protection to the existing service contour. PCIA states that, for the 800 MHz and 900 MHz services, the Commission agreed that "there needed to be a minimum of 18 dB signal difference between the desired and undesired signals for 'routine' short-spacing in order to prevent co-channel interference," but that in this proceeding the Commission "has decided to go back to the 10 dB signal difference, thereby going back to a rule which the previously found did not adequately protect co-channel licensees."[103] PCIA asserts that "there is no valid rationale to treat incumbent 220 MHz licensees differently from incumbent 800 MHz licensees."[104] PCIA also argues that our decision was adopted "even though licensees and manufacturers have demonstrated that 220 MHz systems 'in the real world' cover areas in excess of the Commission's initial prediction."

62. At the outset, we emphasize that since the initiation of this proceeding with the *Third Notice*, neither the Commission nor any commenters had, until now, suggested that the current 10 dB protection criteria be increased. Regarding the merits of PCIA's arguments, we first question PCIA's claim that the Commission made its decision to employ a 10 dB protection for 220 MHz licensees in the face of demonstrations that 220 MHz systems cover areas beyond the Commission's initial prediction. At the time the Commission made that decision in the 220 MHz Third Report and Order, there were, in fact, claims of coverage beyond what was predicted, but no evidence or demonstrations of such coverage were provided; and as discussed elsewhere in this Order, we do not believe that petitioners have provided adequate justification in this proceeding for claims of greater coverage. Additionally, we note that PCIA provides no discussion or technical analysis in support of its contention that we provide greater than 10 dB protection for Phase I licensees. In the absence

[102] For example, an 18 dBu interfering contour for a Phase II station operating at maximum parameters (*i.e.*, 500 watts ERP/150 meters HAAT) is 104 km, but an 18 dBu interfering contour for a Phase II station operating at 100 watts ERP/50 meters HAAT is only 64 km. Thus, under SMR's apparent proposal, a Phase II licensee operating at these lesser parameters and attempting to provide 10 dB protection to the 28 dBu contour of a Phase I licensee would have to locate its base station 40 km farther from the Phase I base station than necessary. And if the *Phase I* licensee, too, was operating at less than maximum parameters, the Phase II licensee would have to locate its base station an even greater distance from the Phase I base station than necessary.

[103] PCIA Third Order Petition at 3.

[104] *Id.* at 3-4.

of such discussion, we cannot reasonably consider the adoption of PCIA's proposal, and we reject its recommendation to increase the protection criteria for 220 MHz stations.

63. SEA, in its comments, notes that employing an 18 dB protection ratio to a 38 dBu service contour would increase the "nominal Phase I-to-Phase II co-channel separation distance to about 140 km."[105] It therefore recommends that 140 km "be the minimum geographic separation between co-channel stations."[106] SEA, however, does not provide any discussion or rationale in support of its position,[107] and we thus reject its recommendation, as well.

(5) Protection of Phase I Systems

64. With regard to the general issue of co-channel interference, AMTA believes that such interference affects the operation of both Phase I and Phase II stations, and therefore believes that "there is a commonality of interest between Phase I and Phase II operators in seeing that the FCC adopts co-channel separation criteria that properly protect the performance of all systems."[108]

65. With regard to co-channel interference between Phase I systems, AMTA notes that, while it believes that technical considerations support "an improved co-channel separation standard" between such systems, because Phase I stations are operating pursuant to the existing protection criteria, it does not recommend any change to the "Phase I to Phase I protection requirements." Rather, it states that the industry "hopes to resolve whatever [Phase I to Phase I] interference problems [that] arise without FCC involvement."[109]

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[105] SEA Third Order Comments at 13.

[106] *Id.* Employing the Section 73.699 curves, the separation between a Phase II station providing 10 dB protection to a Phase I station (where both stations are operating at maximum parameters) is 120 km. The 140 km distance recommended by SEA results from a Phase II station providing 18 dB protection to a Phase I station — again, where both stations are operating at maximum parameters.

[107] The Vega Report also contends that an 18 dB protection ratio "is the more appropriate measurement for the 220 MHz service" but similarly provides no technical justification for this assertion. *See* Vega Report at 5 n.17.

[108] AMTA Third Order Petition at 4. AMTA also notes that it anticipates that many Phase I incumbents will become successful Phase II licensees because of their existing investment and commitment to the 220 MHz industry. *See id.* at 3 n.5.

[109] *Id.* at 4 n.7.

66. AMTA also observes that "the likelihood of [resolving Phase I to Phase I interference problems] is significantly increased because both parties will be subject to identical regulatory obligations and entitled to identical regulatory protection," remarking that "unlike the Phase I/II separation criteria adopted in the Order, neither party will have superior regulatory rights."[110]

67. AMTA, however, does not provide an explanation as to why it believes that Phase II licensees have "superior regulatory rights," nor does it explain how the rules we have adopted for Phase I and Phase II operations might affect the resolution of interference disputes between Phase I and Phase II licensees. We therefore do not believe that AMTA's observations lend support to its claim that Phase I/Phase II separation criteria should be modified.

2. Calculation of Service Contour

68. In the *220 MHz Third Report and Order*, the Commission determined that Phase II EA and Regional licensees should be required to locate their base stations at least 120 km from the base stations of co-channel Phase I licensees, except that such licensees should be permitted to locate their base stations less than 120 km from the base stations of co-channel Phase I licensees if they provide 10 dB protection to the predicted 38 dBu service contour of the base stations of co-channel Phase I licensees.[111] The Commission also decided that the predicted 38 dBu contour of the Phase I licensees would be calculated based on the licensee's authorized ERP and HAAT — not on the maximum allowable ERP and HAAT provided in the Commission's rules for the 220-222 MHz band.[112] The Commission required licensees to operate at their initially authorized ERP and HAAT, and did not permit licensees to seek modification of their authorization to operate at a higher ERP or HAAT.[113] The Commission further determined that licensees operating at power levels lower than their initially authorized ERP would be required to seek modification of their authorization to reflect the lower ERP.[114]

69. SEA, PCIA, INTEK, and SMR disagree with the Commission's decision to require Phase I licensees to modify their authorizations to reflect the system's actual ERP, and

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[110] *Id.*

[111] *220 MHz Third Report and Order*, 12 FCC Rcd at 11025 (para. 173).

