

Federal Communications Commission

§ 22.911

that are likely to need additional capacity in the future.

(b) If technical problems are addressed by an agreement or operating agreement between the licensees that would result in a reduction of quality or capacity of either system, the licensees must notify the Commission by updating FCC Form 601.

[59 FR 59507, Nov. 17, 1994, as amended at 63 FR 68951, Dec. 14, 1998; 82 FR 17582, Apr. 12, 2017]

§ 22.909 Cellular markets.

Cellular Market Areas (CMAs) are standard geographic areas used by the FCC for administrative convenience in the licensing of Cellular systems. CMAs comprise Metropolitan Statistical Areas (MSAs) and Rural Service Areas (RSAs). All CMAs and the counties they comprise are listed in: "Common Carrier Public Mobile Services Information, Cellular MSA/RSA Markets and Counties," *Public Notice*, Rep. No. CL-92-40, 7 FCC Rcd 742 (1992).

(a) *MSAs*. Metropolitan Statistical Areas are 306 areas, including New England County Metropolitan Areas and the Gulf of Mexico Service Area (water area of the Gulf of Mexico, border is the coastline), defined by the Office of Management and Budget, as modified by the FCC.

(b) *RSAs*. Rural Service Areas are 428 areas, other than MSAs, established by the FCC.

[59 FR 59507, Nov. 17, 1994, as amended at 79 FR 72151, Dec. 5, 2014]

§ 22.911 Cellular geographic service area.

The Cellular Geographic Service Area (CGSA) of a Cellular system is the geographic area considered by the FCC to be served by the Cellular system and is the area within which cellular systems are entitled to protection and adverse effects for the purpose of determining whether a petitioner has standing are recognized. The CGSA is the composite of the service areas of all of the cells in the system, excluding any Unserved Area (even if it is served on a secondary basis) or area within the CGSA of another Cellular system. The service area of a cell is the area within its service area boundary (SAB). Licensees that use power spectral density

(PSD) at cell sites within their licensed geographic area are subject to paragraph (c) of this section; all other licensees are subject to paragraph (a) (or, as applicable, paragraph (b)) of this section. If the calculation under paragraph (a), (b), or (c) of this section (as applicable) yields an SAB extension comprising at least 130 contiguous square kilometers (50 contiguous square miles), the licensee must submit an application for major modification of the CGSA using FCC Form 601. *See also* §§ 22.912, 22.949, and 22.953.

(a) *CGSA determination (non-PSD)*. For the purpose of calculating the SABs for cell sites and determining CGSA expansion areas for Cellular base stations that do not operate using PSD (as permitted under § 22.913), the distance to the SAB is calculated as a function of effective radiated power (ERP) and antenna center of radiation height above average terrain (HAAT), height above sea level (HASL), or height above mean sea level (HAMSL).

(1) Except as provided in paragraphs (a)(2) and (b) of this section, the distance from a cell transmitting antenna to its SAB along each cardinal radial is calculated as follows:

$$d = 2.531 \times h^{0.34} \times p^{0.17}$$

where:

d is the radial distance in kilometers

h is the radial antenna HAAT in meters

p is the radial ERP in Watts

(2) The distance from a cell transmitting antenna located in the Gulf of Mexico Service Area (GMSA) to its SAB along each cardinal radial is calculated as follows:

$$d = 6.895 \times h^{0.30} \times p^{0.15}$$

Where:

d is the radial distance in kilometers

h is the radial antenna HAAT in meters

p is the radial ERP in Watts

(3) The value used for h in the formula in paragraph (a)(2) of this section must not be less than 8 meters (26 feet) HASL (or HAMSL, as appropriate for the support structure). The value used for h in the formula in paragraph (a)(1) of this section must not be less than 30 meters (98 feet) HAAT, except that for unserved area applications proposing a cell with an ERP not exceeding 10

Watts, the value for h used in the formula in paragraph (a)(1) of this section to determine the service area boundary for that cell may be less than 30 meters (98 feet) HAAT, but not less than 3 meters (10 feet) HAAT.

(4) The value used for p in the formulas in paragraphs (a)(1) and (a)(2) of this section must not be less than 0.1 Watt or 27 dB less than (1/500 of) the maximum ERP in any direction, whichever is more.

(5) Whenever use of the formula in paragraph (a)(1) of this section pursuant to the exception contained in paragraph (a)(3) of this section results in a calculated distance that is less than 5.4 kilometers (3.4 miles), the radial distance to the service area boundary is deemed to be 5.4 kilometers (3.4 miles).

(6) The distance from a cell transmitting antenna to the SAB along any radial other than the eight cardinal radials is calculated by linear interpolation of distance as a function of angle.

(b) *Alternative CGSA determination (non-PSD).* If a carrier believes that the method described in paragraph (a) of this section produces a CGSA that departs significantly ($\pm 20\%$ in the service area of any cell) from the geographic area where reliable cellular service is actually provided, the carrier may submit, as an exhibit to an application for modification of the CGSA using FCC Form 601, a depiction of what the carrier believes the CGSA should be. Such submissions must be accompanied by one or more supporting propagation studies using methods appropriate for the 800–900 MHz frequency range, including all supporting data and calculations, and/or by extensive field strength measurement data. For the purpose of such submissions, cellular service is considered to be provided in all areas, including “dead spots”, between the transmitter location and the locus of points where the predicted or measured median field strength finally drops to 32 dBuV/m (i.e. does not exceed 32 dBuV/m further out). If, after consideration of such submissions, the FCC finds that adjustment to a CGSA is warranted, the FCC may grant the application.

