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Before the
Federal Communications Commission
Washington DC 20554

In the Matter of	)	
	)	
FWCC Request for Declaratory Ruling on	)	
Partial-Band Licensing of Earth	)	IB Docket No. 00-203
Stations in the Fixed-Satellite Service	)	RM-9649
That Share Terrestrial Spectrum	)	
	)	
FWCC Petition for Rulemaking to Set	)	
Loading Standards for Earth Stations	)	
In the Fixed-Satellite Service that	)	
Share Terrestrial Spectrum	)	
	)	
Onsat Petition for Declaratory Order that	)	
Blanket Licensing Pursuant to Rule 25.115(c)	)	SAT-PDR-19990910-00091
is Available for Very Small Aperture	)	
Terminal Satellite Network Operations at C-	)	
Band	)	
	)	
Onsat Petition for Waiver of Rule 25.212(d)	)	
to the Extent Necessary to Permit Routine	)	
Licensing of 3.7 Meter Transmit and Receive	)	
Stations at C-Band	)	
	)	
Ex parte Letter Concerning Deployment of	)	
Geostationary Orbit FSS Earth Stations in	)	
the Shared Portion of the Ka-band	)	

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COMMENTS OF THE
FIXED WIRELESS COMMUNICATIONS COALITION

Ronald D. Coles, for DMC Stratex Networks, Inc.
5860-G Post Corners Trail
Centerville VA 20120
703-815-6992
Member, FWCC

January 8, 2001

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COMMENTS OF THE
FIXED WIRELESS COMMUNICATIONS COALITION

The Fixed Wireless Communications Coalition (FWCC) hereby files these Comments in the above-captioned proceeding. The FWCC filed the original Petition for Rule Making in RM-9649, part of this docket.[1]

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[1] Partial-Band Licensing of Earth Stations in the Fixed-Satellite Service That Share Terrestrial Spectrum, IB Docket No. 00-203, Notice of Proposed Rulemaking, FCC 00-369 (released Oct. 24, 2000) (Notice). 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

I. SUMMARY

The Commission's Rules require equitable sharing of spectrum between fixed service (FS) terrestrial microwave facilities and earth stations in the fixed satellite service (FSS). The FWCC Petition for Rule Making in RM-9649 showed that sharing of spectrum has been far from equitable in practice. An FSS earth station is routinely licensed for the entire allocated band, without regard to actual need for bandwidth, and is permitted to warehouse huge amounts of unused spectrum, while FS facilities, in contrast, are strictly regulated as to both spectrum efficiency and loading.

The FWCC Petition proposed these changes to the licensing rules:

- An earth station may be licensed only for twice the amount of bandwidth actually needed, with "actual need" broadly construed to accommodate earth stations that access multiple or varying satellites, or otherwise have unpredictable spectrum requirements.

- After 30 months, an earth station using less than half its licensed bandwidth must modify its license to reduce the bandwidth to twice the actual load.

The Commission acknowledges the FWCC's concerns about equitable sharing. The present Notice also raises additional concerns about an earth station's inability to predict its bandwidth requirements before licensing, and its need to build a customer base after licensing. The Notice accordingly proposes somewhat different remedies:

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microwave systems and their associations, and communications service providers and their associations. Its membership also includes railroads, public utilities, petroleum and pipelines 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.

The National Cable Television Association does not support this filing.

- An earth station is initially licensed for the entire allocated band.

- An earth station that subsequently denies coordination to an FS applicant must certify "demonstrated use" of the frequencies in question, or they become available to the FS applicant.

- No showing of demonstrated use is required for the first 24 months after licensing, to provide time for the earth station to establish its customer base.

