



6712-01

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[MB Docket No. 13-249; FCC 17-119]

Revitalization of the AM Radio Service

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: This document amends certain Commission rules applying to AM broadcast stations using directional antenna arrays. AM directional antenna arrays are multiple-tower installations designed to direct radio energy primarily in certain directions in order to avoid interfering with other AM broadcast stations. Approximately 40 percent of all AM broadcasters use directional arrays during some part of the broadcast day. These rule amendments are intended to decrease the burdens and expense of installing and maintaining directional arrays, especially for AM broadcasters using Method of Moments (MoM) modeling for proofs of performance of their directional arrays.

DATES: Effective [INSERT DATE 30 DAYS AFTER PUBLICATION IN FEDERAL REGISTER], except for the amendments to 47 CFR 73.151(c)(1)(ix) and (x) and (c)(3), 47 CFR 73.154(a), and 47 CFR 73.155, which contain new or modified information collection requirements that require approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act (PRA), and which will become effective after the Commission publishes a document in the Federal Register announcing such approval and the relevant effective date.

FOR FURTHER INFORMATION CONTACT: Peter Doyle, Chief, Media Bureau, Audio Division, (202) 418-2700 or Peter.Doyle@fcc.gov; Thomas Nessinger, Senior Counsel, Media Bureau, Audio Division, (202) 418-2700 or Thomas.Nessinger@fcc.gov.

For additional information concerning the Paperwork Reduction Act information collection requirements contained in this document, contact Cathy Williams at 202-418-2918, or via the Internet at Cathy.Williams@fcc.gov.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Third Report and Order (Third R&O), FCC 17-119, adopted September 22, 2017, and released September 25, 2017. The full text of this document is available for public inspection and copying during regular business hours in the FCC Reference Center, 445 Twelfth Street, SW, Room CY-A257, Portals II, Washington, DC 20554. To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer and Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

Paperwork Reduction Act of 1995 Analysis

The Third R&O contains new and modified information collection requirements subject to the PRA, (Pub. L. 104-13, 109 Stat 163 (1995) (codified in 44 U.S.C. 3501-3520)). It will be submitted to the OMB for review under section 3507(d) of the PRA. OMB, the general public, and other Federal agencies will be invited to comment on the new or modified information collection requirements contained in this proceeding in a separate Federal Register notice.

Synopsis

1. In the Third R&O, the Commission adopted many of the proposals set forth in the Further Notice of Proposed Rule Making in this proceeding (FCC 15-142, 30 FCC Rcd 12145

(2015)) (AMR FNPRM). Specifically, the Commission modified the partial proof of performance rules to reduce the expense and burden of such proofs, and made a number of changes to the rules and policies surrounding Method of Moments (MoM) modeling, also to reduce burdens on broadcasters using AM directional antenna arrays.

2. Partial proof of performance measurements are currently required for AM stations using directional antennas whenever the licensee has reason to believe that the radiated fields may be exceeding the limits for which the station is authorized. Such measurements are also required whenever minor directional antenna system repairs are made that result in certain changes to the station's licensed operating parameters. Some commenters, in response to the original Notice of Proposed Rule Making in this proceeding (FCC 13-139, 28 FCC Rcd 15221 (2013)) (AMR NPRM) requested that the current rule governing partial proof of performance field strength measurements for AM directional antenna arrays, 47 CFR 73.154, be modified to require measurements only on radials containing a monitoring point. Currently, the rule requires field strength measurements on radials from the latest complete field strength proof of performance that are adjacent to the monitored radials, if the array has fewer than four monitored radials, in addition to measurements on monitored radials. Commenters claimed that eliminating the requirement to take measurements on non-monitored radials will reduce the cost to maintain AM directional antenna systems without affecting authorized service. The Commission proposed in the AMR FNPRM to require measurements only on radials containing a monitoring point.

3. The Commission adopted the rule change as proposed in the AMR FNPRM. Many commenters stated that a partial proof of performance measuring only the monitored radials will adequately demonstrate that the directional pattern is properly adjusted, and would result in cost

savings to AM broadcasters. Other commenters noted that radials containing a monitor point provide the best indication of a station's directional pattern condition. Although some commenters favored a return to the prior rule requiring ten field strength measurements along each radial containing a monitoring point, compared to the current rule requiring at least eight such measurements, the Commission's experience showed that the eight-point partial proof minimum is sufficient to evaluate antenna system performance, and that returning to the 10-point minimum would only increase the burden on AM broadcasters in exchange for little more in the way of useful data. The Commission therefore rejected the request to require 10 field strength measurements, and adopted this rule change as proposed.

