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Criteria for Microwave Systems,'' May 1994 (TSB10–F).

(f) For microwave paths longer than 25 kilometers, the interference protection criterion shall be such that the interfering signal will not produce more than 1.0 dB degradation of the practical threshold of the microwave receiver for analog system, or such that the interfering signal will not cause an increase in the bit error rate (BER) from 10E–6 to 10E–5 for digital systems.

(g) The development of the C/I ratios and interference criteria specified in paragraphs (e) and (f) of this section and the methods employed to compute the interfering power at the microwave receivers shall follow generally acceptable good engineering practices. The procedures described for computing interfering signal levels in (Appendix I to this subpart E Appendix E of the Memorandum Opinion and Order, GEN Docket No. 90–314, FCC 94–144) shall be applied. Alternatively, procedures for determining interfering signal levels and other criteria as may be developed by the Electronics Industries Association (EIA), the Institute of Electrical and Electronics Engineers, Inc. (IEEE), the American National Standards Institute (ANSI) or any other recognized authority will be acceptable to the Commission.

[59 FR 32854, June 24, 1994, as amended at 61 FR 29691, June 21, 1996; 69 FR 75171, Dec. 15, 2004]

§ 24.238 Emission limitations for Broadband PCS equipment.

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) *Alternative out of band emission limit.* Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

[67 FR 77192, Dec. 17, 2002]

POLICIES GOVERNING MICROWAVE RELOCATION FROM THE 1850–1990 MHZ BAND

§ 24.239 Cost-sharing requirements for broadband PCS.

Frequencies in the 1850–1990 MHz band listed in § 101.147(c) of this chapter have been allocated for use by PCS. In accordance with procedures specified in §§ 101.69 through 101.81 of this chapter, PCS entities (both licensed and unlicensed) are required to relocate the existing Fixed Microwave Services (FMS) licensees in these bands if interference to the existing FMS operations would occur. All PCS entities who benefit from spectrum clearance by other PCS entities or a voluntarily relocating

microwave incumbent, must contribute to such relocation costs. PCS entities may satisfy this requirement by entering into private cost-sharing agreements or agreeing to terms other than those specified in §24.243. However, PCS entities are required to reimburse other PCS entities or voluntarily relocating microwave incumbents that incur relocation costs and are not parties to the alternative agreement. In addition, parties to a private cost-sharing agreement may seek reimbursement through the clearinghouse (as discussed in §24.241) from PCS entities that are not parties to the agreement. The cost-sharing plan is in effect during all phases of microwave relocation specified in §101.69 of this chapter. If a licensee in the Broadband PCS Service enters into a spectrum leasing arrangement (as set forth in part 1, subpart X of this chapter) and the spectrum lessee triggers a cost-sharing obligation, the licensee is the PCS entity responsible for satisfying the cost-sharing obligations under §§24.239 through 24.253.

[62 FR 12757, Mar. 18, 1997, as amended at 69 FR 77559, Dec. 27, 2004]

§ 24.241 Administration of the Cost-Sharing Plan.

The Wireless Telecommunications Bureau, under delegated authority, will select an entity to operate as a neutral, not-for-profit clearinghouse. This clearinghouse will administer the cost-sharing plan by, *inter alia*, maintaining all of the cost and payment records related to the relocation of each link and determining the cost-sharing obligation of subsequent PCS entities. The cost-sharing rules will not take effect until an administrator is selected.

[61 FR 29691, June 12, 1996]

§ 24.243 The cost-sharing formula.

A PCS relocator who relocates an interfering microwave link, *i.e.* one that is in all or part of its market area and in all or part of its frequency band or a voluntarily relocating microwave incumbent, is entitled to *pro rata* reimbursement based on the following formula:

$$R_N = \frac{C}{N} \times \frac{\left[120 - \left(T_m\right)\right]}{120}$$

(a) *RN* equals the amount of reimbursement.