The FWCC agrees with the Commission's concerns about earth station start-ups. The proposed remedy, however, may result in disputes over an earth station's "demonstrated use" of frequencies at the worst possible time, just when the FS applicant is attempting to finalize coordination and begin operations. In addition, the Commission's proposal would not allow an earth station to reserve specific frequencies for back-up in case of satellite or transponder failure. Accordingly, the FWCC offers an alternative set of procedures:

- An earth station may be initially licensed for twice its amount of "projected need" -- again, broadly construed to accommodate individual earth stations that access multiple or varying satellites, or otherwise have unpredictable needs. In occasional situations, licensing at twice projected need may cover the entire band in the vicinity of that particular earth station.

- After 24 months, an earth station using less than half of the licensed bandwidth must modify its license to reduce the bandwidth to twice its actual need.

The 24-month period of liberal licensing permits an earth station to build its customer base and finalize bandwidth requirements. The subsequent allowance of twice actual need is intended to give the earth station operator adequate flexibility to identify back-up capacity for transponder or satellite failure.

Coordination rules. Current procedures allow an earth station applicant to selectively waive an interference objective. An earth station applicant may accept an interference case from an incumbent 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. In some cases the earth station may simply need that particular site, notwithstanding the interference. Yet, when a subsequent terrestrial applicant seeks coordination, the earth station operator is free to disregard mitigating facts and deny the coordination. This is true even in cases where the terrestrial user would not cause actual interference to the earth station.

An earth station that accepts a higher-than-desired interference case when selecting its site should be required to accept the same level of interference from later-coordinating FS stations. The FWCC shows below that cumulative interference from multiple subsequent FS stations is not a realistic concern. The FWCC also clarifies that an earth station may adhere to established coordination criteria outside the specific frequency bands or azimuths on which it waived higher levels of interference.

Onsat proposal. Finally, the FWCC supports the Onsat proposal for blanket licensing of CSAT user terminals. The FWCC requests a clarification, however, that post-licensing coordination expires if an earth station is not put into service within six months.

II. THE COMMISSION SHOULD REVISE ITS PROPOSAL FOR FS/FSS SHARING TO IMPROVE PRACTICABILITY AND MINIMIZE DELAYS IN FIXED SERVICE LICENSING.

A. Introduction

Although the Commission's Rules provide for "coequal" sharing between the FS and the FSS,[2] in actual practice the sharing has been far from equal. The Commission routinely licenses an FSS earth station for the entire allocated band, without regard to any actual need for bandwidth, and imposes 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.

The FWCC Petition made specific suggestions for more equitable sharing of spectrum between the FS and the FSS.[3] The Commission's Notice raises practical objections to some of those suggestions, and lays out alternative proposals.[4] The FWCC agrees with the substance of the Commission's objections, but fears some of its proposed solutions will prove to be

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[2] 47 C.F.R. § 25.202(a)(1) Note 1.

[3] Request for Declaratory Ruling and Petition for Rule Making of the Fixed Wireless Communications Coalition, RM-9649 (filed May 5, 1999)

[4] Notice at paras. 38-44.

cumbersome in practice. Below, the FWCC offers a set of proposals that, we believe, accommodates not only the FWCC's and the Commission's goals, but also the reasonable demands of the FSS industry, and which will be fully practicable in the field.

B. The Original FWCC Request

The FWCC Petition of May 5, 1999, proposed the following limitations on earth station licensing:

- An Earth station may be licensed only for twice the amount of bandwidth as to which the applicant has demonstrated actual need.
- After 30 months, an earth station using less than half of its licensed bandwidth must modify its license to reduce the bandwidth to twice the actual load.
- "Actual need," for licensing and loading purposes, may be liberally construed to accommodate individual earth stations that routinely access multiple satellites or satellites chosen by others (such as broadcasters, teleports, and Intelsat providers), as well as earth stations serving third-party customers with unpredictable demands for bandwidth.
- The allowance of twice actual need is intended to give earth station operators adequate flexibility to contract for back-up capacity in case of transponder or satellite failure.
- ***Exemption***: Earth stations authorized for 40 MHz or less in each direction are exempt from showing "actual need."

C. The Commission's Counterproposal

The Commission noted three objections to the FWCC request.