4. Since the Commission first permitted MoM computer modeling to verify AM directional antenna performance, over 220 MoM directional antenna proofs of performance have been prepared and submitted to the Commission in support of AM station applications for license. This analysis technique has proven to reliably verify directional antenna system performance at a much lower cost. Based on this experience, in the AMR FNPRM the Commission proposed several modifications or eliminations of rules pertaining to AM directional arrays using MoM proofs, intended to improve the quality of the MoM proofs and eliminate expenses to AM licensees. First, 47 CFR 73.155 currently requires that an AM station licensed with a directional antenna pattern pursuant to an MoM proof of performance be recertified at least once within every 24-month period, including disconnection and calibration of base sampling devices. Because of the demonstrated reliability of MoM models, the Commission proposed in the AMR FNPRM to eliminate or modify this requirement. The Commission's review of the comments led it to adopt the proposal to eliminate the recertification requirement, with one exception. Commenters favoring the proposal to eliminate the

recertification rule stated that other means could be employed to troubleshoot and restore the system to its initial condition, and that disconnecting and reconnecting sampling system components was expensive and possibly damaging to the components. The Commission found that system recertification becomes less valuable when the removal of base sampling devices is no longer required, thus refuting commenters who argued for longer recertification intervals but without disconnection of such devices. Therefore, the Commission agreed with those commenters who supported the proposal to eliminate the recertification requirement altogether. The Commission, however, adopted one commenter's suggested change to the original proposal: to retain 47 CFR 73.155 but, rather than prescribing a set recertification interval, to require recertification only in the case of repair to or replacement of affected system components, and then only as to the repaired or replaced components, such recertification to be conducted on such component(s) in the same manner as an initial certification of the component(s) pursuant to the standards set forth in 47 CFR 73.151(c)(2)(i).

5. In the AMR FNPRM, the Commission proposed to modify the requirement for reference field strength measurements set forth in 47 CFR 73.151(c)(3). Currently, when an initial license application is submitted for a directional antenna system based on MoM modeling, reference field strength measurements are required. The proposed rule change would eliminate the need to submit new reference field strength measurements with subsequent license applications for the same directional antenna system and physical facilities, while still retaining the requirement of initial reference field strength measurements, notwithstanding commenter suggestions that this requirement be eliminated in its entirety. Although commenters were roughly evenly divided between those supporting the proposal and those favoring elimination of the requirement for reference field strength measurements in its entirety, the Commission found

on balance that the original proposal should be adopted, stating that at least one, initial set of reference measurements provides external verification that an AM directional array is operating properly, while agreeing with commenters that the expense of further reference field strength measurements should not be required on subsequent license applications when the antenna pattern and physical facilities are unchanged. The Commission adopted the proposed rule change as set forth in the AMR FNPRM.

6. Section 73.151(c)(1)(ix) of the rules (47 CFR 73.151(c)(1)(ix)) requires that a station applying for a directional antenna array using MoM modeling to confirm the antenna pattern must obtain a post-construction certificate from a licensed surveyor, verifying that the towers in the array have the proper spacing and orientation. The Commission's Media Bureau clarified that a licensed station applying to be re-licensed under the MoM rules was exempt from the survey requirement provided that there was no change in the authorized theoretical pattern or patterns. A commenter responding to the AMR NPRM suggested, and the Commission therefore proposed in the AMR FNPRM, that the Commission exempt from the survey requirement any directional antenna pattern on any frequency using towers in an authorized AM array, as long as the tower geometry is not altered and no towers are added to the array. The commenter contended that such an exemption would encourage stations to co-locate on existing arrays and provide relief to broadcasters that would otherwise have difficulty locating sufficient land for their own directional arrays. The Commission proposed to adopt this exemption and, as all but one commenter to the AMR FNPRM supported the proposal, it adopted the proposal as set forth in the AMR FNPRM, and modified 47 CFR 73.151(c)(1)(ix) to codify this exemption.

