Before the
Federal Communications Commission
Washington DC 20554

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MAY 5 1999

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

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In the Matters of	)	
	)	
Request for Declaratory Ruling on	)	
Partial-Band Licensing of Earth	)	Docket No. 99-_____
Stations in the Fixed Satellite Service	)	
that Share Terrestrial Spectrum	)	
	)	
Petition for Rule Making to Set	)	
Loading Standards For Earth Stations	)	RM- _____
in the Fixed Satellite Service that	)	
Share Terrestrial Spectrum	)	

REQUEST FOR DECLARATORY RULING AND PETITION FOR RULE MAKING OF THE FIXED WIRELESS COMMUNICATIONS COALITION

May 5, 1999.

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SUMMARY

This Request for Declaratory Ruling and Petition for Rule Making seeks to maximize efficient use of the radio spectrum for both satellite and point-to-point terrestrial fixed operations. Parts 25 and 101 of the Commission's Rules provide that certain bands are to be shared "coequally" by the Fixed Satellite Service (FSS) and terrestrial microwave fixed services (FS). In actual practice, however, the sharing has not been equal. The Commission routinely licenses an FSS earth station for the entire allocated band, without regard to any actual need for bandwidth, and with no requirements as to either efficiency or loading. Fixed terrestrial services sharing the same bands, in contrast, are generally limited to frequencies actually needed, and additionally are subject to stringent requirements for both spectrum efficiency and loading. Moreover, Commission-accepted frequency coordination procedures allow earth stations to warehouse huge amounts of licensed but unused spectrum, even if it is desperately needed by terrestrial operators. A single earth station can require fixed terrestrial operations to coordinate over an area larger than some states, with a high probability of blockage over a substantial part of that area. This is far from coequal sharing.

Furthermore, current procedures allow an earth station applicant to selectively waive an interference objective. For example, the earth station applicant may accept an interference case from an existing point-to-point terrestrial user because it does not plan to use the interfering frequencies, or because it knows that terrain or a specific local feature, such as a berm or building, will attenuate the interfering signal to an acceptable level. But when a subsequent terrestrial applicant seeks coordination, the earth station operator is free to disregard those same

facts and deny the coordination, even where the terrestrial user would not cause actual interference to the earth station.

Remedies. Point-to-point terrestrial operations should have coequal access to shared frequency bands and not be vulnerable to preemption by FSS operators indefinitely into the future. The Commission should affirm by declaratory ruling that an FSS earth station, using spectrum shared with point-to-point terrestrial services, may be licensed and coordinated to use only twice the amount of spectrum for which the applicant has demonstrated actual need. This represents an allowance of 100% for changeover to alternate transponders or satellites, in case that is required. If the earth station subsequently needs additional bandwidth beyond that amount, it should have to modify its license and coordinate with other users. Similarly, the Commission should promulgate a rule that requires an FSS earth station licensed for significant amounts of shared spectrum to load to 50% of licensed bandwidth within 30 months after licensing, or else reduce its licensed bandwidth. Finally, the Commission should require earth stations that accept cases of potential interference to extend the same modified interference objective to later-coordinated terrestrial facilities.

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REQUEST FOR DECLARATORY RULING
AND PETITION FOR RULE MAKING
OF THE
FIXED WIRELESS COMMUNICATIONS COALITION

Pursuant to Section 1.2 of the Commission's Rules, the Fixed Wireless Communication Coalition (FWCC)[1] requests a declaratory ruling that an earth station in the Fixed Satellite Service (FSS) using spectrum shared with point-to-point terrestrial services may be licensed and coordinated only for the amount of spectrum for which it has demonstrated actual need, plus a 100% allowance that the earth station operator can keep in reserve for changing over to alternate facilities. Further, pursuant to Section 1.401 of the Rules, the FWCC petitions the Commission

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[1] The Fixed Wireless Communications Coalition is a coalition of equipment manufacturers and users interested in terrestrial fixed microwave communications. Its membership includes manufacturers of microwave equipment, licensees of terrestrial fixed microwave systems and their associations, and communications service providers and their associations. Its membership also includes railroads, public utilities, petroleum and pipeline entities, public safety agencies, the broadcast industry, and their respective associations, telecommunications carriers, landline and wireless, local, and interexchange carriers, and others. A list of members is attached as Appendix A.

to amend Part 25 of the Rules to require earth stations in the FSS licensed for more than minimal amounts of spectrum shared with terrestrial fixed services (FS) to meet minimum loading standards, and to require all FSS earth stations to accept interference from new terrestrial facilities on the same basis as they accept any interference in the initial coordination. The objective is to adopt spectrum management standards that achieve in practice the "coequal" sharing specified by Parts 25 and 101 of the Commission's Rules.[2]

A. Introduction

In principle, these bands are shared coequally by the FSS and terrestrial services:

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[2] 47 C.F.R. § 25.202(a)(1) Note 1 ("This band is shared coequally with terrestrial radiocommunication services.")