First, the Commission observed that many earth stations employ multiple antennas, and may communicate regularly with a changing mix of FSS satellites. Examples include commercial gateway and teleport facilities in the business of providing third party access to satellite services, and private facilities such as those operated by HBO to transmit and receive

programming. The Commission stated that its full-band licensing policy provides these earth stations with the flexibility to change transponders or satellites on short notice to meet changing operational requirements.[5]

Second, the Commission believes the FWCC proposal would be impractical to implement. To document "actual need" before filing an application, says the Commission, the FSS applicant would have to identify specific frequencies, pay reservation fees for those frequencies, and enter into contracts with the satellite operators -- all before the applicant even knew whether it could successfully coordinate the spectrum with affected FS users.[6]

Third, the Commission reasons that a new earth station intended to serve third-party customers needs an "initial loading period" to establish its business and build its customer base.[7]

Because of these concerns, the Commission proposes to continue authorizing earth stations for the full band, subject to frequency coordination at the time of application.[8] At the same time, however, to accommodate the FWCC request for more equitable access to spectrum, the Commission set out the following counterproposal, based on the concept of an earth station's "demonstrated use":[9]

- An earth station is initially licensed for the full band.

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5 Notice at para. 40.

6 Notice at para. 41.

7 Notice at para. 55.

8 Notice at para. 40.

9 Notice at paras. 53-56.

- If the earth station subsequently denies coordination to an FS applicant, the earth station operator must certify "demonstrated use" to the frequency coordinator in one or more of these categories:

  (1) "recent use," by identifying the timeframes each transponder band was used during the past 24 months;

  (2) "current use," by identifying each transponder band in use at the time of the coordination request; and/or

  (3) "imminent use," by documenting planned use in the near future -- *e.g.*, through signed contracts.

- The frequency coordinator determines whether the requested frequencies are "in use" by the earth station. If not, they are available to the FS applicant.

- In case of a dispute, either party can seek review by the Commission.

Exemptions:

- An earth station may deny coordination over the entire band for 24 months after licensing, without demonstrating use, to provide time for the earth station to establish its customer base.

- Earth stations authorized for 40 MHz or less in each direction are exempt from the "demonstrated use" requirement.

D. An Alternative FWCC Proposal

The FWCC agrees with the substance of the Commission's concerns. Specifically, the FWCC acknowledges that some earth stations (*e.g.*, teleports) need flexible access to a mix of satellites. The FWCC also respects the difficulty of some earth stations' documenting actual need for spectrum before filing their applications, and notes the importance of giving an earth station that will depend on a customer base adequate time to build up its business.

At the same time, however, the FWCC fears one aspect of the Commission's proposal may cause serious difficulty in practice. Under the Commission's approach, any dispute over

denial of coordination on particular frequencies will arise at the worst possible time: just when the FS station is attempting to file its application and commence operations. In the same way that earth stations need prompt licensing to serve their customers, so do FS operators. We welcome the Commission's concurrence that an earth station should not be permitted block coordination on an unused frequency.[10] But protracted disputes over whether particular frequencies in fact are unused will result in the same type of obstruction of service the Commission seeks to alleviate.

Moreover, the satellite industry may rightfully object that the Commission's plan does not allow an earth station adequate control over its back-up capacity to provide for transponder or satellite failure. The Notice properly raises the issue of "non-routine" need for frequency diversity on the part of FSS operators,[11] yet the Commission's plan would require an FS operator to be given any unused frequency on request, after two years. This would leave an earth station operator no way to reserve specific transponder bands for back-up.

The FWCC has no wish to compromise reliable satellite operations, and is confident that reliability can be maintained in the context of reasonable shared use of spectrum resources. Both the operational viability of the FSS systems and the future growth of the FS must be taken into account so that neither service is compromised. The FWCC's original proposal was intended to address these needs. By allowing earth station licensing of frequency equal to twice that actual needed, it allowed satellite operators to pre-plan for reserve capacity in case of failure.