[112] *Id.* at 11026 (para. 174).

[113] *Id.*

[114] *Id.*

to define the service area based upon actual ERP.[115] PCIA contends that this is a departure from previous Commission policy for Part 90.[116] PCIA and SEA argue that these requirements will result in a significant reduction in the protection afforded to Phase I licensees.[117] Several parties contend that a Phase I licensee's service area should be defined based on maximum authorized power and height levels.[118] INTEK claims that using maximum facility values will strike the appropriate balance between the interests of Phase I and Phase II licensees.[119]

70. We disagree with petitioners. As indicated in the *220 MHz Third Report and Order*, the Commission's goal was to provide service to the public.[120] In authorizing Phase II licensees to serve a particular geographic area, the Commission sought to allow them to serve "any portion" of that area, "except for portions of the area already being served by co-channel Phase I licensees."[121] The area "already being served" by co-channel Phase I licensees plainly cannot be calculated based on an assumption of the use by such licensees of maximum allowable operating parameters. Nor should this area be calculated based on the licensee's authorized ERP, if the licensee is not operating at its authorized ERP. Rather, it is the area the licensee was serving at the time the decisions adopted in the *220 MHz Third Report and Order* became effective,[122] and must therefore be calculated based on the licensee's ERP and HAAT at that time.[123]

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[115] PCIA Third Order Petition at 2-3; SEA Third Order Comments at 13-14; INTEK Third Order Petition at 5-8; SMR Third Order Reply at 8-9.

[116] PCIA Third Order Petition at 2; *see also* SMR Third Order Reply at 9 (arguing that using maximum facility values to determine a licensee's protected service area will more closely track Commission actions in other services).

[117] PCIA Third Order Petition at 2-3; SEA Third Order Comments at 14.

[118] INTEK Third Order Petition at 5-6; PCIA Third Order Petition at 2-3; SEA Third Order Comments at 14; SMR Third Order Reply at 8-9.

[119] INTEK Third Order Petition at 7-8.

[120] *220 MHz Third Report and Order*, 12 FCC Rcd at 11026 (para. 174).

[121] *Id.*

[122] The decisions adopted in the 220 MHz Third Report and Order became effective on August 21, 1997.

[123] For licensees that relocated from their initially authorized base station site to a new location, in accordance with the provisions of the *220 MHz Second Report and Order*, that new location would likely be at a different HAAT than the initial base station site. The Commission allowed such licensees to be authorized at that new HAAT, even if it was higher than their initially authorized HAAT, but did not permit them to obtain

71. In asserting that the *220 MHz Third Report and Order* is inconsistent with previous Part 90 policy, PCIA points to the Commission's actions in protecting Part 90, Subpart S[124] systems from co-channel interference based on maximum allowable ERP. Specifically, PCIA cites the use of the Table in Section 90.621(b)(4) of the Commission's Rules that identifies appropriate co-channel separation distances between existing stations and proposed "short-spaced"[125] stations based on the operating parameters of such stations. While it is true that the Table assumes that existing stations are considered to be operating at maximum allowable ERP, it is important to note that the Table was designed to provide licensees seeking to "short-space" with a simple, uncomplicated method for doing so that did not require the submission of a technical showing.[126]

72. In developing the Table, the Commission decided that the distance separations would be based on the more conservative approach of providing 18 dB of protection to the 40 dBu contour of an existing station,[127] and of assuming that existing stations were operating at maximum allowable ERP.[128] However, the Commission indicated that an entity providing a technical showing as part of a request to short-space to an existing station by waiver could base that showing on the existing station's *actual* power and antenna height.[129] We therefore

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authorization at a higher ERP. *See* paras. 175-184, *infra*. The area being served by a Phase I licensee that relocated its base station is therefore calculated based on the HAAT and the ERP of the relocated base station.

[124] Operations in the 800 MHz and 900 MHz services are governed by Subpart S of Part 90 of the Commission's Rules, 47 C.F.R. §§ 90.601-90.699.

[125] The term "short-spacing" in Subpart S of Part 90 refers to the locating of base stations at distances closer than the standard separation distance between co-channel Subpart S stations (*i.e.*, 113 km (70 miles)).

[126] Prior to the use of the Table, applicants seeking to short-space without gaining the consent of all affected co-channel licensees were required to file a waiver request that included a technical showing demonstrating 10 dB protection to the 40 dBu contour of all existing co-channel facilities. *See* Amendment of Part 90 of the Commission's Rules to Permit the Short-Spacing of Specialized Mobile Radio Systems Upon Concurrence from Co-Channel Licensees, PR Docket No. 90-34, Report and Order, 6 FCC Rcd 4929 (para. 5) (1991) (*Short-Spacing Report and Order*).

[127] *Id.* at 4931 (para. 14). *See also* Amendment of Part 90 of the Commission's Rules to Permit the Short-Spacing of Specialized Mobile Radio Systems Upon Concurrence from Co-Channel Licensees, PR Docket No. 90-34, Memorandum Opinion and Order, 7 FCC Rcd 6069 (para. 2) (1992) (*Short-Spacing Memorandum Opinion and Order*).

[128] Co-channel Protection Criteria for Part 90, Subpart S Stations Operating Above 800 MHz, PR Docket No. 90-60, Report and Order, 8 FCC Rcd 7293, 7295-96 (para. 13) (1993).

[129] *See Short-Spacing Report and Order*, 6 FCC Rcd at 4936 (n.44) (1991). *See also Short-Spacing Memorandum Opinion and Order* 7 FCC Rcd at 6070 (para. 7) (1992).

disagree with PCIA's assertion that our use of the Table in Section 90.621(b)(4) for the 800 MHz and 900 MHz services demands that we protect Phase I 220 MHz licensees based on the maximum allowable ERP for the 220 MHz band.[130] Rather, we believe that the Commission's decision in the *220 MHz Third Report and Order* to protect Phase I licensees in accordance with their actual facilities is not inconsistent with Commission practices in those services.