7. Section 73.151(c)(1)(viii) of the rules (47 CFR 73.151(c)(1)(viii)) provides: "The shunt capacitance used to model base region effects shall be no greater than 250 pF unless the

measured or manufacturer's stated capacitance for each device other than the base insulator is used. The total capacitance of such devices shall be limited such that in no case will their total capacitive reactance be less than five times the magnitude of the tower base operating impedance without their effects being considered.” The Commission proposed to clarify that this rule applies only when total capacitance used to model base region effects exceeds 250 pF and should apply only when base current sampling is used. No commenters opposed this proposal, and therefore the Commission adopted it as proposed.

8. The Commission also posed a set of specific inquiries in the AMR FNPRM concerning whether to permit use of MoM modeling for skirt-fed towers. A skirt-fed tower employs a design different from that of the more typical AM tower. Because the physical characteristics of a skirt-fed tower vary from those of a traditional monopole, and are much more difficult to model, skirt-fed towers are excluded from computer modeling. Commenters were asked whether the Commission and the engineering community had gained sufficient experience with MoM modeling to allow such modeling of skirt-fed towers. Some commenters stated that such modeling should be allowed, while other opined that more experience was needed. The Commission agreed with commenters that stated that more experience was necessary before allowing MoM modeling of skirt-fed towers, and so retained the present limitation on the use of MoM modeling to those arrays using simple, series-fed towers with standard ground systems, excluding antenna systems with skirt-fed or sectionalized towers, and arrays that use non-standard ground systems such as those consisting of short, elevated radials. The Commission stated that it may revisit this conclusion at a later date and propose specific standards for use in more complex analyses.

9. The Commission also proposed to clarify when new MoM proofs must be submitted after antennas were added or other changes were made above the base of a tower in an AM directional array. The Commission adopted this AMR FNPRM proposal, noting that Subpart BB of its Part 1 rules sets forth procedures to be followed when Commission authorization holders or applicants propose to, among other things, add an antenna to an AM tower, and specifically that 47 CFR 1.30003(b)(2) dictates procedures to be followed when adding an antenna to a tower in an AM directional array when the station is licensed via an MoM proof of performance, requiring a base impedance measurement on the tower being modified, and submission of a new license application only if the base resistance and reactance values exceed a specified deviation from those values as contained in the last MoM proof. Although that rule refers specifically to the addition of antennas, the Commission agreed with commenters and clarified that the rule applies to any modification to tower or system components above the tower base, stating that re-proofing should not be needed if a change is made that does not affect the modeled values used in the license proof. The Commission thus modified 47 CFR 73.151(c)(1) to reflect the applicability of the 47 CFR 1.30003(b)(2) procedures in such instances.

10. Finally, the Commission proposed to eliminate the requirement, found in the conditions attached to a construction permit for an AM station, that current distribution measurements be made when the applicant employs a top-loaded antenna, instead permitting use of MoM modeling to determine antenna characteristics. The Commission received no objections to this proposal, which will eliminate an unnecessary regulatory burden. The Commission therefore directed its staff to modify the conditions attached to AM construction permits accordingly.

11. The Commission also noted that, as part of a Notice of Inquiry set forth with the AMR FNPRM, it requested comment as to whether the main studio requirements, contained in 47 CFR 73.1125 and in Commission precedent, should be relaxed in order to offer relief to AM broadcasters. This aspect of the Notice of Inquiry, however, has been superseded by a new proceeding, MB Docket No. 17-106, in which the Commission proposed to eliminate the main studio requirements for all broadcasters. Accordingly, the Commission will not further consider issues pertaining to main studio requirements for AM stations in the AM Revitalization proceeding.

Final Regulatory Flexibility Analysis

12. As required by the Regulatory Flexibility Act of 1980, as amended (RFA) (5 U.S.C. 603), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the AMR FNPRM (30 FCC Rcd 12145, 12202-05 (2015)). The Commission sought written public comment on the proposals in the AMR FNPRM, including comment on the IRFA. The Commission received no comments on the IRFA. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA (see 5 U.S.C. 604).