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[10] Notice at para. 42-44.

[11] Notice at para. 54.

The FWCC now offers the following modified proposal with the objective of addressing both the Commission's and the FWCC's concerns.

- An Earth station may be initially licensed for twice the amount of bandwidth for which the applicant has shown "projected need" -- i.e., twice the maximum bandwidth that the applicant reasonably expects to be using within two years' time. No documentation of projected need is required, other than the applicant's signature.[12]

- For example, an individual earth station might reasonably project a need to license the entire band if it expects to routinely access multiple satellites or satellites chosen by others, or if it plans to serve third-party customers with as-yet-unknown requirements. In contrast, an earth station constructed for the purpose of accessing a particular transponder would be restricted to twice the bandwidth of that transponder.

- After 24 months, an earth station using less than half the licensed bandwidth must modify its license to reduce the bandwidth to twice its actual need. This 24 month period constitutes an initial loading period during which the earth station can establish its business and build its customer base.[13]

- "Actual need," for the purpose of retaining bandwidth after 24 months, may be liberally construed to accommodate individual earth stations (such as broadcasters, teleports, and Intelsat providers) at particular sites that routinely access multiple satellites, or satellites chosen by others.

- The allowance of twice actual need is intended to give earth station operators adequate flexibility to identify back-up capacity in advance to allow for transponder or satellite failure.[14]

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[12] The signature attests: "The undersigned, individually and for the applicant, hereby certifies that all statements made in the application and in all attached exhibits are true, complete, and correct to the best of his or her knowledge and belief, and are made I good faith." FCC Form 312, Main Form, page 4.

[13] *See* Notice at para. 55. For the sake of symmetry, the FWCC would not object to shortening the loading period for FS stations from 30 to 24 months. *See id.*

[14] Outside the CSAT context, the FWCC has not objected to the common practice of coordinating the entire visible geostationary arc, even where an earth station plans to access only one or two satellites. This gives an earth station additional back-up options, if transponders

- An earth station operator may not deny FS coordination outside its licensed bandwidth, absent an exceptional showing of harmful interference to its licensed operations.

- ***Exemption***: Earth stations authorized for 40 MHz or less in each direction are exempt from showing "actual need."

Clarification of Scope: This proposal applies only to shared FS-FSS bands in which the Commission has actually licensed and established technical rules for both FS and FSS operations on a co-primary basis. The proposal does not extend to bands that the FCC has primarily designated to exclusive FS operations, such as LMDS and 39 GHz.

Except for the 40 MHz exemption, the twice-actual-need standard should apply to all fixed satellite services, regardless of whether they handle private communications, contract carriage, or common carriage, and whether their traffic consists of voice, video, data, or some combination.[15] The past few decades have seen a steady erosion of the regulatory distinctions between private and common carriage. Moreover, the ongoing convergence of all transport to digital formats is erasing distinctions among various categories of service. Any rationale for differing standards to cover differing services is rapidly disappearing.

The Commission's "demonstrated use" criterion would unavoidably raise questions about treatment of intermittent use, varying transponder usage over time, degrees of commitment to future use, and similar questions bearing on whether an earth station operator can protect spectrum against the request of an FS applicant.[16] Because the FWCC's "actual need" standard

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using coordinated frequencies are available on other spacecraft.

[15] *See* Notice at para. 59.

[16] *See* Notice at para. 54.

turns primarily on the type of service the earth station offers and the kind and number of spacecraft it accesses, rather than one-of-a-kind specifics of the earth station's daily operation, we believe "actual need" will yield fewer and briefer disputes about needed spectrum. Moreover, the FWCC proposal puts the timing of any such disputes at the two-year anniversary of the FSS license, when they are less likely to obstruct an urgent FS application.

