

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

### § 73.155

### 47 CFR Ch. I (10–1–16 Edition)

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 measurements shall be made to verify the open-circuit resonant frequency closest to carrier frequency, to establish length, and also at frequencies corresponding to odd multiples of  $\frac{1}{8}$  wavelength immediately above and below the open-circuit resonant frequency closest to carrier frequency, while open circuited, to verify their characteristic impedance. The frequencies measured must be the same as were measured in the most recent proof of performance and must demonstrate that the sampling lines continue to meet the requirements of § 73.151(c) with regard to their length and characteristic impedance.

(3) For towers having sampling loops, measurements shall be made at carrier frequency or, if necessary, at nearby frequencies where the magnitude of the measured impedance is no greater than 200 ohms with the sampling loops connected. The frequencies measured must be the same as were measured in the most recent proof of performance and the measured impedances must agree within  $\pm 2$  ohms and  $\pm 4$  percent resistance and reactance of the proof values.

(b) Field strength measurements shall be made at the reference field strength measurement locations that were established by the most recent proof of performance. If locations have become inaccessible or their readings contaminated by localized electromagnetic environmental changes, new locations that meet the requirements of the moment method proof of performance rules in § 73.151(c)(3) shall be established to replace them.

(c) The results of the periodic directional antenna performance recertification measurements shall be retained in the station's public inspection file.

[73 FR 64562, Oct. 30, 2008]

#### **§ 73.157 Antenna testing during daytime.**

(a) The licensee of a station using a directional antenna during daytime or nighttime hours may, without further authority, operate during daytime hours with the licensed nighttime directional facilities or with a nondirectional antenna when conducting monitoring point field strength measurements or antenna proof of performance measurements.

(b) Operation pursuant to this section is subject to the following conditions:

(1) No harmful interference will be caused to any other station.

(2) The FCC may notify the licensee to modify or cease such operation to resolve interference complaints or when such action may appear to be in the public interest, convenience and necessity.

(3) Such operation shall be undertaken only for the purpose of taking