Need for, and Objectives of, the First Report and Order

13. This Third Report and Order (Third R&O) adopts several changes to the rules, many of which were first suggested by commenters in the initial round of commenting in this proceeding. First, the Commission proposed to modify the rules on submission of partial proofs of performance of directional AM antenna arrays. The current rules require that field strength measurements be taken on all radials containing a monitoring point (a specific location at which regular measurements are taken), as well as on radials adjacent to monitored radials if the array has fewer than four monitored radials. The Commission proposed to eliminate the second

requirement, of taking measurements on non-monitored radials, in order to ease regulatory burdens on and expense to AM broadcasters using directional antenna arrays. Most commenters concurred with the proposal or with slight variations to it, with two commenters suggesting more stringent analyses of such directional antenna arrays. Overall, the Commission agreed with most commenters that measurement of monitored radials is sufficient to verify the integrity of the antenna pattern, and that dropping the adjacent-radials requirement would save broadcasters time and expense. The Commission therefore adopted the rule change as proposed.

14. The next set of proposed changes concerned modifications of rules pertaining to Method of Moments (MoM) proofs of directional AM antenna system performance. The rules provide for two methods of verifying the performance of a directional AM array. The traditional method is by taking field strength measurements of the antenna pattern. In 2008, the Commission promulgated rules for verifying directional array performance through MoM proofs. An MoM proof allows an AM licensee to verify antenna performance with MoM software, which uses measurements of internal parameters in conjunction with a physical model of the antenna to compute the contribution of each antenna element to the directional pattern. MoM proofs are thus a less expensive alternative to taking field strength measurements of the directional pattern. In the years since the Commission first allowed submission of MoM proofs, over 220 such proofs have been submitted. Based on that experience, the Commission took note of commenter requests to modify some of the rules pertaining to MoM analyses in order to make them even less burdensome.

15. The Commission proposed and, based on comments, adopted the following rule changes: (1) eliminating the requirement for biennial recertification of the performance of a directional pattern licensed pursuant to an MoM proof, except as to any system components that

have been repaired or replaced, under 47 CFR 73.155; (2) retaining the requirement for an initial set of reference field strength measurements, but eliminating the requirement to submit further reference field strength measurements on relicensing, under 47 CFR 73.151(c)(3); (3) eliminating the requirement of a licensed surveyor's certification under 47 CFR 73.151(c)(1)(ix) for relicensing of any existing AM station directional array, provided that the tower geometry is not being modified and no new towers are being added to the array; and (4) clarifying that the provisions of 47 CFR 73.151(c)(1)(viii) apply only when total capacitance used to model base region effects exceeds 250 pF and should apply only when base current sampling is used. All of these changes received support in the record, sometimes with variations suggested, and were adopted in order to lessen the burdens and expense to AM licensees.

16. Additionally, the Commission proposed in the AMR FNPRM to allow MoM modeling of skirt-fed towers, but based on comments it concluded that more experience with modeling such towers is needed before allowing and promulgating standards for such analyses. It did not adopt any new rules in this regard. Finally, the Commission proposed to codify the standards under which a new proof of performance was to be filed when adding antennas or adding or modifying other system components above the base insulator of a tower in an AM array. The rules (47 CFR 1.30003(b)(2)) already provide such standards in reference to adding antennas to towers. The Third R&O adopts a rule section codifying the same procedures already set forth in 47 CFR 1.30003(b)(2) with regard to the addition or modification of any system components above the base insulator, not limited to antennas. This clears up any ambiguity regarding whether addition or modification of such components requires filing new proofs of performance with the Commission.

17. The Commission also released a Notice of Inquiry along with the AMR FNPRM, in

which among other things it asked whether its rules for siting and staffing an AM station main studio should be relaxed. Since release of the Notice of Inquiry, however, the Commission released a Notice of Proposed Rule Making in a new proceeding, in which it proposes to eliminate main studio rules for all broadcast services. (Elimination of Main Studio Rule, Notice of Proposed Rule Making, MB Docket No. 17-106, 32 FCC Rcd 4415 (2017)). Accordingly, in the Third R&O the Commission stated that it would no longer consider this issue in the AM Revitalization proceeding.

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

18. There were no comments to the IRFA filed.

Response to comments by the Chief Counsel for Advocacy of the Small Business Administration

19. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments. 5 U.S.C. 604(a)(3). The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

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

20. The RFA directs the Commission to provide a description of and, where feasible, an estimate of the number of small entities that will be affected by the rules adopted herein. 5 U.S.C. 603(b)(3). The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small government jurisdiction.” 5 U.S.C. 601(6). In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act. 5 U.S.C. 601(3). A small

business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA). 15 U.S.C. 632.