In short, the FWCC proposal based on twice actual need will allow earth stations to establish back-up capacity in advance. The initial 24 months of twice "projected need" will give FSS operators additional flexibility to access changing or not-yet-identified satellites in the course of establishing a customer base. In short, the proposal will recognize the legitimate needs of FS providers, and will minimize disputes at the time FS providers are attempting to finalize coordination and commence operations.

Ku-band issues. The Notice points out that FSS systems at 10.7-11.7 GHz are restricted to providing international, intercontinental operations, and seeks comment on whether this limitation should affect sharing rules with the FS.[17] The FWCC has addressed this question in detail, in close consultation with SkyBridge L.L.C., in connection with the siting of NGSO FSS gateway stations. The FWCC and SkyBridge filed a joint proposal with the Commission that recommends the establishment of "FS growth zones" within which gateway stations in the 10.7-11.7 GHz band would be subject to special coordination and protection rules.[18] The Commission

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[17] Notice at para. 60.

[18] Letter from Leonard R. Raish and Thomas J. Keller, Co-Chairmen, FWCC, and Jeffrey H. Olson, Counsel for SkyBridge L.L.C., to Magalie Roman Salas, Secretary, FCC, in ET Docket No. 98-206 (filed Dec. 8, 1999).

recently deferred consideration of the details to a separate proceeding.[19] The FWCC stands by the joint proposal and urges the Commission to integrate those principles into the present rulemaking.

III. HISTORY SHOWS THE NEED FOR ADJUSTMENT TO THE FS/FSS LICENSING AND COORDINATION RULES.

The Notice requests comment on the extent of problems in FS and FSS sharing, including problems caused by proliferation of ubiquitously-deployed satellite user terminals and point-to-multipoint fixed stations in certain frequency bands, and the implementation of NGSO satellite systems.[20]

The FWCC has provided detailed comment in several recent allocation proceedings on the increasing coordination difficulties caused by ubiquitously deployed FSS earth stations in supposedly co-equal shared bands. Historically, the problem arose first in the 4 GHz C-band. So many small-aperture, receive-only earth stations have been coordinated, each typically over hundreds of miles, as to effectively sterilize the entire band for much of the country. It is now virtually impossible to coordinate any FS system in the 4 GHz band, even though in many cases the FSS receiver is not using the particular frequency that the FS applicant seeks to use. One telling piece of evidence that the problem is widespread: many manufacturers have abandoned their 4 GHz point-to-point product lines.

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[19] NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range, ET Docket No. 98-206, First Report and Order and Further Notice of Proposed Rule Making, FCC 00-418 at para. 67 (released Dec. 8, 2000).

[20] Notice at paras. 29-31.

The ubiquitous deployment of FSS user terminals creates unavoidable interference similar to that caused by broadcasting or mobile applications. No one would seriously attempt sharing between the FS and broadcasting or mobile services. Yet the current rules, in contemplating sharing with widespread FSS terminals, create problems of comparable scale. If one service in a shared band coordinates all of the spectrum over most of the geography, the band is no longer shared. In that event sharing can be accomplished only by dividing either the spectrum or the geography between the services.

The effective unavailability of spectrum at 4 GHz has put pressure on other frequency bands to meet the growth needs of FS operators. Equally important, however, it has denied FS operators the opportunity to realize the full value of their investment in 4 GHz infrastructure. Today, an FS entrant is permitted to coordinate only the spectrum it needs, and only over the azimuth arc the transmitter will actually use. These limitations protect opportunities for FSS growth. Similarly, new rules should hold FSS entrants to coordinations that not only protect incumbent FS operations, but also allow them room for reasonable growth.