(b) *C* equals the actual cost of relocating the link. Actual relocation costs include, but are not limited to, such items as: Radio terminal equipment (TX and/or RX—antenna, necessary feed lines, MUX/Modems); towers and/or modifications; back-up power equipment; monitoring or control equipment; engineering costs (design/path survey); installation; systems testing; FCC filing costs; site acquisition and civil works; zoning costs; training; disposal of old equipment; test equipment (vendor required); spare equipment; project management; prior coordination notification under §101.103(d) of this chapter; site lease renegotiation; required antenna upgrades for interference control; power plant upgrade (if required); electrical grounding systems; Heating Ventilation and Air Conditioning (HVAC) (if required); alternate transport equipment; and leased facilities. C also includes voluntarily relocating microwave incumbent's independent third party appraisal of its compensable relocation costs and incumbent transaction expenses that are directly attributable to the relocation, subject to a cap of two percent of the ''hard'' costs involved. C may not exceed $250,000 per link, with an additional $150,000 permitted if a new or modified tower is required.

(c) *N* equals the number of PCS entities that would have interfered with the link. For the PCS relocator, N=1. For the next PCS entity that would have interfered with the link, N=2, and so on. In the case of a voluntarily relocating microwave incumbent, N=1 for the first PCS entity that would have interfered with the link. For the next PCS entity that would have interfered with the link, N=2, and so on.

(d) *Tm* equals the number of months that have elapsed between the month the PCS relocator or voluntarily relocating microwave incumbent obtains reimbursement rights for the link and

the month that the clearinghouse notifies a later-entrant of its reimbursement obligation for the link. A PCS relocator obtains reimbursement rights for the link on the date that it signs a relocation agreement with a microwave incumbent. A voluntarily relocating microwave incumbent obtains reimbursement rights for the link on the date that the incumbent notifies the Commission that it intends to discontinue, or has discontinued, the use of the link, pursuant to §101.305 of the Commission's rules.

[62 FR 12757, Mar. 18, 1997, as amended at 65 FR 46113, July 27, 2000]

§ 24.245 Reimbursement under the Cost-Sharing Plan.

(a) *Registration of reimbursement rights.* (1) To obtain reimbursement, a PCS relocator must submit documentation of the relocation agreement to the clearinghouse within ten business days of the date a relocation agreement is signed with an incumbent.

(2) To obtain reimbursement, a voluntarily relocating microwave incumbent must submit documentation of the relocation of the link to the clearinghouse within ten business days of the date that the incumbent notifies the Commission that it intends to discontinue, or has discontinued, the use of the link, pursuant to §101.305 of the Commission's rules.

(b) *Documentation of expenses.* Once relocation occurs, the PCS relocator or the voluntarily relocating microwave incumbent, must submit documentation itemizing the amount spent for items listed in §24.243(b). The voluntarily relocating microwave incumbent, must also submit an independent third party appraisal of its compensable relocation costs. The appraisal should be based on the actual cost of replacing the incumbent's system with comparable facilities and should exclude the cost of any equipment upgrades or items outside the scope of §24.243(b). The PCS relocator or the voluntarily relocating microwave incumbent, must identify the particular link associated with appropriate expenses (*i.e.*, costs may not be averaged over numerous links). If a PCS relocator pays a microwave incumbent a monetary sum to relocate its own facilities, the PCS relocator must estimate the costs associated with relocating the incumbent by itemizing the anticipated cost for items listed in §24.243(b). If the sum paid to the incumbent cannot be accounted for, the remaining amount is not eligible for reimbursement. A PCS relocator may submit receipts or other documentation to the clearinghouse for all relocation expenses incurred since April 5, 1995.

(c) *Full Reimbursement.* A PCS relocator who relocates a microwave link that is either fully outside its market area or its licensed frequency band may seek full reimbursement through the clearinghouse of compensable costs, up to the reimbursement cap as defined in §24.243(b). Such reimbursement will not be subject to depreciation under the cost-sharing formula.

[61 FR 29692, June 12, 1996, as amended at 62 FR 12757, Mar. 18, 1997; 65 FR 46113, July 27, 2000]

§ 24.247 Triggering a reimbursement obligation.