Frequencies (GHz)	Satellite Service[3]	Terrestrial Service[4]
3.700- 4.200	Space to Earth	CC, LTTS, OFS
5.925- 6.425	Earth to Space	CC, LTTS, OFS
6.425-7.125	Earth to Space	CC, LTTS, OFS, BAS, CARS
10.700-11.700	Space to Earth[5]	CC, LTTS, OFS
12.700-13.250	Earth to Space[6]	CC, LTTS, OFS, BAS, CARS
17.700-19.700	Space to Earth	CC, OFS, BAS, CARS
27.500-29.500[7]	Earth to Space	LMDS

In practice, however, the satellite-terrestrial sharing is far from coequal. Satellite earth station operators have an overwhelming preference in access to spectrum, due to a combination of two factors. First, the Commission routinely licenses an earth station for the entire allocated band, without regard to any actual need for bandwidth, and with no loading requirements, while point-to-point terrestrial operations are generally limited to frequencies actually needed, and additionally are subject to stringent requirements for spectrum efficiency and loading. Second,

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[3] 47 C.F.R. § 25.202(a)(1).

[4] 47 C.F.R. §§ 74.602 (BAS), 78.18 (CARS), 101.101 (CC, LTTS, OFS, LMDS).

[5] 10.95-11.20 and 11.45-11.70 GHz are presently allocated for international GSO downlinks. ET Docket No. 98-206 proposes to open the entire 10.7-11.7 GHz band to both GSO downlinks and NGSO gateway downlink operations.

[6] Proposed in ET Docket No. 98-206.

[7] Although the 27.5-29.5 GHz band is allocated on a primary basis to both the Fixed Service and the FSS, CC Docket No. 92-297 designated discrete band segments for different services. The only portion of the band subject to co-primary FS/FSS sharing is 29.10-29.25 GHz, and the Commission imposed special restrictions on both the Fixed Service and the FSS to facilitate sharing in this segment. *See* Redesignation of the 27.5-29.5 GHz Frequency Band, 11 FCC Rcd 19005, 19033-34 (1996).

earth stations are routinely licensed for all azimuths at all elevations, and can deny coordination to terrestrial operators on that basis. As a result, earth stations are permitted to "warehouse" huge amounts of unused bandwidth over unlimited azimuth, even if the spectrum is desperately needed by terrestrial operators.

B. Terrestrial Licensees Are Required to Load Their Spectrum and To Use It Efficiently.

The point-to-point terrestrial services must meet stringent rules intended to ensure efficient use of FS spectrum.

First, equipment at 4 GHz, 6 GHz, 10 GHz, and 11 GHz is subject to demanding payload requirements, ranging from 2.46 to 4.47 bits/second/Hertz.[8]

Second, "[r]egardless of the maximum authorized bandwidth specified for each frequency band, the Commission reserves the right to issue a license for less than the maximum bandwidth if it appears that a lesser bandwidth would be sufficient to support an applicant's intended communications."[9]

Third, equipment at 4 GHz, 6 GHz, 10 GHz, and 11 GHz operating at bandwidths of 10 MHz or greater is required to be loaded to 50% of the specified payload standards within 30 months of licensing.[10]

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[8] 47 C.F.R. § 101.141(a)(3).

[9] 47 C.F.R. § 101.109(b).

[10] 47 C.F.R. § 101.141(a)(3) (note 3 in table).

Fourth, frequency diversity is prohibited in the absence of a factual showing that required communications cannot otherwise be achieved.[11]

In short, point-to-point terrestrial operators are required to squeeze the maximum benefit out of shared spectrum by requesting only as much as they actually need, and by using and loading it efficiently.

C. Earth Station Licensees Are Free To Request Spectrum Covering an Entire Allocated Band.

In contrast to the terrestrial rules, the Part 25 satellite rules have no provisions that require an earth station operator to minimize spectrum usage. At least since 1967, the Commission has routinely licensed an earth station for an entire allocated band without any inquiry into the amount of traffic to be carried.[12] Nor are satellite and earth station operators subject to any rules on either spectrum efficiency or loading. If an earth station applicant requested a license for the entire 1,000 MHz C-band to carry a single two-way voice channel, the Commission would grant it in the ordinary course. Nothing on the application form even asks for information that would let the Commission determine how much spectrum an applicant reasonably needs.