NGSO Issues. In some bands, the Commission has proposed sharing between the FS and gateway stations providing feeder links to NGSO spacecraft.[21] But in co-equal shared bands, even gateway sites have created coordination problems under the current rules. Those rules require evaluation of the potential for interference into an FS link even on frequencies the FSS feeder link may never use. These rules unfairly disadvantage the FS industry. Where spectrum shortages require FS sharing with FSS gateway stations, a portion of any shared band should be

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[21] *See* NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range, ET Docket No. 98-206, First Report and Order and Further Notice of Proposed Rule Making, FCC 00-418 (released Dec. 8, 2000).

prioritized for FS -- a form of pre-coordination. This would permit the FS operator to engineer the system for preferred use of the designated frequency pairs, permitting more efficient use of the band by both services. Otherwise the large range of azimuths and elevations needed to track the NGSO spacecraft makes sharing with gateway stations very difficult. Particularly in the 6525-6875 MHz band,[22] where many critical Public Safety and other FS operations are in place, it is crucial that NGSO operators utilize only the spectrum necessary to provide service. In particular, only those channel assignments required for current and immediate planned use should be authorized.

In contrast with gateways, the Commission recognizes that sharing between the FS and NGSO user terminals is not merely difficult, but impossible. For that reason, the Commission recently reallocated a large portion of the 18 GHz band, originally allocated as a FS/FSS shared band, exclusively to FSS, to accommodate the proposed NGSO FSS.[23] While helping the FSS, this action has worsened spectrum shortages for the FS.[24]

Spectrum efficiency. The FWCC Petition noted that Part 101 places certain FS systems under stringent bits/sec/Hertz efficiency standards, which minimize the amount of spectrum required for a given communication. The FWCC did not request spectrum efficiency standards for FSS operations.[25] Most earth stations must interoperate with existing spacecraft transponders,

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22 *See* Notice at para. 54.

23 Redesignation of the 17.7-19.7 GHz Frequency Band, 15 FCC Rcd 13430 (2000).

24 For details, *see* Petition for Reconsideration of the Fixed Wireless Communications Coalition in IB Docket No. 98-172 (filed Oct. 10, 2000).

25 *See* Notice at para. 59.

whose modulation techniques are fixed in orbiting hardware. As for new spacecraft, the FWCC acknowledges the complex engineering constraints imposed by size, weight, cost, available bandwidth, power output, and power consumption, among other considerations. On the other hand, spectrum is a limited and valuable commodity. While consumption of excessive bandwidth no doubt reduces costs for spacecraft designers, it increases the overall economic costs of communications generally. The Commission should take these more general costs into account in setting criteria for future satellite systems.

IV. THE COMMISSION SHOULD ADOPT THE FWCC'S PROPOSED AMENDMENTS TO THE COORDINATION RULES CONCERNING PRIOR ACCEPTANCE OF INTERFERENCE.

Apart from the licensing and loading issues discussed above, the current frequency coordination rules place FS providers at a further disadvantage relative to the FSS.

Coordination procedures require an applicant, whether FS or FSS, to notify all incumbent operators of the application. Incumbents that would receive interference above the industry-accepted coordination criteria can deny coordination and block the application. Conversely, the coordination process may inform the applicant that an incumbent will cause the proposed station higher-than-desired levels of interference.

Three cases can arise:

1. No predicted interference into either an existing station or the proposed station, using established criteria. The proposed station can be licensed and constructed with no problem.

2. Predicted interference into an existing station, caused by the proposed station, using established criteria. The problem must be resolved before the proposed station can be licensed.

3. Predicted interference into the proposed station, caused by an existing station, using established criteria.

In a case (3) situation, the applicant for the proposed station has several options. It can abandon its plans; or apply for a different band; or try to coordinate a different site, or the same site under different parameters. Or, if it wishes, the applicant can selectively waive an interference objective. That is, the applicant can accept the proposed station site despite a higher-then-desirable level of incoming interference from a pre-existing user. The applicant might do so because, for example, it does not plan to receive on 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, or simply because it needs the particular site, notwithstanding interference.

The situation of concern to the FWCC arises when an applicant accepts such interference in order to site its facility, after which a subsequent applicant's coordination predicts interference into that facility. Under present procedures, the now-incumbent licensee is free to disregard the berm or building or frequency offset on which it relied in accepting its own coordination, and deny coordination to the subsequent applicant, even where the licensee would not experience actual interference. This amounts to another form of warehousing.