(1) The alternative CGSA determination must define the CGSA in terms of

distances from the cell sites to the 32 dBuV/m contour along the eight cardinal radials, with points in other azimuthal directions determined by the method given in paragraph (a)(6) of this section. The distances used must be representative of the coverage within the eight cardinal radials, as depicted by the alternative CGSA determination.

(2) If an uncalibrated predictive model is used to depict the CGSA, the alternative CGSA determination must identify factors (e.g. terrain roughness or features) that could plausibly account for the difference between actual coverage and that defined by the formula in paragraph (a)(1) of this section. If actual measurements or a measurement-calibrated predictive model are used to depict the CGSA, and this fact is disclosed in the alternative CGSA determination, it is not necessary to offer an explanation of the difference between actual coverage and that defined by the formula in paragraph (a)(1) of this section. If the formula in paragraph (a)(1) of this section is clearly inapplicable for the cell(s) in question (e.g. for microcells), this should be disclosed in the alternative CGSA determination.

(3) The provision for alternative CGSA determinations was made in recognition that the formula in paragraph (a)(1) of this section is a general model that provides a reasonable approximation of coverage in most land areas, but may under-predict or over-predict coverage in specific areas with unusual terrain roughness or features, and may be inapplicable for certain purposes, e.g., cells with a coverage radius of less than 8 kilometers (5 miles). In such cases, alternative methods that utilize more specific models are appropriate. Accordingly, the FCC does not consider use of the formula in paragraph (a)(1) of this section with parameters outside of the limits in paragraphs (a)(3), (a)(4) and (a)(5) of this section or with data for radials other than the cardinal radials to be a valid alternative method for determining the CGSA of a cellular system.

(c) *CGSA determination (PSD).* (1) For the purpose of calculating the SABs for cell sites and determining CGSA expansion areas for Cellular base stations

that operate using PSD (as permitted under § 22.913), the licensee must use a predictive propagation model that is appropriate for the service provided, taking into account terrain and local conditions. The SAB and CGSA boundary must be defined in terms of distances from the cell site to the 32 dBuV/m contour along the eight cardinal radials, with points in other azimuthal directions determined by the method set forth in paragraph (a)(6) of this section. The distances used must be representative of the coverage within the eight cardinal radials.

(2) An application for major modification of the CGSA under this paragraph (c) must include, as an exhibit, a depiction of the CGSA accompanied by one or more supporting propagation studies using methods appropriate for the 800–900 MHz frequency range, including all supporting data and calculations, and/or by extensive field strength measurement data. For the purpose of such submissions, Cellular service is considered to be provided in all areas, including “dead spots,” between the transmitter location and the locus of points where the predicted or measured median field strength finally drops to 32 dBuV/m (*i.e.*, does not exceed 32 dBuV/m further out). If, after consideration of such submissions, the FCC finds that adjustment to a CGSA is warranted, the FCC may grant the application.

(d) *Protection afforded.* Cellular systems are entitled to protection only within the CGSA (as determined in accordance with this section) from co-channel and first-adjacent channel interference (*see* § 22.983). Licensees must cooperate in resolving co-channel and first-adjacent channel interference by changing channels used at specific cells or by other technical means.

(e) [Reserved]

[59 FR 59507, Nov. 17, 1994, as amended at 59 FR 59954, Nov. 21, 1994; 63 FR 68951, Dec. 14, 1998; 67 FR 9609, Mar. 4, 2002; 67 FR 77191, Dec. 17, 2002; 68 FR 42295, July 17, 2003; 79 FR 72151, Dec. 5, 2014; 82 FR 17582, Apr. 12, 2017]

§ 22.912 Service area boundary extensions.

This section contains rules governing service area boundary (SAB) extensions. SAB extensions are areas (cal-

culated using the methodology of § 22.911) that extend outside of the licensee’s Cellular Geographic Service Area (CGSA) boundary into Unserved Area or into the CGSA of a neighboring co-channel licensee. Service within SAB extensions is not protected from interference or capture under § 22.911(d) unless and until the area within the SAB extension becomes part of the CGSA in compliance with all applicable rules.

(a) *Extensions into Unserved Area.* Subject to paragraph (c) of this section, the licensee of a Cellular system may, at any time, extend its SAB into Unserved Area and provide service on a secondary basis only, provided that the extension area comprises less than 130 contiguous square kilometers (50 contiguous square miles). If more than one licensee of a Cellular system extends into all or a portion of the same Unserved Area under this section, all such licensees may provide service in such Unserved Area on a shared secondary (unprotected) basis only.

(b) *Contract extensions.* The licensee of any Cellular system may, at any time, enter into a contract with an applicant for, or a licensee of, a Cellular system on the same channel block to allow one or more SAB extensions into its CGSA (not into Unserved Area).

(c) *Gulf of Mexico Service Area.* Land-based Cellular system licensees may not extend their SABs into the Gulf of Mexico Exclusive Zone (GMEZ) absent written contractual consent of the co-channel GMEZ licensee. GMEZ licensees may not extend their SABs into the CGSA of a licensee on the same channel block in an adjacent CMA or the Gulf of Mexico Coastal Zone absent written contractual consent of the co-channel licensee.

[79 FR 72151, Dec. 5, 2014]

§ 22.913 Effective radiated power limits.

Licensees in the Cellular Radiotelephone Service are subject to the effective radiated power (ERP) limits and other requirements in this Section. *See also* § 22.169.

(a) *Maximum ERP.* The ERP of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.