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[11] 47 C.F.R. § 101.103(c). In the C-band, frequency diversity is limited to one protection channel, and even then will not be authorized without a minimum of three working channels in service or a showing that three working channels will be required within three years — subject to termination if the application for the third working channel not actually filed within three years. *Id.*

[12] *See* Communications Satellite Corp., 8 F.C.C.2d 1001, 1003 (1967) (consistent practice in the United States to "coordinate[] the entire bands 5925-6425 MHz (transmit) and 3700-4200 MHz (receive) and all azimuths from 0°-360° and all elevation angles from 5° and above, in order to allow for flexibility of operation.") Although this opinion found "little or no adverse affect upon terrestrial systems in the areas concerned," *id.*, that is no longer true 32 years later.

D. The Asymmetry In the Rules Between Terrestrial and Satellite Users Disadvantages Terrestrial Operations.

1. One-sided requirements for spectrum conservation unfairly penalize terrestrial users.

The Commission's policy of imposing spectrum conservation obligations on terrestrial users, but not on earth station operators, unfairly short-changes terrestrial users.

Both services are subject to frequency coordination procedures.[13] A proposed station, whether point-to-point terrestrial or satellite earth station, must show it will not cause interference to a previously licensed station in either service, and must accept interference from previously licensed stations in either service. In principle, these requirements are similar for the two services.

In practice, however, all similarity vanishes. A point-to-point applicant must usually coordinate if it seeks to locate anywhere within 100 to 150 miles of a licensed earth station, depending on terrain, latitude, and other factors. The resulting coordination area is larger than some states. If the earth station is licensed for the entire band — as most are — the terrestrial station must coordinate at any frequency it proposes to use, even if the earth station is not using that part of the band. Worse still, even if a point-to-point station successfully coordinates with an earth station on an unused frequency, the earth station remains free at any time to expand its operations and displace the terrestrial station. But the reverse is not true. A terrestrial station cannot license hundreds of megahertz for which it has no traffic, and by doing so, maintain preemption rights for unused spectrum over tens of thousands of square miles. Yet earth stations routinely do just that.

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[13] *See generally* 47 C.F.R. §§ 25.203(c), 101.103.

2. *The Rules allow earth stations to hold terrestrial operators to standards the earth stations cannot meet.*

Current procedures permit an earth station operator to accept potential cases of interference at the time of initial coordination, and thereby site an earth station that would otherwise be ruled out by FS interference, but then block future FS users by holding them to the original objectives.

The initial coordination of a new earth station often shows potential cases of interference with terrestrial users on the earth station's receive frequencies. This is particularly likely in the Ku-band international frequencies at 10.95-11.20 and 11.45-11.70 GHz, for example, where terrestrial users have a large embedded base of 11 GHz stations. Many potential interference cases exceed the desired interference objective by a significant amount. The earth station is free to accept these cases nonetheless. But once the cases are accepted and the coordination is complete, the earth station operator can then bar new terrestrial users that do not meet the originally desired objective, even though the operator waived that same objective as to existing terrestrial users at the time of the original coordination.

There could be many reasons why an earth station might operate satisfactorily despite the missed objectives. For example, even though an earth station routinely coordinates for the full band, the operator may know in advance it will not be operating on the specific interfering terrestrial channels. Or, the earth station operator may know of a specific local feature, such as a berm or building, capable of attenuating the interfering signal to an acceptable level, even though the feature does not appear on the topographical maps.

In short, the earth station operator has the option of accepting potential interference cases on the basis of facts not available to the terrestrial user. But when a subsequent terrestrial user

seeks coordination, the earth station operator is free to disregard those same facts and deny the coordination, even where the terrestrial user would not cause actual interference to the earth station.

E. The Commission Should Issue a Declaratory Ruling That Restricts Earth Stations Using Shared Spectrum to Bandwidth Actually Needed.

Terrestrial operations are chronically short of spectrum, particularly in densely populated areas, and are accustomed to cooperating with one another to maximize use of the spectrum. Point-to-point licensees also accept the need to work around an earth station that is actually using frequencies shared between the two services. But terrestrial operations should have access to shared frequencies that the earth station is not using, and has no firm plans to use, without being vulnerable to preemption indefinitely into the future.