73. We continue to believe that our goal should be to facilitate the provision of 220 MHz service to the public. In accomplishing this, we must attempt to ensure that such service is not denied to any geographic areas in the Nation. If we were to assume that all 220 MHz Phase I licensees are operating at the maximum power and antenna height for the 220 MHz service — 500 watts ERP and 150 meters HAAT, respectively — when many are not operating at such parameters and may never operate at such parameters,[131] we could force Phase II licensees to provide considerably greater protection to co-channel Phase I licensees than necessary, and thereby potentially deny service to the public in areas beyond the Phase I licensee's actual 38 dBu service contour.[132]

74. A 220 MHz Phase I license was granted by the Commission based on a specific location and operating parameters. There was no guarantee that the licensee would be allowed to alter its operating parameters without the possibility of competing applications from others wishing to serve this territory.[133] Similarly, we cannot assume that Phase I licensees that were operating at a particular ERP at the time of the decisions adopted in the *220 MHz Third Report and Order* became effective will some day increase that ERP to their authorized power level. And again, to protect a Phase I licensee's base station in accordance with a power level that the licensee *might* employ at some time in the future could deny service to the public.

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[130] We assume that SMR, in stating that "applying maximum facilities" in determining a Phase I licensee's service contour "will more closely track actions in other services" is, too, referencing the Commission's rules that apply to Subpart S stations. SMR Third Order Reply at 9.

[131] A height of 150 meters is roughly equivalent to the height of 50-story building.

[132] The 38 dBu service contour based on maximum operating parameters (*i.e.*, 500 watts ERP and 150 meters HAAT) is approximately 28 miles. The 38 dBu service contour of a base station with operating parameters of 100 watts ERP and 150 meters HAAT, for example, is approximately 20 miles. Thus, if we were to calculate the 38 dBu service contour for such a base station *based* on maximum operating parameters, a potential loss of service to the public could occur in the area between 20 and 28 miles of the Phase I licensee's base station (an area of approximately 1,200 square miles).

[133] In the *220 MHz Third Report and Order*, for example, the Commission emphasized that it did "not think it would be appropriate to allow Phase I licensees to expand their service areas by increasing their power and antenna height without the filing of mutually exclusive applications." *220 MHz Third Report and Order*, 12 FCC Rcd at 11026 (para. 174).

75. We thus conclude that the decision made by the Commission in the *220 MHz Third Report and Order* regarding the method to be used to calculate the 38 dBu service contour of Phase I base stations[134] is appropriate, and requests for the adoption of alternative methods made by petitioners are therefore denied. The Wireless Telecommunications Bureau will issue a Public Notice following the adoption of this Order announcing when applications must be filed by Phase I, non-nationwide licensees in order to enable such licensees to comply with the requirement that they modify their authorization to reflect the ERP at which they were operating at the time the decisions adopted in the *220 MHz Third Report and Order* became effective.

3. Emission Masks

76. In the *220 MHz Third Report and Order*, the Commission decided to eliminate the emission mask at the edge of "inside" channels for Phase I and Phase II licensees authorized on contiguous channel assignments.[135] The Commission concluded that, because licensees constructing base stations must adhere to the required co-channel separation criteria with respect to all co-channel licensees in their areas, the increased strength of out-of-band signals would not result in any increased likelihood of harmful interference to co-channel licensees.[136] This decision met with a generally favorable response.[137] Both Glenayre and PCIA remark that the Commission's action will permit licensees to use the most efficient technology for the service they offer.[138] Comtech, however, raises a concern that "the revised rule section 90.733(d) and (e) only address instances in which licensees use channels that are wider than 5 kHz [and that the] regulations do not clearly address circumstances in which licensees combine multiple authorizations to use channels wider than 5 kHz," and petitions us to clarify this matter.[139]

77. Under the revised rule Section 90.733, the emission limits in Section 90.212(f) must be met only at the outermost edges of contiguous channels. The rule does not address contiguous channels under only one authorization — Section 90.733 simply uses the term "authorized contiguous channels." Therefore, we clarify that emission limits must be met *only*

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[134] *See id.*

[135] *Id.* at 11000-01 (para. 122).

[136] *Id.*

[137] Glenayre Third Order Petition at 2; PCIA Third Order Reply at 2.

[138] Glenayre Third Order Petition at 2; PCIA Third Order Reply at 2.

[139] Comtech Third Order Petition at 10-11.

at the outermost edges of contiguous channels, including those cases in which licensees combine multiple authorizations that result in contiguous channels. As the Commission indicated in the *220 MHz Third Report and Order*, because licensees operating on contiguous channels will be providing required protection to all co-channel licensees in their area, interference will not occur to those licensees as a result of the elimination of the emission mask on all "inside" channels. Thus, so long as licensees combining multiple authorizations to create a contiguous channel block maintain the required co-channel protection on all of the channels that comprise the channel block, we clarify that such licensees will be permitted to eliminate the emission mask on all "inside" channels.

4. Antenna Height Above Average Terrain vs. Antenna Height Above Ground

78. In the 220 MHz service, the Commission's rules specify maximum allowable power, both for stations operating on base station frequencies (*i.e.*, channels in the 220-221 MHz band) and for stations operating on mobile station frequencies (*i.e.*, channels in the 221-222 MHz band). In both instances, the maximum allowable power is related to the height of the transmitting antenna. The maximum allowable ERP of a base station, or of a fixed station operating on base station frequencies, is provided in a Table in Section 90.729(a) of the Commission's Rules, and is a function of HAAT.[140] The maximum allowable ERP of stations operating on mobile frequencies is provided in a formula in Section 90.729(b) of the Commission's Rules as a function of the height of the antenna above ground.[141] SEA petitions the Commission to calculate the maximum allowable ERP of stations operating on mobile frequencies based on HAAT, and INTEK also comments in favor of using the HAAT standard.[142]

79. SEA advocates restricting antenna height to 7 meters above average terrain rather than 7 meters above ground, and characterizes the above-ground standard as a weakening of the rule.[143] SEA believes that measuring antenna height above ground could lead to violations

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[140] 47 C.F.R. § 90.729(a). For references to HAAT in the text of the *220 MHz Third Report and Order*, see 12 FCC Rcd at 11008 (para. 139), 11013 (para. 148), 11026 (para. 174).

