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service to at least one-quarter of the population in their licensed area within five years of being licensed, or make a showing of substantial service in their licensed area within five years of being licensed. Population is defined as the 1990 population census. Licensees may elect to use the 2000 population census to determine the five-year construction requirement. Failure by any licensee to meet these requirements will result in forfeiture of the license and the licensee will be ineligible to regain it.

(c) Licensees must file maps and other supporting documents showing compliance with the respective construction requirements within the appropriate five- and ten-year benchmarks of the date of their initial licenses.

(d) Licensees in the paired 1910–1915 MHz and 1990–1995 MHz bands must make a showing of ''substantial service'' in their license area within ten years of the date of initial license issuance or renewal. ''Substantial service'' is defined as service which is sound, favorable, and substantially above a level of mediocre service which just might minimally warrant renewal. Failure by any licensee to meet this requirement will result in forfeiture of the license and the licensee will be ineligible to regain it.

[58 FR 59183, Nov. 8, 1993, as amended at 64 FR 26890, May 18, 1999; 65 FR 53636, Sept. 5, 2000; 69 FR 67835, Nov. 22, 2004; 69 FR 75171, Dec. 15, 2004]

### § 24.229 Frequencies.

The frequencies available in the Broadband PCS service are listed in this section in accordance with the frequency allocations table of § 2.106 of this chapter.

(a) The following frequency blocks are available for assignment on an MTA basis:

Block A: 1850–1865 MHz paired with 1930–1945 MHz; and

Block B: 1870–1885 MHz paired with 1950–1965 MHz.

(b) The following frequency blocks are available for assignment on a BTA basis:

Block C: 1895–1910 MHz paired with 1975–1990 MHz;

Pursuant to Amendment of the Commission's Rules Regarding Installment Payment Financing for Personal Communications Services (PCS) Licensees, WT Docket No. 97–82, *Sixth Report and Order*, FCC 00–313, all 30 MHz Block C licenses available for auction in Auction No. 35 or any subsequent auction will be reconfigured into three 10 MHz C block licenses as follows: 1895–1900 MHz paired with 1975–1980 MHz, 1900–1905 MHz paired with 1980–1985 MHz, 1905–1910 MHz paired with 1985–1990 MHz;

Block D: 1865–1870 MHz paired with 1945–1950 MHz;

Block E: 1885–1890 MHz paired with 1965–1970 MHz;

Block F: 1890–1895 MHz paired with 1970–1975 MHz;

(c) The paired frequency blocks 1910–1915 MHz and 1990–1995 MHz are available for assignment in the 175 Economic Areas defined in § 90.7 of this chapter. The 1910–1915 MHz block shall be used for mobile/portable station transmissions while the 1990–1995 MHz block shall be used for base station transmissions.

[59 FR 32854, June 24, 1994, as amended at 60 FR 13917, Mar. 15, 1995; 60 FR 26375, May 17, 1995; 61 FR 33868, July 1, 1996; 62 FR 660, Jan. 6, 1997; 65 FR 53637, Sept. 5, 2000; 69 FR 67836, Nov. 22, 2004]

### § 24.232 Power and antenna height limits.

(a) (1) Base stations with an emission bandwidth of 1 MHz or less are limited to 1640 watts equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.

(2) Base stations with an emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.

(3) Base station antenna heights may exceed 300 meters HAAT with a corresponding reduction in power; *see* Tables 1 and 2 of this section.

(4) The service area boundary limit and microwave protection criteria specified in §§ 24.236 and 24.237 apply.

TABLE 1—REDUCED POWER FOR BASE STATION ANTENNA HEIGHTS OVER 300 METERS, WITH EMISSION BANDWIDTH OF 1 MHZ OR LESS

| HAAT in meters | Maximum EIRP watts |
|---|---|
| ≤300 | 1640 |
| ≤500 | 1070 |
| ≤1000 | 490 |
| ≤1500 | 270 |
| ≤2000 | 160 |

TABLE 2—REDUCED POWER FOR BASE STATION ANTENNA HEIGHTS OVER 300 METERS, WITH EMISSION BANDWIDTH GREATER THAN 1 MHZ

| HAAT in meters | Maximum EIRP watts/MHz |
|---|---|
| ≤300 | 1640 |
| ≤500 | 1070 |
| ≤1000 | 490 |
| ≤1500 | 270 |
| ≤2000 | 160 |

(b) (1) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, with an emission bandwidth of 1 MHz or less are limited to 3280 watts equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

(2) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, with an emission bandwidth greater than 1 MHz are limited to 3280 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

(3) Base station antenna heights may exceed 300 meters HAAT with a corresponding reduction in power; *see* Tables 3 and 4 of this section.

(4) The service area boundary limit and microwave protection criteria specified in §§ 24.236 and 24.237 apply.

(5) Operation under this paragraph (b) at power limits greater than permitted under paragraph (a) of this section must be coordinated in advance with all broadband PCS licensees authorized to operate on adjacent frequency blocks within 120 kilometers (75 miles) of the base station and is limited to base stations located more than 120 kilometers (75 miles) from the Canadian border and more than 75 kilometers (45 miles) from the Mexican border.