The Commission should affirm by declaratory ruling that an earth station in the Fixed Satellite Service, using spectrum shared with terrestrial services, may be licensed and coordinated to use only twice the amount of bandwidth for which the applicant has demonstrated actual need. An applicant might demonstrate actual need, for example, by certifying that it has the appropriate contracts for transponder usage, or by certifying minutes of usage per day, or by justifying the bandwidth applied for in terms of the service proposed. FSS users such as broadcast networks, which may need routine access to several transponders on multiple satellites, might be able to take those multiple facilities into account in assessing actual need. The 100% allowance for frequency diversity permits fast changeover to alternate transponders or satellites in case of space station failure or other such events. If the earth station subsequently experiences an unexpected demand for additional bandwidth beyond the 100% allowance, it must modify its license and coordinate with any other users in place at that time. An earth station is free to

change frequencies in the same band without increasing total bandwidth (for example, to change to satellites or transponders outside its licensed frequencies) but must satisfactorily coordinate the new frequencies with other users prior to operation.

This requested declaratory ruling is fully consistent with the Commission's Rules as they stand today, and so can be granted without an APA rulemaking procedure.[14] Proposed text appears in Appendix B.

F. The Commission Should Amend Its Rules to Reduce the Coordination Disparities that Presently Favor Earth Stations.

1. The Commission should require earth stations using shared spectrum to meet minimum loading standards.

Spectrum shortage has become a fact of life in many parts of the country. The Commission is attempting to ease congestion in most of the fixed and mobile services, whether private, common carrier, or CMRS, by requiring licensees to meet reasonably accessible levels of loading and spectrum efficiency. This sometimes entails additional costs, but ultimately benefits all users by permitting a given amount of spectrum to carry many more communications.

The conspicuous exception to the policy favoring efficient spectrum loading has been earth station licensing in the Fixed Satellite Service. There, as noted, a licensee is permitted to use hundreds of megahertz inefficiently, or even to camp on spectrum without using it at all.

To help make more shared spectrum available for terrestrial use, without unfairly impinging on earth station operators, the FWCC petitions the Commission to amend Part 25 of its Rules to add this provision:

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[14] We nonetheless propose below a rule amendment that parallels this declaratory ruling, so that all of the relevant provisions are conveniently accessible in the Code of Federal Regulations.

> An earth station licensee in the Fixed Satellite Service, in bands shared with point-to-point terrestrial services, must certify within 30 months after issuance of an initial license, major modification, or renewal that it is loaded to 50% of its licensed bandwidth. A licensee that cannot make this certification by the required date must instead, within 30 days of that date, notify the Commission pursuant to Section 25.118 of a reduced range of operating frequencies whose total bandwidth is no more than twice the actual load, and must disseminate such notice to the public in a manner reasonably calculated to reach other users of the band. This paragraph does not apply to earth stations authorized for total bandwidth of 40 MHz or less in each direction.[15]

The first sentence of this provision parallels the loading requirement applicable to terrestrial operations in the 4, 6, 10, and 11 GHz bands, operating at bandwidths of 10 MHz or greater.[16] The second sentence is proposed in lieu of outright cancellation of the earth station license for failure to load. The last sentence provides an exemption for light users of the band.

2. *The Commission should require earth stations that waive interference cases to give similar treatment to later-coordinated terrestrial facilities.*

The present rules allow an earth station operator to waive potential interference from terrestrial users in order to site an earth station. But, once sited, the earth station can bar future terrestrial users that exceed the interference objective, even if they threaten far less interference than the case waived.[17] The following procedure will help to resolve that inequity.[18]

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[15] Section 25.118 permits an earth station licensee to make certain changes to its facilities without prior Commission authorization, provided that any required frequency coordination procedures are satisfactorily completed in advance. The licensee must notify the Commission of the modification within 30 days.

[16] *See* 47 C.F.R. § 101.141(a)(3) (note 3 in table).

[17] One FWCC member had an earth station accept an interference case that missed the desired interference objective by 94 dB — and then subsequently deny a terrestrial path that missed the desired objective by approximately 5 dB (after allowing for terrain blockage).

[18] Proposed rule text to implement these provisions appears in Appendix C.

(a) If a satellite earth station applicant coordinating a new or modified earth station accepts cases of potential interference into the earth station from terrestrial users, it may at its option explain the basis for accepting each case (frequency offset, terrain, attenuation from buildings, etc.) Combinations of explanations are acceptable, as are incomplete explanations. (Missing explanations are dealt with in paragraph (f).) For example, a 50 dB missed objective might be accounted for as 10 dB terrain blockage, 25 dB shielding due to a building, and 15 dB unexplained.