Although in principle these procedures apply equally to the FS and the FSS, in actual practice they are far more harmful to the FS. There are two reasons for the disparity. First, unlike FSS earth stations, FS stations are permitted to license only bandwidth and azimuths actually needed (plus limited capacity for growth), leaving few unused frequencies or azimuths on which to waive harmless incoming signals. Second, FSS earth stations are usually at ground

level, where they can receive protection from buildings and other ground clutter, while FS antennas are sited on towers or high buildings. As a result, cases waived by FS facilities are typically in the low-single-digit dB range, where earth stations often waive many tens of dB -- and then sometimes refuse coordinations at far lower levels. One FWCC member reports a specific instance of an earth station operator that accepted a 94 dB case into the earth station, and subsequently *refused* a net 5 dB case into the same earth station.[26] Although discrepancies of this extreme magnitude fortunately are unusual, cases of earth stations waiving interference, and subsequently refusing coordination at lower levels of interference, are commonplace.

The FWCC petition proposed a remedy. The basic principle requires an earth station that accepts cases of potential interference to extend the same modified interference objective to later-coordinated terrestrial facilities. In its pure form, however, this principle could disadvantage an earth station by failing to respect the specific conditions under which it accepted the interference case. Accordingly, the FWCC proposed rules that invite an incoming earth station operator to specify interference it accepts on the basis of frequency offset, attenuation by a local feature, terrain blockage, or some combination of these. The earth station would then have to accept that amount of interference in each category -- but no more -- from later-coordinated terrestrial facilities.[27]

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[26] The facility was an AT&T IBS Ku Band earth station sited at 811 Tenth Avenue, New York City. When New Jersey Bell attempted a coordination in the 1980s, the earth station refused a 17 dB case attenuated by 12 dB terrain blockage, for a net of 5 dB over the desired coordination level.

[27] Specifically, the FWCC Petition proposed these rule provisions:

(1) An applicant for an earth station authorization may, during the frequency coordination process, choose to accept cases of potential interference

The FWCC welcomes the Commission's general endorsement of these principles, but disagrees with some of the Commission's reservations for the reasons set out below.

Cumulative effect. The Commission tentatively rejects the proposal that an earth station that accepts interference from one terrestrial source must accept the same (or less) interference

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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 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).

from other terrestrial sources. The Commission reasons that interference is cumulative.[28] Its concern is apparently that an incoming earth station might waive one interferor, but find that a second keeps it from meeting its service objective.[29] But this concern is misplaced.

Consider the worst possible situation. Suppose the earth station accepted, say, a 75 dB interference case when it coordinated -- that is, the operator chose its site notwithstanding a preexisting fixed service transmitter that illuminates the earth station with a signal 75 dB higher than the agreed-upon objective for FS/FSS coordination. Now a second FS provider seeks to install a transmitter that will place another signal 75 dB above the objective into the earth station, as permitted under the proposed FWCC rules.[30] The total interference from two 75 dB sources is not 150 dB over the objective, as one might expect, but only 78 dB over.[31] The increase in interference level from 75 to 78 dB is not significant in practice. If the earth station can accept 75 dB over the objective, it can certainly accept 78 dB. In any event, interference objectives are calculated on the assumption of multiple exposures. Cumulative interference is simply not a realistic concern.

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[28] Notice at para. 75.

[29] *See* queries in Notice at para. 77.

[30] Again, this is the worst case. The earth station could deny coordination if the FS applicant's interference were higher than 75 dB over the objective.

[31] In the logarithmic dB (decibel) scale, a doubling of power always increases the level by 3 dB.