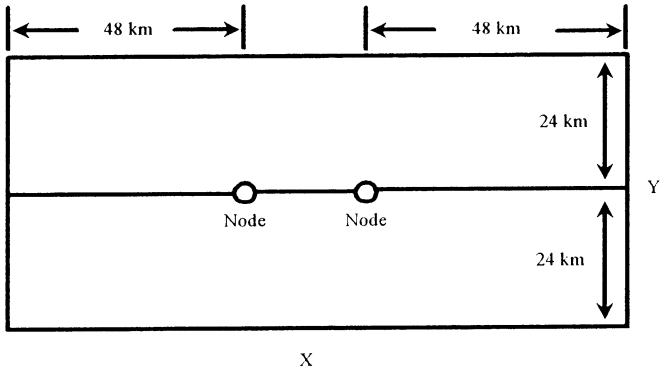
(a) *Licensed PCS.* The clearinghouse will apply the following test to determine if a PCS entity preparing to initiate operations must pay a PCS relocator or a voluntarily relocating microwave incumbent in accordance with the formula detailed in §24.243:

(1) All or part of the relocated microwave link was initially co-channel with the licensed PCS band(s) of the subsequent PCS entity;

(2) A PCS relocator has paid the relocation costs of the microwave incumbent; and

(3) The subsequent PCS entity is preparing to turn on a fixed base station at commercial power and the fixed base station is located within a rectangle (Proximity Threshold) described as follows:

(i) The length of the rectangle shall be x where x is a line extending through both nodes of the microwave link to a distance of 48 kilometers (30 miles) beyond each node. The width of the rectangle shall be y where y is a line perpendicular to x and extending for a distance of 24 kilometers (15 miles) on both sides of x. Thus, the rectangle is represented as follows:



(ii) If the application of the Proximity Threshold test indicates that a reimbursement obligation exists, the clearinghouse will calculate the reimbursement amount in accordance with the cost-sharing formula and notify the subsequent PCS entity of the total amount of its reimbursement obligation.

(b) *Unlicensed PCS.* UTAM's reimbursement obligation is triggered either:

(1) When a county is cleared of microwave links in the unlicensed allocation, and UTAM invokes a Zone 1 power cap as a result of third party relocation activities; or

(2) A county is cleared of microwave links in the unlicensed allocation and UTAM reclassifies a Zone 2 county to Zone 1 status.

(c) Any new entrants granted licenses for the 1910–1915 MHz band must reimburse UTAM a pro rata share of its total expenses incurred by UTAM as of the date that the new entrants gain access to the band. The percent required by new entrants to pay shall be calculated based upon the amount of spectrum granted to the new entrant as compared to the total amount of spectrum UTAM is responsible for clearing of incumbents (20 megahertz), and must be paid before a new entrant begins operations in the band. For example, if a new entrant obtains a license for 5 megahertz of spectrum in this band, it is required to reimburse UTAM one-quarter of UTAM's total costs to date on a pro rata shared basis. New entrants will be responsible for the actual costs associated with future relocation activities in their licensed spectrum, but will be entitled to seek reimbursement from UTAM for the proportion of those band clearing costs that benefit users of the 1915–1930 MHz band.

[61 FR 29692, June 12, 1996, as amended at 62 FR 12757, Mar. 18, 1997; 69 FR 67836, Nov. 22, 2004]

§ 24.249 Payment issues.

(a) *Timing.* On the day that a PCS entity files its prior coordination notice (PCN) in accordance with § 101.103(d) of this chapter, it must file a copy of the PCN with the clearinghouse. The clearinghouse will determine if any reimbursement obligation exists and notify the PCS entity in writing of its repayment obligation, if any. When the PCS entity receives a written copy of such obligation, it must pay directly to the PCS relocator or the voluntarily relocating microwave incumbent the amount owed within thirty days, with the exception of those businesses that qualify for installment payments. A business that qualifies for an installment payment plan must make its first installment payment within thirty days of notice from the clearinghouse. UTAM's first payment will be due thirty days after its reimbursement obligation is triggered, as described in § 24.247(b).

