



Engineering
Consulting
Construction
Value Engineering
Real Estate Services

DOCKET FILE COPY ORIGINAL

Daniel J. Collins
Vice President

RECEIVED
NOV 17 1999
FCC MAIL ROOM

November 16, 1999

Magalie R. Salas, Esq.
Secretary, Federal Communications Commission
Washington, DC 20554

Dear Ms. Salas:

Enclosed are an original and 14 copies of a Petition for Rulemaking.

As the subject matter of the petition involves both the Wireless Telecommunications Bureau and the International Bureau, I am separately providing the chiefs of those bureaus with courtesy copies.

Once this petition is assigned an "RM" number, I will be happy to email you an Adobe Acrobat "pdf" version of the text, for convenience in posting it on the FCC's Web site.

If there are any questions or additional information is required, please feel free to contact me.

Regards,

Enclosures

299 Madison Avenue, PO Box 1936
Morristown, New Jersey 07962-1936
Tel 973.267.8830 x1342
Fax 973.267.3555
Email dcollins@ekmail.com
Web www.ekcorp.com

No. of Copies rec'd 14
List ABCDE
WTB

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

RECEIVED
NOV 17 1999
FCC MAIL ROOM

In the Matter of)
)
FCC Rules Section 101.145 --) RM - _____
Interference to Geostationary Satellites)
from Point-to-Point Microwave)
Systems)

PETITION FOR RULEMAKING

1. Pursuant to Section 1.401 of the FCC's Rules and Regulations, Edwards and Kelcey, Inc. submits the following Petition for Rulemaking, which requests a modification to Section 101.145 of the Rules, the FCC Form 601 license application, and the related processing of applications for point-to-point microwave licenses.

2. Edwards and Kelcey, Inc. is a consulting and engineering firm providing system design and regulatory support for both public- and private-sector operators of point-to-point microwave systems licensed under Part 101 of the Rules. Our firm is not an FCC licensee, but we respectfully request the Commission accept our role in support of licensees as sufficient standing in this matter. While the scope of the rule change addressed herein is fairly narrow, it involves a surprisingly significant number of microwave applications and we believe the change, if adopted by the Commission, will serve to reduce application preparation-related expenditures, use Commission resources

more efficiently, reduce unnecessary delays in FCC processing of certain applications, and facilitate more timely activation of new microwave systems.

3. Often, microwave operators determine a need to construct a link in the 5.925 – 6.875 GHz (“6 GHz”) band that requires an antenna to be pointed within two degrees of the geostationary satellite orbit. The frequency band in question is shared on a co-equal basis by stations in the Fixed Satellite Service, and under those circumstances there is a theoretical potential for unacceptable interference from a 6 GHz terrestrial microwave transmitter to a 6 GHz geostationary satellite space station (uplink) receiver.

4. The FCC’s mechanism for controlling such potential interference is codified in Section 101.145 of the Commission’s Rules. In pertinent part, the text of that regulation reads as follows:

§ 101.145 Interference to geostationary satellites.

These limitations are necessary to minimize the probability of harmful interference to reception in the bands 2655–2690 MHz, 5925–6875 MHz, and 12.7–12.75 GHz on board geostationary space stations in the fixed-satellite service.

(b) 2655 to 2690 MHz and 5925 to 6875 MHz. No directional transmitting antenna utilized by a fixed station operating in these bands may be aimed within 2 degrees of the geostationary-satellite orbit, taking into account atmospheric refraction. However, exception may be made in unusual circumstances upon a showing that there is no reasonable alternative to the transmission path proposed. If there is no evidence that such exception would cause possible harmful interference to an authorized satellite system, said transmission path may be authorized on waiver basis where the maximum value of the equivalent isotropically radiated power (EIRP) does not exceed:

- (1) +47 dBW for any antenna beam directed within 0.5 degrees of the stationary satellite orbit; or*
(2) +47 to +55 dBW, on a linear decibel scale (8 dB per degree) for any antenna beam directed between 0.5 degrees and 1.5 degrees of the stationary orbit.

This regulation acknowledges that microwave applicants often have no reasonable alternative to proposing that an antenna point within two degrees of the geostationary orbital arc, and in our experience that is indeed true. Often, a microwave operator needs to establish a link between specific, otherwise-unconnected points in an existing network, and any alternatives simply to avoid the antenna-pointing problem would add significant and unnecessary cost. Moreover, alternative designs might not be able to successfully complete frequency coordination with other microwave (and shared-band satellite earth station) operators, and plans involving completely new sites are subject to the vagaries and not insignificant expenses associated with municipal approvals and new construction. However, as Section 101.145 allows, if a microwave applicant in that circumstance can comply with the applicable power limitations, a waiver may be filed with the associated license application¹. (Item 20 of FCC Form 601, Schedule I, includes the question, “Does this filing add or modify emanations in the 5925 – 6425 MHz band pointed within 2 degrees of the Geostationary Satellite Arc?” If the applicant answers “Yes”, a waiver request “explaining circumstances” must be attached.²)

¹ We note that while the text of Section 101.145 refers to antennas that point “within 2 degrees” of the geostationary orbital arc, the specified EIRP limits only appear to address a range of 0 to 1.5 degrees.

² We note that while the text of Section 101.145 specifically addresses the 5925 – 6875 MHz frequency range, and FCC Form 601 is used for licensing systems throughout that range, Item 20 of Schedule I only appears to focus on the band 5925 – 6425 MHz.

5. Of specific interest here is the treatment of all such cases via a waiver request. Because of this particular approach, when an application involves a microwave antenna pointed within two degrees of the geostationary orbit – and *even if the proposed maximum EIRP is well under the FCC-specified EIRP limits* – the applicant is required by the Commission to request a waiver of the subject regulation.