21. The subject rules and policies will apply to those AM radio broadcasting licensees and potential licensees employing directional antenna arrays. A radio broadcasting station is an establishment primarily engaged in broadcasting aural programs by radio to the public. 15 U.S.C. 632. Included in this industry are commercial, religious, educational, and other radio stations. Id. Radio broadcasting stations which primarily are engaged in radio broadcasting and which produce radio program materials are similarly included. Id. However, radio stations that are separate establishments and are primarily engaged in producing radio program material are classified under another NAICS number. Id. The SBA has established a small business size standard for this category, which is: firms having \$38.5 million or less in annual receipts. 13 CFR 121.201, NAICS code 515112 (updated for inflation in 2008). According to the BIA/Kelsey, MEDIA Access Pro Database on July 27, 2017, 4,644 (99.94%) of 4,647 AM radio stations have revenue of \$38.5 million or less. Therefore, the majority of such entities are small entities. We note, however, that, in assessing whether a business concern qualifies as small under the above definition, business (control) affiliations (13 CFR 121.103(a)(1)) must be included. Our estimate, therefore, likely overstates the number of small entities that might be affected by our action, because the revenue figure on which it is based does not include or aggregate revenues from affiliated companies.

Description of Projected Reporting, Record Keeping and other Compliance Requirements

22. As described, the rule changes will not result in substantial increases in burdens on applicants, and in fact will decrease burdens on many applicants. The rule changes adopted in the Third R&O do not involve application changes, and to the extent they affect reporting or record-keeping requirements they reduce those burdens by exempting AM broadcasters with directional antenna arrays from certain field strength measurements; from biennial recertification of antenna arrays; from filing new proofs of performance or surveyor's reports in many cases; and from making current distribution measurements. Thus, the rule changes adopted in the Third R&O, at most, do not change reporting requirements, or record-keeping requirements beyond what is already required, and in many cases reduce reporting and record-keeping requirements for AM broadcasters operating with directional antenna arrays. The elimination of main studio rules for AM stations will also eliminate certain reporting requirements, but the Commission has indicated that it will not consider the elimination of such rules further in this proceeding.

Steps Taken to Minimize Significant Impact of Small Entities, and Significant Alternatives Considered

23. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed 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 or reporting requirements under the rule for 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 small entities. 5 U.S.C. 603(c)(1)-(c)(4).

24. The majority of commenters who commented on the proposals adopted in the Third R&O supported the proposals. Some suggested variations on the rule changes as proposed; a

few rejected the proposed changes, some with little comment other than to voice their opposition. Based on the comments, the Commission adopted the proposed change to the partial proof of performance rules, and six out of seven discrete proposals with regard to MoM proofs. The Commission concurred with those commenters that stated, at some length, that the Commission and the engineering community did not yet have sufficient experience with MoM modeling of skirt-fed towers to allow the Commission to set forth rules regarding such analyses. The Commission also changed the proposal regarding recertification of an AM station licensed with a directional antenna pattern pursuant to an MoM proof from that originally proposed. While the Commission proposed in the AMR FNPRM to delete the recertification requirement entirely for an AM station licensed with a directional antenna pattern pursuant to an MoM proof, the Commission based on a commenter suggestion decided to retain the recertification requirement only in the case of repair to or replacement of affected system components, and then only as to those components. In general, the Commission favored those comments that resulted in relaxed regulatory burdens on AM broadcasters, to the extent this could be accomplished without compromising the technical integrity of the AM broadcast service.

25. Report to Congress. The Commission will send a copy of the Third R&O, including this FRFA, in a report to Congress and the Government Accountability Office pursuant to the Small Business Regulatory Enforcement Fairness Act of 1996. 5 U.S.C. 801(a)(1)(a). In addition, the Commission will send a copy of the Third R&O, including the FRFA, to the Chief Counsel for Advocacy of the Small Business Administration. A copy of the Second R&O and FRFA (or summaries thereof) will also be published in the Federal Register. See 5 U.S.C. 604(b).

Ordering Clauses

26. Accordingly, IT IS ORDERED that, pursuant to the authority contained in Sections 1, 2, 4(i), 303, and 307 of the Communications Act of 1934, 47 U.S.C. 151, 152, 154(i), 303, and 307, this Third Report and Order IS ADOPTED.