(b) *Eligibility for Installment Payments.* PCS licensees that are allowed to pay for their licenses in installments under

our designated entity rules will have identical payment options available to them with respect to payments under the cost-sharing plan. The specific terms of the installment payment mechanism, including the treatment of principal and interest, are the same as those applicable to the licensee's installment auction payments. If, for any reason, the entity eligible for installment payments is no longer eligible for such installment payments on its license, that entity is no longer eligible for installment payments under the cost-sharing plan. UTAM may make quarterly payments over a five-year period with an interest rate of prime plus 2.5 percent. UTAM may also negotiate separate repayment arrangements with other parties.

[61 FR 29693, June 12, 1996, as amended at 62 FR 12757, Mar. 18, 1997]

§ 24.251 Dispute resolution under the Cost-Sharing Plan.

Disputes arising out of the cost-sharing plan, such as disputes over the amount of reimbursement required, must be brought, in the first instance, to the clearinghouse for resolution. To the extent that disputes cannot be resolved by the clearinghouse, parties are encouraged to use expedited ADR procedures, such as binding arbitration, mediation, or other ADR techniques.

[61 FR 29693, June 12, 1996]

§ 24.253 Termination of cost-sharing obligations.

The cost-sharing plan will sunset for all PCS entities on April 4, 2005, which is ten years after the date that voluntary negotiations commenced for A and B block PCS entities. Those PCS entities that are paying their portion of relocation costs on an installment basis must continue the payments until the obligation is satisfied.

[61 FR 29693, June 12, 1996]

APPENDIX I TO SUBPART E OF PART 24—A PROCEDURE FOR CALCULATING PCS SIGNAL LEVELS AT MICROWAVE RECEIVERS (APPENDIX E OF THE MEMORANDUM OPINION AND ORDER)

The new Rules adopted in Part 24 stipulate that estimates of interference to fixed microwave operations from a PCS operation will be based on the sum of signals received at a microwave receiver from the PCS operation. This appendix describes a procedure for computing this PCS level.

In general, the procedure involves four steps:

1. Determine the geographical coordinates of all microwave receivers operating on co-channel and adjacent frequencies within the coordination distance of each base station and the characteristics of each receiver, *i.e.*, adjacent channel susceptibility, antenna gain, pattern and height, and line and other losses.

2. Determine an equivalent isotropically radiated power (e.i.r.p.) for each base station and equivalent e.i.r.p. values for the mobiles and portables associated with each base station. Determine the values of pertinent correction and weighting factors based on building heights and density and distribution of portables. Close-in situations, prominent hills, and extra tall buildings require special treatment.

3. Based on PCS e.i.r.p. values, correction and weighting factors, and microwave receiving system characteristics determined above, calculate the total interference power at the input of each microwave receiver, using the Longley-Rice propagation model.

4. Based on the interference power level computed in step 3, determine interference to each microwave receiver using criteria described in Part 24 and EIA/TIA Bulletin 10–F.

The interference from each base station and the mobiles and portables associated with it is calculated as follows:

$P_{rbi}=10Log\ (p_{tbi})-L_{bi}-UC_i+G_{mwi}-C_i-BP_i$

$P_{rmi}=10Log\ (n_{mi}\times p_{tmi})-L_{mi}-UC_i+G_{mwi}-C_i$

$P_{rpsi}=10Log\ (n_{psi}\times p_{tpsi})-L_{psi}-UC_i+G_{mwi}-C_i$

$P_{rpbi}=10Log\ (n_{pbi}\times p_{tpbi})-L_{pbi}-UC_i-(BP_i-BH_i)+G_{mwi}-C_i$

$P_{rpri}=10Log\ (n_{pri}\times p_{tpri})-L_{pri}-(UC_i-BH_i)+G_{mwi}-C_i$

where:

P refers to Power in dBm

p refers to power in milliwatts

P_{rbi}=Power at MW receiver from ith base station in dBm

p_{tbi}=e.i.r.p. transmitted from ith base station in milliwatts, which equals average power per channel × number of channels × antenna gain with respect to an isotropic antenna − line loss

L_{bi}=Path loss between MW and base station site in dB

UC_i=Urban correction factor in dB

G_{mwi}=Gain of MW antenna in pertinent direction (dBi)

C_i=Channel discrimination of MW system in dB

P_{rmi}=Power at MW receiver from mobiles associated with ith base station

p_{tmi}=e.i.r.p. transmitted from mobiles associated with ith base station