In the case where there are spans which overlap, the above formula shall be applied repeatedly, once for each augmentation, in ascending order of central azimuth of augmentation, beginning with zero degrees representing true North. Note that, when spans overlap, there will be, in effect, an augmentation of an augmentation. And, if the span of an earlier augmentation overlaps the central azimuth of a later augmentation, the value of ''A'' for the later augmentation will be different than the value of ''A'' without the overlap of the earlier span.

(iii) A combination of paragraphs (d)(2)(i) and (d)(2)(ii), of this section, with (d)(2)(i) being applied before (d)(2)(ii) is applied.

(iv) Where augmentation is allowable under the terms of this section, the requested amount of augmentation shall be centered upon the measured radial and shall not exceed the following:

(A) The actual measured inverse distance field value, where the radial does not involve a required monitoring point.

(B) 120% of the actual measured inverse field value, where the radial has a monitoring point required by the instrument of authorization.

Whereas some pattern smoothing can be accommodated, the extent of the requested span(s) shall be minimized and in no case shall a requested augmentation span extend to a radial azimuth for which the analyzed measurement data does not show a need for augmentation.

(3) A Modified Standard Pattern shall be specifically labeled as such, and shall be plotted in accordance with the requirements of paragraph (b)(2) of §73.150. The effective (RMS) field strength in the horizontal plane of $E(\varphi,\alpha)_{std,}$ $E(\varphi,\alpha)_{th,}$ and the root sum square (RSS) value of the inverse fields of the array elements (derived from the equation for $E(\varphi,\alpha)_{th}$), shall be tabulated on the page on which the horizontal plane pattern is plotted. Where sector augmentation has been employed in designing the modified pattern, the direction of maximum augmentation (*i.e.*, the central azimuth of augmentation) shall be indicated on the horizontal plane pattern for each augmented sector, and the limits of each sector shall also be shown. Field values within an augmented sector, computed prior to augmentation, shall be depicted by a broken line.

(4) There shall be submitted, for each modified standard pattern, complete tabulations of final computed data used in plotting the pattern. In addition, for each augmented sector, the central azimuth of augmentation, span, and radiation at the central azimuth of augmentation ($E(\varphi,\alpha)_{aug}$) shall be tabulated.

(5) The parameters used in computing the modified standard pattern shall be specified with realistic precision. Following is a list of the maximum acceptable precision:

(i) Central Azimuth of Augmentation: to the nearest 0.1 degree.

(ii) Span: to the nearest 0.1 degree.

(iii) Radiation at Central Azimuth of Augmentation: 4 significant figures.

(e) Sample calculations for a modified standard pattern follow. First, assume the existing standard pattern in §73.150(c). Then, assume the following augmentation parameters:

Augmentation number	Central azimuth	Span	Radiation at central azimuth
1	110	40	1,300
2	240	50	52
3	250	10	130

Following is a tabulation of part of the modified standard pattern:

Azimuth	0	30	60	Vertical angle
0	28.86	68.05	72.06	
105	1,299.42	872.14	254.21	
235	39.00	35.74	38.71	
247	100.47	66.69	32.78	

[46 FR 11992, Feb. 12, 1981, as amended at 56 FR 64862, Dec. 12, 1991; 66 FR 20756, Apr. 25, 2001]

§73.153 Field strength measurements in support of applications or evidence at hearings.

In the determination of interference, groundwave field strength measurements will take precedence over theoretical values, provided such measurements are properly taken and presented. When measurements of

groundwave signal strength are presented, they shall be sufficiently complete in accordance with §73.186 to determine the field strength at 1 mile in the pertinent directions for that station. The antenna resistance measurements required by §73.186 need not be taken or submitted.

[44 FR 36037, June 20, 1979, as amended at 56 FR 64862, Dec. 12, 1991]

§ 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. If the directional pattern has fewer than 4 monitored radials, the partial proof shall include measurements on those radials from the latest complete proof of performance which are adjacent to the monitored radials.

(b) The measurements are to be made within 3 to 15 kilometers from the center of the antenna array. When a monitoring point as designated on the station authorization lies on a particular radial, one of the measurements must be made at that point. One of the following methods shall be used for the partial proof:

(1) Measurement points shall be selected from the points measured in latest full proof of performance provided that the points can be identified with reasonable certainty, and that land development or other factors have not significantly altered propagation characteristics since the last full proof. At each point, the licensee shall measure directional field strength for comparison to either the directional or the nondirectional field strength measured at that point in the last full proof.

(2) In the event that a meaningful comparison to full proof measurements cannot be made, the licensee shall measure both directional and nondirectional field strength at eight points on each radial. The points need not be limited to those measured in the last full proof of performance.

(c) The results of the measurements are to be analyzed as follows. Either the arithmetic average or the logarithmic average of the ratios of the field strength at each measurement point to the corresponding field strength in the most recent complete proof of performance shall be used to establish the inverse distance fields. (The logarithmic average for each radial is the antilogarithm of the mean of the logarithms of the ratios of field strength (new to old) for each measurement location along a given radial). When new nondirectional measurements are used as the reference, as described in paragraph (b)(2) of this section, either the arithmetic or logarithmic averages of directional to nondirectional field strength on each radial shall be used in conjunction with the measured nondirectional field from the last proof to establish the inverse distance field.

(d) The result of the most recent partial proof of performance measurements and analysis is to be retained in the station records available to the FCC upon request. Maps showing new measurement points, *i.e.*, points not measured in the last full proof, shall be associated with the partial proof in the station's records, and shall be provided to the FCC upon request.

[66 FR 20756, Apr. 25, 2001]

§ 73.155 Periodic 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 that directional antenna pattern at least once within every 24 month period.

(a) Measurements shall be made to verify the continuing integrity of the antenna monitor sampling system.

(1) For towers using base current or base voltage sampling derived at the output of the antenna coupling and matching equipment, the sampling devices shall be disconnected and calibrated by measuring their outputs with a common reference signal (a current through them or a voltage across them, as appropriate) and the calibration must agree with the manufacturer's specifications.

(2) For towers using base current or base voltage sampling derived at the output of the antenna coupling and matching equipment, sampling line