[141] 47 C.F.R. § 90.729(b). For references to height above ground in the text of the *220 MHz Third Report and Order*, see 12 FCC Rcd at 11007-08 (paras. 138-139), 11012 (para. 145), 11013-14 (paras. 150-151). *See also* Sections 90.729(c) and 90.733(h)(4) of the Commission's Rules, 47 C.F.R. §§ 90.729(c), 90.733(h)(4).

[142] SEA Third Order Petition at 2-5; SEA Third Order Comments at 2; INTEK Third Order Comments at 7.

[143] SEA Third Order Comments at 2.

of the intent of the rule, and could cause disruptive interference.[144] According to SEA, allowing construction of fixed and paging antennas in the 221-222 MHz band at 7 meters above ground could permit greater ERP from a paging station operating at a high site than would be allowed by a standard 220-221 MHz repeater transmitter, because the ERP of the standard 220-221 MHz repeater transmitter is a function of HAAT.[145] SEA therefore requests that Sections 90.729(b) and 90.729(c) be modified to reference HAAT instead of height above ground.[146]

80. We agree with SEA and grant its request to modify Sections 90.729(b) and 90.729(c). We believe that it is appropriate to require the height limitation for stations operating on the 221-222 MHz frequencies to be associated with the HAAT of the station's transmitting antenna, rather than the antenna's height above ground. This rule was adopted to minimize interference to adjacent channel operations on the 221-222 MHz channels. By requiring licensees operating stations in this band to limit the height of their transmitting antenna to 7 meters HAAT, we will eliminate instances of licensees inadvertently causing interference to adjacent channel operations by transmitting at an antenna height of 7 meters above ground at a particularly high elevation.[147] We also agree with SEA that Section 90.729(c), too, should be modified to indicate that the height restriction of base stations operating on channels 196-200 must be associated with such station's transmitting antenna HAAT, rather than the antenna's height above ground. Modification of this rule in this manner will similarly eliminate instances of inadvertent interference to adjacent channel operations in the 221-222 MHz band from transmissions on these channels.

[144] SEA Third Order Petition at 2-3.

[145] *Id.* at 3-4.

[146] *Id.* at 4-5 & n.6. Section 90.729(c) of the Commission's Rules places limitations on the height and power of base stations operating on Channels 196-200. The height limit in this rule is associated with the station transmitting antenna's height above ground. 47 C.F.R. § 90.729(c).

[147] As currently provided in Section 90.729(b) of the Commission's Rules, a licensee may operate a station at a height greater than 7 meters above ground so long as it reduces its power in accordance with the formula provided in that section. In modifying Section 90.729(b) to limit the height of transmitting antennas to 7 meters HAAT, we also modify the rule to indicate that licensees may operate a station at a height greater than 7 meters HAAT so long as they reduce their power in accordance with the formula. 47 C.F.R. § 90.729(b).

5. Allowable Power Limit for Mobile Channels

81. For the 220 MHz service, the maximum allowable power for transmissions on mobile channels (channels in the 221-222 MHz band) is 50 watts ERP.[148] As the Commission explained in the *220 MHz Third Report and Order*, this restriction is necessary to ensure that such transmissions, including transmissions on mobile channels by licensees operating two-way paging systems, do not cause adjacent channel interference.[149]

82. Comtech and Glenayre petition the Commission to revise the 50 watt ERP limit.[150] Comtech first notes that, with respect to nationwide licensees, there is no danger of interference to co-channel licensees, because no other licensee will be authorized to use their mobile side channels, anywhere in the Nation.[151] Comtech acknowledges, however, that it is adjacent channel users, and not co-channel licensees, that the height and power limitations are intended primarily to protect.[152] Comtech claims that the Commission's approach for the 220 MHz service differs from the Commission's regulations governing similar services.[153] Comtech contends that the potential for interference is no greater in the VHF band than it is for 220-222 MHz systems, and that comparable transmissions in the VHF band are permitted up to 500 watts ERP.[154] Therefore, Comtech argues, the Commission should revise its rule to reflect the same height-power limits and adjacent-channel interference restrictions it provides for the VHF band in Section 22.535 of the Commission's Rules.[155] Glenayre states that limiting the mobile frequency ERP for fixed operations will preclude efficient one-way paging operations, especially for nationwide licensees.[156]

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[148] *See* Section 90.729(b) of the Commission's Rules, 47 C.F.R. § 90.729(b); *220 MHz Third Report and Order*, 12 FCC Rcd at 11007-08 (paras. 138-139), 11013-14 (paras. 150-151). The 50 watt ERP limit applies to all 220 MHz service mobile transmitters, including Phase I and Phase II licensees, both nationwide and non-nationwide.

[149] *220 MHz Third Report and Order*, 12 FCC Rcd at 11007-08 (paras. 138-139), 11013-14 (paras. 150-151).

[150] Comtech Third Order Petition at 4-6; Glenayre Third Order Petition at 4-5.

[151] Comtech Third Order Petition at 4.

[152] *Id.*

[153] *Id.*

[154] *Id.* at 4-5. *See* Sections 22.531 and 22.535 of the Commission's Rules, 47 C.F.R. §§ 22.531, 22.535.

[155] Comtech Third Order Petition at 5, citing 47 C.F.R. § 22.535.

[156] Glenayre Third Order Petition at 4.

83. We do not believe it would be appropriate to grant petitioners' request. In the *220 MHz Third Report and Order*, the Commission decided that fixed stations operating on mobile channels would be limited to 50 watts ERP, with an antenna height of 7 meters above ground, but provided that this height could be exceeded if the power level is decreased below 50 watts ERP in accordance with a formula provided in Section 90.729(b) of the Commission's Rules. The Commission imposed this antenna height limit for fixed stations operating on the 221-222 MHz frequencies because of its concern about the possibility of interference to traditional, two-way land mobile operations if adjacent channel licensees transmitting on these frequencies operated fixed paging stations at high elevations. That is, if a licensee operates a fixed paging station at a high elevation, its signal could interfere with the signal of an adjacent channel mobile station attempting to transmit to its base station receive site.