TABLE 3—REDUCED POWER FOR BASE STATION ANTENNA HEIGHTS OVER 300 METERS, WITH EMISSION BANDWIDTH OF 1 MHZ OR LESS

| HAAT in meters | Maximum EIRP watts |
|---|---|
| ≤300 | 3280 |
| ≤500 | 2140 |
| ≤1000 | 980 |
| ≤1500 | 540 |
| ≤2000 | 320 |

TABLE 4—REDUCED POWER FOR BASE STATION ANTENNA HEIGHTS OVER 300 METERS, WITH EMISSION BANDWIDTH GREATER THAN 1 MHZ

| HAAT in meters | Maximum EIRP watts/MHz |
|---|---|
| ≤300 | 3280 |
| ≤500 | 2140 |
| ≤1000 | 980 |
| ≤1500 | 540 |
| ≤2000 | 320 |

(c) Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of § 24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

(e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, *etc.*, so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

NOTE TO § 24.232: Height above average terrain (HAAT) is to be calculated using the method set forth in § 24.53 of this part.

[73 FR 24183, May 2, 2008]

### § 24.235 Frequency stability.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### § 24.236 Field strength limits.

The predicted or measured median field strength at any location on the border of the PCS service area shall not exceed 47 dBuV/m unless the parties agree to a higher field strength.

### § 24.237 Interference protection.

(a) All licensees are required to coordinate their frequency usage with the co-channel or adjacent channel incumbent fixed microwave licensees in the 1850–1990 MHz band. Coordination must occur before initiating operations from any base station. Problems that arise during the coordination process are to be resolved by the parties to the coordination. Licensees are required to coordinate with all users possibly affected, as determined by Appendix I to this subpart E (Appendix E of the Memorandum Opinion and Order, GEN Docket No. 90–314, FCC 94–144; TIA Telecommunications Systems Bulletin 10–F, ''Interference Criteria for Microwave Systems,'' May 1994, (TSB10–F)); or an alternative method agreed to by the parties.

(b) The results of the coordination process need to be reported to the Commission only if the parties fail to agree. Because broadband PCS licensees are required to protect fixed microwave licensees in the 1850–1990 MHz band, the Commission will be involved in the coordination process only upon complaint of interference from a fixed microwave licensee. In such a case, the Commission will resolve the issues.

(c) In all other respects, coordination procedures are to follow the requirements of § 101.103(d) of this chapter to the extent that these requirements are not inconsistent with those specified in this part.

(d) The licensee must perform an engineering analysis to assure that the proposed facilities will not cause interference to existing OFS stations within the coordination distance specified in Table 3 of a magnitude greater than that specified in the criteria set forth in paragraphs (e) and (f) of this section, unless there is prior agreement with the affected OFS licensee. Interference calculations shall be based on the sum of the power received at the terminals of each microwave receiver from all of the applicant's current and proposed PCS operations.

TABLE 3—COORDINATION DISTANCES IN KILOMETERS

| | PCS Base Station Antenna HAAT in Meters | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIRP(W) | 5 | 10 | 20 | 50 | 100 | 150 | 200 | 250 | 300 | 500 | 1000 | 1500 | 2000 |
| 0.1 | 90 | 93 | 99 | 110 | 122 | 131 | 139 | 146 | 152 | 173 | 210 | 239 | 263 |
| 0.5 | 96 | 100 | 105 | 116 | 128 | 137 | 145 | 152 | 158 | 179 | 216 | 245 | 269 |
| 1 | 99 | 103 | 108 | 119 | 131 | 140 | 148 | 155 | 161 | 182 | 219 | 248 | 272 |
| 2 | 120 | 122 | 126 | 133 | 142 | 148 | 154 | 159 | 164 | 184 | 222 | 250 | 274 |
| 5 | 154 | 157 | 161 | 168 | 177 | 183 | 189 | 194 | 198 | 213 | 241 | 263 | 282 |
| 10 | 180 | 183 | 187 | 194 | 203 | 210 | 215 | 220 | 225 | 240 | 268 | 291 | 310 |
| 20 | 206 | 209 | 213 | 221 | 229 | 236 | 242 | 247 | 251 | 267 | 296 | 318 | 337 |
| 50 | 241 | 244 | 248 | 255 | 264 | 271 | 277 | 282 | 287 | 302 | 331 | 354 | 374 |
| 100 | 267 | 270 | 274 | 282 | 291 | 297 | 303 | 308 | 313 | 329 | 358 | 382 | 401 |
| 200 | 293 | 296 | 300 | 308 | 317 | 324 | 330 | 335 | 340 | 356 | 386 | 409 | 436 |
| 500 | 328 | 331 | 335 | 343 | 352 | 359 | 365 | 370 | 375 | 391 | 421 | 440 | |
| 1000 | 354 | 357 | 361 | 369 | 378 | 385 | 391 | 397 | 402 | 418 | | | |
| 1200 | 361 | 364 | 368 | 376 | 385 | 392 | 398 | 404 | 409 | 425 | | | |
| 1640 | 372 | 375 | 379 | 388 | 397 | 404 | 410 | 416 | 421 | 437 | | | |
| 2400 | 384 | 387 | 391 | 399 | 408 | 415 | 423 | 427 | 431 | | | | |
| 3280 | 396 | 399 | 403 | 412 | 419 | 427 | 435 | 439 | 446 | | | | |

(e) For microwave paths of 25 kilometers or less, interference determinations shall be based on the C/I criteria set forth in TIA Telecommunications Systems Bulletin 10–F, ''Interference