27. IT IS FURTHER ORDERED that, pursuant to the authority found in Sections 1, 2, 4(i), 303, and 307 of the Communications Act of 1934, 47 U.S.C. 151, 152, 154(i), 303, and 307, the Commission's rules ARE HEREBY AMENDED as set forth in Appendix A to the Third Report and Order.

28. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Third Report and Order, including the Final Regulatory Flexibility Act Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

29. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Third Report and Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. 801(a)(1)(A).

30. IT IS FURTHER ORDERED that the rule change to 47 CFR 73.151(c)(1)(viii) adopted herein WILL BECOME EFFECTIVE 30 days after the date of publication in the Federal Register.

31. IT IS FURTHER ORDERED that the rule changes to 47 CFR 73.151(c)(1)(ix), 73.151(c)(1)(x), 73.151(c)(3), 73.154(a), and 73.155, all of which contain new or modified information collection requirements that require approval by the Office of Management and Budget (OMB) under the PRA, WILL BECOME EFFECTIVE after the Commission publishes a notice in the Federal Register announcing such approval and the relevant effective date.

List of Subjects in 47 CFR Part 73

Communications equipment, Radio.

FEDERAL COMMUNICATIONS COMMISSION.

Marlene H. Dortch,
Secretary.

Final Rule

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR part 73 as follows:

PART 73—RADIO BROADCAST SERVICES

1. The authority citation for part 73 continues to read as follows:
Authority: 47 U.S.C. 154, 303, 309, 310, 334, 336, and 339.
2. Section 73.151 is amended by revising paragraphs (c)(1)(viii) and (ix), adding paragraph (c)(1)(x), and revising paragraph (c)(3) to read as follows:

§ 73.151 Field strength measurements to establish performance of directional antennas.

* * * * *

(c) * * *

(1) * * *

(viii) The shunt capacitance used to model the base region effects shall be no greater than 250 pF unless the measured or manufacturer's stated capacitance for each device other than the base insulator is used. The total capacitance of such devices shall be limited such that in no case will their total capacitive reactance be less than five times the

magnitude of the tower base operating impedance without their effects being considered. This “five times” requirement only applies when the total capacitance used to model base region effects exceeds 250 pF and when base current sampling is used.

(ix) The orientation and distances among the individual antenna towers in the array shall be confirmed by a post-construction certification by a land surveyor (or, where permitted by local regulation, by an engineer) licensed or registered in the state or territory where the antenna system is located. Stations submitting a moment method proof for a pattern using towers that are part of an authorized AM array are exempt from the requirement to submit a surveyor's certification, provided that the tower geometry of the array is not being modified and that no new towers are being added to the array.

(x) An AM station that verified the performance of its directional antenna system using computer modeling and sampling system verification under this rule section, that makes modifications to tower or system components above the base insulator, shall follow the procedures set forth in section 1.30003(b)(2) of this chapter.

* * * * *

(3) When the application for an initial license for a directional antenna system is submitted that is based on computer modeling and sample system verification, reference field strength measurement locations shall be established in the directions of pattern minima and maxima. On each radial corresponding to a pattern minimum or maximum, there shall be at least three measurement locations. The field strength shall be measured at each reference location at the time of the proof of performance. The license application shall include the measured field strength values at each reference point, along

with a description of each measurement location, including GPS coordinates and datum reference. New reference field strength measurements are not required for subsequent license applications for the same directional antenna pattern and physical facilities.

3. Section 73.154 is amended by revising paragraph (a) to read as follows:

§ 73.154 AM directional antenna partial proof of performance measurements.

(a) A partial proof of performance consists of at least 8 field strength measurements made on each of the radials that includes a monitoring point.

* * * * *

4. Revise § 73.155 to read as follows:

§ 73.155 Directional antenna performance recertification.

A station licensed with a directional antenna pattern pursuant to a proof of performance using moment method modeling and internal array parameters as described in §73.151(c) shall recertify the performance of the antenna monitor sampling system only in the case of repair to or replacement of affected system components, and then only as to the repaired or replaced system components. Any recertification of repaired or replaced system components shall be performed in the same manner as an original certification of the affected system components under § 73.151(c)(2)(i) of this part. The results of the recertification measurements shall be retained in the station's public inspection file.

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