84. If 220 MHz licensees were to be permitted, as petitioners propose, to operate fixed stations in the 221-222 MHz band at a power level of 500 watts ERP — ten times higher than the current limit — we would have a similar concern about the possibility of interference to adjacent channel 220 MHz land mobile operations. In its comments in this proceeding, SEA — which "petitioned the Commission to strengthen the current rule" with regard to mobile channel operations — argues against petitioners' request to allow an increase in the power limit on the mobile channels, stating that it "vigorously oppose[s] any weakening of [the] rule" relating to operations on such channels.[157] We conclude that permitting 500 watt ERP fixed station transmissions on the mobile channels in the 220 MHz band could cause interference to adjacent channel operations, and therefore reject the adoption of a rule that would allow for such transmissions.

85. Petitioners further argue that, because the Commission permits a 500 watt ERP power level for paging base stations operating on Part 22 VHF channels that are adjacent to channels used for mobile transmissions, we should similarly provide for such power limits in the 220 MHz band. In support of this argument, they contend that the existence of 500 watt ERP stations presents no more potential for interference in the 220-222 MHz band than currently exists in the Part 22 VHF band. We reject petitioners' argument because it assumes a commonality between the technical characteristics of VHF land mobile equipment operating under Part 22 of the Commission's Rules and equipment used in the 220-222 MHz band. The technical characteristics of VHF equipment operating under Part 22 and equipment operating in the 220 MHz band are, of course, not identical. Thus, we cannot accept petitioners'

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[157] *See* SEA Comments at 2. In order to reduce the likelihood of interference to adjacent channel operations in the 220 MHz band, we have, in response to SEA's petition in this instant proceeding, modified Section 90.729(b) and (c) of the Commission's Rules to require licensees operating on channels in the 221-222 MHz band to adhere to an antenna height limit associated with their station antenna's HAAT, rather than the antenna's height above ground. *See* paras. 78-80, *supra*.

contention that the same rules that apply to Part 22 paging operations on channels adjacent to channels used for mobile transmissions should be applied to the 220 MHz band.

86. To illustrate how the Commission's rules currently address similar operations in the 220 MHz band, we turn to Section 90.723(d)-(f) of the Commission's Rules. These rules provide the procedures that 220 MHz licensees must follow to ensure that interference is not caused by base station transmitters operating on channels adjacent to channels used for mobile transmissions. In the 220-222 MHz band, where the base station transmit frequencies are situated immediately below the mobile station transmit frequencies,[158] the possibility exists for interference to the reception of signals at base stations receiving on the lower channels in 221-222 MHz band from transmissions from nearby base stations transmitting on the upper channels in the 220-221 MHz band.

87. The Commission, in developing the original 220 MHz service rules, recognized this possibility for interference, and adopted rules that require geographic separation between Phase I base stations transmitting on the upper 40 channels in the 220-221 MHz band (*i.e.*, channels 161-200, referred to in the Commission's rules as "Sub-band B")[159] and Phase I base stations receiving on the lower 40 channels in the 221-222 MHz band (*i.e.*, channels 1-40, referred to in the Commission's rules as "Sub-band A"). Specifically, the rules require a separation of at least 6 km between Phase I base stations transmitting at 500 watts ERP on Sub-band B channels and base stations receiving on Sub-band A channels if the transmitting channel is within 200 kHz of the receive channel.[160] In the *220 MHz Third Report and Order*, the Commission continued to demonstrate its concern about this type of interference by requiring Phase II licensees transmitting on Sub-band B channels to provide protection to existing Phase I licensees operating on Sub-band A channels in accordance with the provisions of Section 90.723(d);[161] and by requiring Phase II licensees operating on Sub-band B and Sub-

[158] Base station transmit frequencies are located at 220-221 MHz, and mobile station transmit frequencies are located at 221-222 MHz. *See* Section 90.715 of the Commission's Rules, 47 C.F.R. § 90.715.

[159] There are two-hundred 5 kHz channel pairs in the 220 MHz band. They are numbered from "1" to "200." *See* Section 90.715 of the Commission's Rules, 47 C.F.R. § 90.715.

[160] *See* Section 90.723(d) of the Commission's Rules, 47 C.F.R. § 90.723(d). The Commission also provided a Table in Section 90.723(d) that indicates appropriate geographic separations for base stations operating at power levels below 500 watts ERP.

[161] *220 MHz Third Report and Order*, 12 FCC Rcd at 11015 (para. 153); 47 C.F.R. § 90.723(d). *See also* Section 90.723(e) of the Commission's Rules, 47 C.F.R. § 90.723(e).

band A channels to coordinate the location of their base stations with one another to avoid interference.[162]

88. Because the Commission adopted these requirements to ensure that base stations in the 220-221 MHz band do not cause interference to the reception of signals by base station receivers in the adjoining 221-222 MHz band, if we were to allow 500 watt ERP operation by fixed stations transmitting on any and all of the channels in the 221-222 MHz band, we would similarly have to ensure that interference would not be caused to base station receivers attempting to receive signals in that band. To accomplish this in a manner similar to the way we currently protect base station receivers operating on the Sub-band A channels, we would have to require 500 watt ERP fixed stations transmitting on channels in the 221-222 MHz band to afford protection to any base station receive sites up to 200 kHz removed in accordance with provisions similar to those prescribed in Section 90.723.[163] Thus, for example, if a Phase II, nationwide licensee authorized on channels 81-90 sought to operate a 500 watt ERP fixed station on its mobile channels, then it would have to ensure that all licensees operating up to 200 kHz below channel 81 (*i.e.*, channels 41-80) and all licensees operating up to 200 kHz above channel 90 (*i.e.*, channels 91-130) would be protected.

89. For the licensee seeking to operate a fixed station at a power level of 500 watts ERP, protecting a multitude of Phase I, non-nationwide base stations in its geographic area would be a difficult, but not impossible task. This is because all Phase I licensees were initially authorized to construct only one base station, and have now generally completed the construction of their stations. However, protecting all affected Phase II licensees and all affected Phase I nationwide licensees[164] would, realistically, be impossible. This is because, unlike Phase I non-nationwide licensees, who have constructed a single base station that must be protected, Phase II licensees and Phase I nationwide licensees will be continually adding, relocating, and modifying stations as they develop and implement their systems over the

[162] *See* Section 90.723(f) of the Commission's Rules, 47 C.F.R. § 90.723(f).