6. To our knowledge, such waiver requests are almost always granted by the Commission. However, there is a significant impact associated with the requirement for a waiver request, as opposed to other possible alternatives. Under current microwave regulations and licensing policy, a new microwave system may be activated immediately upon filing of the related license application – *except if the application includes a waiver request*. If a waiver request is included with an application, operation may not begin until the Commission processes the application and approves the associated waiver request.

7. The problem is that the processing and granting of a license application including a waiver request can take several months. To most applicants in the public as well as the private sector, the time associated with system implementation is critical. In this case the additional time taken in application processing effectively serves no useful purpose, particularly when the applicant has complied with the applicable EIRP limits, no unacceptable interference will occur, and the waiver request will likely be granted.

8. Moreover, the EIRP limits specified by the FCC were originally established almost 20 years ago, when higher-power analog microwave systems were prevalent (and before the FCC allowed system activation immediately on filing of the related license application). When analog microwave radio was most popular, the possible range of parameters relating to transmitter power and antenna gain (combining to represent EIRP) were such that a maximum EIRP in the +47 to +55 dBW range was reasonably common. However, digital microwave systems now predominate, and those systems operate with lower transmitter power levels that effectively hold “real-world” EIRP levels comfortably under +47 dBW, the lower range of the FCC’s interference-control limit. Almost all commercially-available 6 GHz digital radios, including those equipped with automatic transmitter power control, operate with a maximum power of less than 1.5 watts (1.76 dBW). Even with a rather large 12-foot parabolic antenna with a main beam gain of 44.90 dBi, the maximum EIRP is only 46.66 dBW. Therefore, today’s most common microwave systems are virtually incapable of exceeding even the low-range EIRP limit in Section 101.145 of the Rules. Nevertheless, microwave applicants are still required to file a waiver request if an antenna is pointed within two degrees of the geostationary orbital arc. Because of that particular requirement for a waiver, activation of new microwave systems so affected cannot occur immediately and must await Commission processing of the waiver request. Since such waiver requests are almost always granted, this simply costs applicants time and delays system implementation. This can represent an even more significant problem if one or two links in the middle of a proposed longer, multi-link network require waivers, and the waiver requests effectively delay activation of the entire network.

9. We propose that there is a more reasonable and efficient alternative approach – one that requires only a minor modification to the regulation (and the license application form) and that does not in any way sacrifice interference protection for the geostationary satellite orbital arc. Our proposed modification is simple: require a waiver request only if an application proposes to exceed the existing specified EIRP limits in Section 101.145; if, on the other hand, an application complies with those EIRP limits, require only an exhibit noting that an antenna will point within two degrees of the orbital arc, and certifying compliance with the stated EIRP limits.

10. Effecting this modification requires relatively simple wording changes to Section 101.145 and to Item 20 of FCC Form 601, Schedule I. We propose modifying Section 101.145 subparagraph (b) to read as follows (with significant changes in bold):

(b) 2655 to 2690 MHz and 5925 to 6875 MHz. No directional transmitting antenna utilized by a fixed station operating in these bands may be aimed within 2 degrees of the geostationary-satellite orbit, taking into account atmospheric refraction, and exceed the EIRP limits stated below. License applications proposing an antenna pointed within 2 degrees of the geostationary-satellite orbit shall include an attached exhibit noting the circumstances and certifying compliance with the EIRP limits. The EIRP limits are as follows:

(1) +47 dBW for any antenna beam directed within 0.5 degrees of the stationary satellite orbit; or

(2) +47 to +55 dBW, on a linear decibel scale (8 dB per degree) for any antenna beam directed between 0.5 degrees and 1.5 degrees of the stationary orbit.

In addition, we propose the wording of Item 20 of FCC Form 601, Schedule I, be changed to read as follows:

Does this filing **propose an antenna** in the 5925 – 6875 MHz band pointed within 2 degrees of the Geostationary Satellite Arc? (Yes or No) If “Yes”, an **exhibit explaining circumstances and certifying compliance with the EIRP limits in Section 101.145 must be attached.**

Note that since an applicant generally has the right to request a waiver of any FCC regulation, the above-proposed language does not in either case specifically reference a need for a waiver if an application proposes to exceed the specified EIRP limits. (Note, too, that the above-suggested changes also address the frequency range issue we noted earlier in footnote 2.)

11. We believe this simple change in approach will eliminate the negative impact of a waiver request for virtually all cases of proposed 6 GHz microwave antennas pointing within two degrees of the geostationary orbital arc. At the same time, the proposed modification does not sacrifice any continuing interference protection for satellite space stations, and focuses the Commission’s resources and attention only on waiver requests that represent a real potential for interference. Most important, it will allow more timely system implementation for applicants whose proposed operations fall under Section 101.145 of the Rules but comply with the FCC-specified EIRP limits.

12. In conclusion, we believe a waiver requirement should not apply to applications for microwave systems meeting the Commission’s technical standards regarding the

control of potential interference. Under the circumstances, a simpler requirement for an attached exhibit would avoid unnecessary delays in system activation. Finally, although this proposal focuses on 6 GHz point-to-point microwave systems, the Commission may wish to consider adopting the same logic and exhibit approach for the other types of systems and frequency bands addressed in Section 101.145 of the Rules.

WHEREFORE, Edwards and Kelcey, Inc. respectfully requests the Commission to modify the subject regulation and license application form as described herein.

Respectfully submitted,



Daniel J. Collins
Vice President

Edwards and Kelcey, Inc.
299 Madison Avenue
Morristown, NJ 07962-1936

November 16, 1999