(b) If the explanation under paragraph (a) relies on frequency offset, a terrestrial station can coordinate at any level in the frequency ranges accepted by the earth station.

(c) If the only explanation under paragraph (a) is shielding by a local feature that would not appear on a topographical map, such as a building or berm, then its level of attenuation is deemed to be the amount of the missed objective, even if this is different from the actual attenuation that would show up in measurements. This imputed attenuation applies over the entire azimuth subtended by the feature. For example, if the earth station accepts a 50 dB missed objective on the basis of a building, then the attenuation of that building is deemed to be 50 dB for all azimuths passing though the building.

(d) If the only explanation under paragraph (a) is terrain blockage, the earth station applicant must evaluate the blockage using industry-accepted programs based on current topographical maps. If the evaluated blockage is less

than the missed objective, and therefore insufficient to clear the case, the desired interference objective level of the original coordination is reduced by the amount of the missed objective. For example, suppose the original interference objective is -170 dBW, the accepted incoming signal level is -120 dBW, and documented terrain blockage is 30 dB. The missed objective is the difference between -170 and -120, or 50 dB. Terrain accounts for 30 dB of that, leaving 20 dB unexplained. The interference objective for new terrestrial facilities is then deemed to be 20 dB above the original objective of -170 dBW, or -150 dBW.

(e) If the explanation under paragraph (a) is a combination of terrain blockage and shielding by local feature, the level of attenuation of the local feature is deemed to be the amount of the missed objective less the terrain blockage calculated as in paragraph (d), and applies over the entire azimuth subtended by the attenuating feature.

(f) If the earth station operator does not offer an explanation under paragraph (a), or if none of paragraphs (b) through (e) apply, then the original objective is reduced by the amount of the unexplained missed objective. For example, if the original interference objective was -170 dBW and the missed objective was 20 dB, the interference objective for new terrestrial facilities is deemed to be -170 + 20 = -150 dBW.

CONCLUSION

The Commission should correct the imbalance in access to spectrum shared coequally between satellite and point-to-point terrestrial users. The Commission should declare that it will

no longer authorize earth stations for more than twice the amount of spectrum actually needed. In addition, the Commission should amend its rules (1) to require earth station operators to either certify loading to 50% of licensed bandwidth within 30 months, or else reduce the licensed bandwidth to not more than twice actual loading, and (2) to adjust the interference objectives of earth stations that accept cases of potential interference so that new terrestrial facilities can be similarly accommodated.

Respectfully submitted,

FIXED WIRELESS COMMUNICATIONS
COALITION

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Coalition

May 5, 1999

Appendix A

MEMBERS OF THE FIXED WIRELESS COMMUNICATIONS COALITION

USERS

Association of Public-Safety Communications Officials
American Mobile Telephone Association
UTC - The Telecommunications Association
National Association of Broadcasters
Independent Cable Telecommunications Association
American Petroleum Institute
International Wireless Cable Association
Personal Communications Industry Association
Norfolk-Southern Railroad
Union Pacific Railroad
Burlington-Northern Railroad
BellSouth
Bell Atlantic
SBC Communications, Inc.
People's Choice TV

MANUFACTURERS

Harris Corporation -- Microwave Division
Alcatel Network Systems Inc.
Digital Microwave Corporation
Sierra Digital Communications
California Microwave, Microwave Data Systems
Tadiran Microwave Networks

Appendix B

Proposed Declaratory Ruling

Some frequency bands are licensed coequally between the fixed satellite service (FSS) and terrestrial fixed services. 47 C.F.R. § 25.202(a)(1) Note 1. Point-to-point terrestrial users in some of these bands are required to load their licensed channels to 50% of specified payload standards within 30 months of licensing. 47 C.F.R. § 101.141(a)(3) (note 3 in table). Satellite earth station operators in the shared bands, however, are routinely licensed for the entire allocated band without any showing of spectrum need. Once licensed, an earth station operator may deny coordination to subsequent terrestrial applicants for any part of the entire band, including frequencies the earth station is not be using and may have no plans to use.

The present Declaratory Ruling seeks to address this discrepancy in access to spectrum.