[163] The Table in Section 90.723(d) provides the geographic separations for base station receive sites operating on Sub-band A channels and base station transmitter sites operating on Sub-band B channels. The 500 watt ERP power limit and 150 meter HAAT limit for stations transmitting in the 220-221 MHz band form the basis for the geographic separations provided in the Table. As discussed in paras. 78-80, *supra*, the Commission will restrict licensees operating fixed stations on 221-222 MHz channels to an antenna height of 7 meters HAAT. So, if we were to develop a table to protect base station receive sites in the 221-222 MHz band from fixed stations operating in that band, then, because of the lower antenna height restriction for fixed stations operating in the 221-222 MHz band, such a table would provide for lesser geographic protection of base station receive sites than provided in the Table in Section 90.723(d).

[164] An "affected" licensee would be a licensee operating on channels up to 200 kHz removed from the channels of the 500 watt ERP fixed station operating in the 221-222 MHz band.

course of their initial ten-year license period and possibly beyond that period. In order not to restrict the development of such licensees' systems, a licensee seeking to operate a fixed station in the 221-222 MHz band at a power level of 500 watts ERP would have to protect all possible sites in an EA or Region where a given EA or Regional licensee might seek to locate a base station, and all possible sites in the Nation where a nationwide licensee might seek to locate a base station. Moreover, we could not simply allow a licensee seeking to operate a 500 watt ERP fixed station to only protect the already-constructed base stations of affected licensees.[165] To do so would deny affected licensees the ability to locate future base stations at any and all available sites.

90. We conclude that the only manner in which a licensee could operate a fixed station in the 221-222 MHz band at a power level of 500 watts ERP without disrupting the operations of other 220 MHz licensees would be for that licensee to gain the consent of all affected 220 MHz licensees to operate such a station. We will therefore permit a licensee seeking to operate fixed stations in the 221-222 MHz band at a power level of 500 watts ERP to seek a waiver of Section 90.729(b) of the Commission's rules if the licensee obtains the consent for such operation from the following licensees authorized on channels up to 200 kHz removed from the channels of the licensee: (1) all nationwide licensees; (2) all Phase II non-nationwide licensees that are authorized in an EA or Region that is located within 6 km of the licensee's proposed fixed station;[166] (3) all Government nationwide users; and (4) all Phase I non-nationwide licensees with a base station that is located within 6 km of the licensee's proposed fixed station.[167]

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[165] Under such a scenario, once a 500 watt ERP fixed station was constructed on a 221-222 MHz channel, all Phase II licensees operating on channels up to 200 kHz removed from that channel would risk interference if they situated their base stations too close to the location of the fixed station.

[166] As discussed in note 163, *supra*, the geographic separations in the Table in Section 90.723(d) are based on the 150 meter HAAT limit for antennas transmitting in the 220-221 MHz band, but because we restrict the antenna height of stations in the 221-222 MHz band to 7 meters HAAT (*see* paras. 78-80, *supra*), a licensee operating a 500 watt ERP fixed station in the 221-222 MHz band would not have to provide as great a degree of geographic protection to base station receive sites as required by the Table. In the absence of a table that provides the geographic separations required to protect 220 MHz base station receive sites from fixed stations operating at an antenna height of 7 meters, however, we will require a licensee seeking the consent of Phase II non-nationwide licensees to operate at a power level of 500 watts ERP to obtain the consent of all such licensees that are authorized in an EA or Region that is located within 6 km of the licensee's proposed fixed station.

[167] In paras. 95-106, *infra*, we provide procedures under which Phase I non-nationwide licensees may modify their authorizations to add additional transmitters within their existing service area or change the operating parameters or location of their base station. We conclude that a licensee seeking the consent of a Phase I non-nationwide licensee to operate at 500 watts ERP will not be required to obtain the consent of that licensee with regard to any additional transmitters for which the licensee obtains authorization. The licensee will only be required to obtain the consent with regard to the licensee's base station, as authorized at the time the licensee

91. Finally, in addressing petitioners' request to permit operations on the 220 MHz mobile channels at a power level of 500 watt ERP, we note Glenayre's contention that limiting the mobile frequency power will "preclude efficient one-way paging, especially for nationwide licensees." SEA, in response, suggests that the "obvious application for the mobile transmit frequency is as a response or 'talk-back' channel for two-way paging." In the *220 MHz Third Report and Order* the Commission did not specify how the mobile channels in the 220 MHz band would be used. They could be used as a response channel (as part of a two-way paging system),[168] or they could be utilized to provide 220 MHz licensees with a second one-way paging channel. We believe the Commission's rules for operation on the mobile channels (*i.e.*, limiting power to 50 watts ERP and antenna height to 7 meters HAAT), will enable 220 MHz licensees who intend to operate paging systems to use these channels to best meet their needs and the needs of their customers — whether this is to implement one-way or two-way paging systems — and will ensure that they do so without causing interference to other licensees in the 220 MHz band.

6. Allowable Power Limit for Nationwide Licensees

92. Comtech and Glenayre petition the Commission to raise the allowable power limit for the base stations of nationwide licensees.[169] Glenayre requests that the Commission permit nationwide licensees to operate their base stations up to a limit of 1400 watts ERP, provided that the transmitter is at least 5 km from a fixed adjacent channel system, with systems within 5 km to be restricted to 500 watts ERP or less, depending on distance, as provided in the Commission's existing rules.[170] Glenayre suggests the Commission could create a sliding scale, similar to the sliding scale established in Section 90.729(a) of the

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seeks the consent. Also, as indicated in note 166, *supra*, in the absence of a table that provides the geographic separations required to protect 220 MHz base station receive sites from fixed stations operating at an antenna height of 7 meters, we will require a licensee seeking the consent of Phase I non-nationwide licensees to operate at a power level of 500 watts ERP to obtain the consent of all such licensees with a base station that is located within 6 km of the licensee's proposed fixed station.

[168] We note that the Commission currently provides spectrum for two-way paging in the narrowband Personal Communications Service. There, the channels in the 901-902 MHz band are specifically identified as paging "response" channels. These channels may also be used by paging licensees authorized in Part 22 and Part 90 to create two-way paging systems. Significantly, the power limit for stations operating on the 901-902 MHz channels is only 7 watts ERP (much lower than the 50 watt ERP limit for stations operating in the 221-222 MHz band).

[169] Glenayre Third Order Petition at 3-5; Comtech Third Order Petition at 4-6.

[170] Glenayre Third Order Petition at 3.

Commission's Rules, for reducing ERP to account for antenna height.[171] Comtech also requests that the maximum ERP be raised to the 1400 watts permitted paging stations in the VHF band.[172]

93. Comtech asks that power limitations imposed by Section 90.729 be modified to reflect that nationwide licensees operate without co-channel interference concerns.[173] Both Glenayre and Comtech stress that raising the permitted ERP is necessary for the competitive operation of 220 MHz service paging systems.[174] Arch and PCIA support Glenayre's and Comtech's proposal to increase the maximum ERP for 220 MHz service nationwide paging base stations to VHF paging levels.[175] Metricom agrees, calling the ERP limit "artificial," and stating that the limit requires the construction of more base stations, thus placing additional and unnecessary costs on nationwide licensees.[176]

94. In the *220 MHz Report and Order*, which established the 220 MHz service, the Commission adopted technical rules for the 220 MHz service, including a rule providing height-power restrictions for stations operating in the 220 MHz band.[177] In the *220 MHz Third Notice*, the Commission did not seek comment with regard to the appropriateness of this rule. Commenters in that proceeding, however, sought modification of the rule with regard to height-power limitations for stations operating in the 221-222 MHz band. Therefore, in the *220 MHz Third Report and Order*, the Commission modified the rule based upon these comments. Commenters, however, did not seek modification of the rule with regard to height-power limitations for stations operating in the 220-221 MHz band, and the Commission did not address or modify these height-power limitations. We therefore view this matter, as raised by petitioners herein, as being beyond the scope of this reconsideration proceeding. We do, however, believe that an increase in the allowable power for nationwide licensees would be acceptable provided that appropriate technical criteria are established to ensure that

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[171] *Id.*

[172] Comtech Third Order Petition at 5. *See* Section 22.535 of the Commission's Rules, 47 C.F.R. § 22.535.

[173] Comtech Third Order Petition at 5-6.

[174] *Id.* at 5; Glenayre Third Order Petition at 5-6.

[175] Arch Third Order Comments at 4; PCIA Third Order Reply at 4. In its reply comments, Arch clarifies that, while it opposes increasing ERP for mobile transmitters, it supports increasing ERP for paging base stations. Arch Third Order Reply at 5.

[176] Metricom Third Order Comments at 7.

[177] *See* Section 90.729 of the Commission's Rules, 47 C.F.R. § 90.729.

interference does not occur to adjacent channel systems. We therefore invite those parties seeking modification of the Commission's rules regarding this matter to submit a petition for rulemaking in order to change the allowable power limit and to develop such criteria.

7. Modification of Phase I Non-Nationwide Licenses

95. Phase I non-nationwide licensees were granted site-specific authorizations. These licensees are authorized to transmit on specific frequencies at a specific set of coordinates. Petitioners point out that neither the *220 MHz Third Report and Order* nor the *220 MHz Second Report and Order* provides a mechanism by which Phase I licensees may modify their authorizations.[178] Petitioners note that in the *220 MHz Third Report and Order*, the Commission stated that Phase I non-nationwide licensees will not be permitted to seek modification of their authorizations to operate at a higher ERP or HAAT.[179] SBT contends that the Commission's position on modifications expresses far more concern for future licensees than for incumbent licensees who are currently providing service to the public.[180] Petitioners also assert that licensees must be permitted to make operational changes that are necessary to maintain the viability of a station and are required in order to compete successfully in the marketplace.[181] Petitioners therefore urge the Commission to adopt procedures for ongoing modifications for Phase I licensees.[182]

96. Several petitioners also urge us to permit Phase I licensees to modify their systems as long as such modifications do not expand their service contour.[183] They note that

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[178] AMTA Third Order Petition at 9-10; SEA Third Order Comments at 14; SMR Third Order Petition at 9; SMR Third Order Reply at 8; USMC Third Order Reply at 3. As explained in para. 8, *supra*, the *220 MHz Second Report and Order* provided a one-time mechanism for Phase I licensees to modify their authorizations.

[179] *See 220 MHz Third Report and Order*, 12 FCC Rcd at 11026 (para. 174); AMTA Third Order Petition at 9-10; INTEK Third Order Petition at 5; PCIA Third Order Petition at 4-5; SEA Third Order Comments at 13.

[180] SBT Third Order Reply at 3-4.

[181] AMTA Third Order Petition at 9; PERS Third Order Comment at 5 (unpaginated); SMR Third Order Reply at 8; *see also* USMC Third Order Reply at 3.

[182] AMTA Third Order Petition at 8-10; INTEK Third Order Petition at 5-7; PERS Third Order Comment at 5 (unpaginated); PCIA Third Order Petition at 4-5; SBT Third Order Reply at 3-4; SEA Third Order Comments at 14-15; SMR Third Order Petition at 9-11; SMR Third Order Comments at 3; SMR Third Order Reply at 8; USMC Third Order Comments at 2-3.

[183] AMTA Third Order Petition at 9-10; INTEK Third Order Petition at 5; PERS Third Order Comment at 5 (unpaginated); PCIA Third Order Petition at 4-5; SEA Third Order Comments at 15; SMR Third Order Petition at 9-11; SMR Third Order Comments at 3; SMR Third Order Reply at 8-9. Petitioners contend that the Phase I

this flexibility has been granted to incumbents in other Part 90 services.[184] SMR also asks that licensees be permitted to modify their system configurations without prior Commission approval, arguing that a similar rule has been approved in the 800 MHz and 900 MHz services.[185] In addition, AMTA requests that we permit Phase I licensees to convert overlapping incumbent systems into a geographic license, as is currently allowed for incumbent 800 MHz and 900 MHz authorizations.[186]

97. We recognize that licensed sites may become unusable for a variety of reasons.[187] We are also persuaded by petitioners' arguments that, in order to maintain the economic and technical viability of a licensee's 220 MHz service, Phase I incumbent licensees should be permitted to modify their authorizations (*e.g.*, to relocate their base station, to change the ERP or HAAT of their base station) as long as doing so does not expand their service contour, as we have defined that contour in this proceeding. Such licensees will therefore be permitted to make those modifications to their authorizations that do not expand their 38 dBu service contour.[188] Phase I licensees will also be able to add additional transmitters within their 38 dBu service contour without prior authorization from the Commission, *e.g.*, to fill in "dead spots" in coverage or to reconfigure their systems to increase capacity within their service area, so long as signals from such transmitters do not expand their 38 dBu service contour.