FSS earth station applications for initial authorization, major modification, or renewal filed after the release date of this Ruling, in bands shared with terrestrial services, must specify and justify the amount of bandwidth actually needed to deliver the services described in the application. An applicant might establish actual need, for example, by certifying that it has transponder contracts for the bandwidth as to which it asserts actual need, or by certifying minutes of usage per day, or by justifying the bandwidth applied for in terms of the service proposed. (Some users may be able to justify bandwidth for access to multiple transponders and/or satellites.) Frequency ranges requested in the application must encompass no more than twice the justified bandwidth. This represents an allowance of 100% for frequency diversity.

Pursuant to Section 25.118, an earth station licensee does not require prior Commission authorization to modify its operation to use different frequencies in the same band, without increasing total bandwidth beyond that authorized (for example, to change to satellites or transponders outside the licensed frequencies), but must satisfactorily complete frequency coordination of such modifications with other users of the band. If an earth station experiences a demand for additional bandwidth beyond that specified in its license, it must modify its authorization accordingly, and satisfactorily coordinate with other users.

This substance of this Ruling is authorized by Section 308(b) of the Communications Act. Procedurally, the Ruling is fully consistent with the Commission's Rules in effect today and does not require a rulemaking procedure under the Administrative Procedure Act.

Appendix C

Proposed Rules

Section 25.130 is amended by adding a new paragraph (f):

> (f) An applicant for an earth station authorization in bands shared with terrestrial services must specify and justify the amount of bandwidth actually needed to deliver the services described in the application. Frequency ranges requested in the application must encompass no more than twice the justified bandwidth. An earth station licensee may modify its operation pursuant to Section 25.118 to use different frequencies in the same band without increasing total bandwidth beyond that authorized, but must satisfactorily complete frequency coordination of such modifications with other users of the band. If an earth station experiences a demand for additional bandwidth beyond that specified in its license, it must modify its license accordingly, subject to satisfactory frequency coordination with other users.[19]

Section 25.133 is amended by adding a new paragraph (e):

> (e) An earth station licensee in the Fixed Satellite Service, in bands shared with point-to-point terrestrial services, must certify within 30 months after issuance of an initial license, major modification, or renewal that it is loaded to 50% of its licensed bandwidth. A licensee that cannot make this certification by the required date must instead, within 30 days of that date, notify the Commission pursuant to Section 25.118 of a reduced range of operating frequencies whose total bandwidth is no more than twice the actual load, and must disseminate such notice to the public in a manner reasonably calculated to reach other users of the band. This paragraph does not apply to earth stations authorized for total bandwidth of 40 MHz or less in each direction.

Section 25.203 is amended by redesignating paragraphs (e) through (k) as (f) through (l), respectively, and by adding new paragraph (e):

> (e)(1) An applicant for an earth station authorization may, during the frequency coordination process, choose to accept cases of potential interference into the earth station from terrestrial users. In that event, subsequent terrestrial applicants may coordinate with the earth station at the same level and under the

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[19] This proposed rule parallels the declaratory ruling requested in text and set out in Appendix B. As explained in text, this provision is fully consistent with the Commission's Rules today. We nonetheless suggest that the Commission include this language in any rule amendment, so that all of the relevant provisions are conveniently accessible in the Code of Federal Regulations.

same conditions as the earth station accepted in its coordination, subject to the following paragraphs.

(2) An applicant for an earth station authorization that accepts cases of potential interference from a terrestrial station, as in paragraph (1), may specify that it does so on the basis of frequency offset from the frequencies and bandwidth used by the terrestrial station. In that event, subsequent terrestrial applicants may coordinate in the frequency ranges accepted by the earth station without affording any protection to the earth station.

(3) An applicant for an earth station authorization that accepts cases of potential interference, as in paragraph (1), may specify that it relies on attenuation by a local feature, in which event it must identify the local feature and specify its location and the subtended azimuth. Subsequent terrestrial applicants may coordinate over the arc of azimuths passing through the local feature at the same level as the earth station accepted.

(4) An applicant for an earth station authorization that accepts cases of potential interference, as in paragraph (1), may specify that its waiver is based in whole or in part on terrain blockage. In that event the earth station applicant must evaluate the terrain blockage using industry-accepted programs based on current topographical maps. If the evaluated blockage is less than the difference between the desired and accepted interference objectives, and therefore insufficient to clear the interference case, subsequent terrestrial applicants may coordinate at the level that the earth station accepted in its waiver, reduced by the evaluated blockage.

(5) An applicant for an earth station authorization may accept cases of potential interference based on combinations of the factors addressed in paragraphs (2) through (4). In that event, subsequent terrestrial applicants may coordinate at the levels determined under paragraphs (2) and (3), which may depend on frequency and azimuth, as adjusted by terrain blockage as specified in paragraph (4).