98. We note that a Phase I licensee who relocates under the criteria set forth in the *220 MHz Second Report and Order* (and as further considered below in this Order)[189] must first establish its 38 dBu service contour at its new base station site in accordance with the Commission's rules for relocation before it can take advantage of the flexibility provided in

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licensees' service contours should be variously defined, *e.g.*, by their 28 dBu contour (AMTA Third Order Petition at 10; INTEK Third Order Petition at 5-6), their original 38 dBu contour (SEA Third Order Comments at 15), and at maximum facilities (PCIA Third Order Petition at 4-5; SMR Third Order Comments at 3; SMR Third Order Reply at 8-9).

[184] AMTA Third Order Petition at 8-10; INTEK Third Order Petition at 6-7; SEA Third Order Comments at 14-15; SMR Third Order Comments at 3; SMR Third Order Reply at 8.

[185] SMR Third Order Petition at 10-11.

[186] AMTA Third Order Petition at 9-10.

[187] For example, deconstruction of a tower site, refusal of a site lessor to extend a lease, or introduction of incurable interference at a site.

[188] A licensee's 38 dBu service contour shall be calculated in accordance with the provisions contained in paras. 68-75, *supra*.

[189] *See* paras. 167-174, *infra*.

this section. Phase I licensees, however, will be required to notify the Commission of any changes in technical parameters or additional stations constructed through a minor modification of their license. These modification applications will not be subject to public notice and petition to deny provisions in the Commission's rules, or mutually exclusive applications.

99. As discussed in paras. 81-91, *supra*, the Commission's Rules require geographic separation between Phase I base stations transmitting on the upper 40 channels in the 220-221 MHz band (*i.e.*, channels 161-200, referred to in the Commission's rules as "Sub-band B") and Phase I base stations receiving on the lower 40 channels in the 221-222 MHz band (*i.e.*, channels 1-40, referred to in the Commission's rules as "Sub-band A"). Also, as indicated *supra*, in the *220 MHz Third Report and Order*, the Commission's Rules require Phase II licensees transmitting on Sub-band B channels to provide geographic protection to Phase I licensees operating on Sub-band A channels;[190] and require Phase II licensees operating on Sub-band B and Sub-band A channels to coordinate the location of their base stations with one another to avoid interference.[191] Our decision herein to permit Phase I, non-nationwide licensees to modify their authorizations to add additional transmitter sites or change the operating parameters or location of their base station, however, raises interference concerns if such stations are authorized to licensees operating in Sub-bands A and B.

100. First, with respect to potential interference among Phase I licensees, we believe that Phase I licensees authorized on Sub-bands A or B channels that may seek to add additional transmitter sites or change the operating parameters or location of their base station should be required to coordinate such actions in a manner similar to the way that Phase II licensees authorized on Sub-bands A and B channels must coordinate the location of their base stations under Section 90.723(f) of the Commission's Rules. Thus, to ensure that appropriate geographic separations are maintained if licensees authorized on Sub-bands A or B channels seek modifications to add additional transmitter sites or change the operating parameters or location of their base station, we will require licensees authorized on Sub-bands A or B channels to coordinate such actions with one another to avoid interference. These licensees must include with their application for a minor modification of their authorization,[192] a certification that the station has been appropriately coordinated.

101. Second, under Section 90.723(e) we currently require Phase II licensees authorized on Sub-band B channels, in locating their base stations, to provide geographic

[190] *See* Section 90.723(e) of the Commission's Rules, 47 C.F.R. § 90.723(e).

[191] *See* Section 90.723(f) of the Commission's Rules, 47 C.F.R. § 90.723(f).

[192] *See* para. 98, *supra*.

protection to the base stations of Phase I licensees authorized on Sub-band A channels. However, we do not believe that it would be appropriate to require a Phase II licensee authorized on Sub-band B, as it constructs its EA or Regional systems, to have to protect receivers associated with additional transmitter sites that a Phase I licensee authorized on Sub-band A might add within its service contour at any time in the future. We conclude, therefore, that a Phase II licensee authorized on Sub-band B channels should continue to provide geographic protection to Phase I licensees authorized on Sub-band A, but only to the base station of such licensees, as authorized at the time the Phase II, Sub-band B licensee seeks to construct its station.

102. Third, under our existing rules, there are no protection or coordination requirements among Phase I licensees authorized on Sub-band B and Phase II licensees authorized on Sub-band A This is because Phase II licensees authorized on Sub-band A, in constructing their systems, would be aware of the location of the base stations of Phase I licensees on Sub-band B and would, in all likelihood, avoid placing their base stations in locations where such Phase I, Sub-band B stations might cause interference. However, if Phase I, Sub-band B licensees are permitted to add additional transmitter sites or modify the operating parameters or location of their base station at any time in the future, such actions could cause unforeseen interference to the base stations of Phase II, Sub-band A licensees. We will therefore require Phase I, Sub-band B licensees, in adding additional transmitter sites or modifying the operating parameters or location of their base station, to coordinate such actions with Phase II licensees authorized on Sub-band A. Phase I, Sub-band B licensees must include with their application for a minor modification of their authorization,[193] a certification that the station has been appropriately coordinated.

103. In addition, we will allow Phase I 220 MHz licensees to convert their site-by-site licenses to a single license authorizing operations throughout the incumbents' contiguous and overlapping 38 dBu service contours of their constructed multiple sites. Phase I licensees seeking such reissued licenses must make a one-time filing of specific information for each of their external base station sites to assist the Commission staff in updating the Commission's database. We also will require evidence that such facilities are constructed and placed in operation and that, by operation of the Commission's rules, no other licensee would be able to use these channels within this geographic area. We note that facilities added or modified that do not extend the 38 dBu service contour will not require prior approval under this procedure.

104. We believe this decision strikes a fair balance between the interests of incumbents and Phase II licensees. Under our ruling, a Phase I licensee will be free to maintain full operational flexibility in providing service within its own service contour, while

[193] *See* para. 98, *supra*.