Frequency offset. The Notice misreads the FWCC request on frequency offset. An earth station that accepts interference in one part of the spectrum would *not* be required to accept the same level on all frequencies, as the Notice suggests.[32]

Under the FWCC proposals, an earth station that accepts interference on the basis of frequency offset is required to accept interference from later-arriving FS facilities only in those same frequencies. For example, suppose an IBS Ku band earth station coordinates the entire band (10950-11200 and 11450-11700 MHz). The earth station accepts a pre-existing FS station at 11545 MHz, at a coordination level of -120 dBW (let us say), while the rest of the band satisfies the desired coordination level of -150 dBW. A later-arriving FS station can coordinate at -120 dBW *only* on11545 MHz.[33] Elsewhere in the band, the original coordination level of -150 dBW still applies.

Limited azimuth. Similarly, an earth station that accepts an interference case in reliance on a specific local feature, such as a building or berm, need subsequently accept that level of interference only over the range of azimuths subtended by that feature. Again, if the desired coordination level is -150 dBW, but an earth station accepts a pre-existing FS station in reliance on a nearby building that provides (say) 30 dB of attenuation over the azimuth range 200-240 degrees, a subsequently FS facility can coordinate at -120 dBW, but only over that same range of azimuths. Elsewhere, the original coordination level of -150 dBW applies.

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[32] Notice at para. 74.

[33] The coordination is subject to standard adjacent and overlapping channel criteria.

Record keeping. The license of an FS or FSS facility that accepted an interference case in siting its facility should have the specifics noted on its license.[34] More important, however, the facility accepting interference should be required to send out an updated coordination notification, as this will facilitate coordination for subsequent applicants.

* * * *

In short, an earth station that accepts interference into its proposed facility should be required, thereafter, to accept the same conditions, to the same extent (but only to that extent) that it accepted originally.

V. THE FWCC SUPPORTS THE COMMISSION'S PROPOSALS ON CSAT LICENSING.

The FWCC supports the Commission's proposals concerning blanket licensing of C-Band small aperture terminals (CSATs), as requested by Onsat Network Communications, Inc.[35] This support is conditioned on ultimate adoption of certain limitations agreed to by Onsat, following discussions with the FWCC. These principles include (a) licensing of CSAT networks for not more than 20 MHz of shared C-band spectrum; (b) licensing for no more than three satellite locations within the visible geostationary satellite arc; and (c) frequency coordination of individual earth stations before each is placed into operation.[36]

The frequency coordination requirement needs clarification. Outside the CSAT context, an earth station applicant that coordinates, but then delays filing its application, must renew the

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[34] *See* Notice at para. 80.

[35] Notice at paras. 87-97.

[36] Notice at paras 93-94.

coordination after six months. In the case of CSATs, however, there will be no licensing event for each individual earth station that tolls the time period following coordination. This raises the possibility that a licensee might coordinate multiple earth stations, but fail to construct them promptly, thus warehousing spectrum as a result.

To avoid this problem, the FWCC suggests a provision specifying that frequency coordination for a pre-licensed CSAT user terminal is valid only for six months. If the station does not commence operation within that time, the coordination expires. The CSAT licensee is free to attempt the coordination again, but in that event must work around any FS facilities coordinated in the meantime.

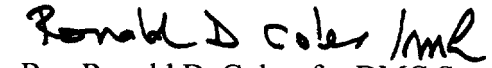
CONCLUSION

There is not enough spectrum to go around. As a result, spectrum sharing is unavoidable in the modern communications environment. The technical characteristics of the FS and the FSS make them natural candidates for sharing. Historically, however, the Commission's licensing and coordination rules have tilted strongly in favor of the FSS. As satellite and mobile services have increasingly made incursions into FS spectrum,, the inequitable sharing rules have limited necessary FS growth.

This proceeding is an opportunity to make the use of spectrum more efficient by giving the FS access to unused frequencies now warehoused by FSS operators, this promoting improved sharing generally between FS and FSS facilities. The rules proposed above will enable FS providers to better serve the public, without diminishing either the scale or the reliability of

satellite communications. These rules are in the public interest, and warrant favorable consideration and adoption by the Commission.

Respectfully submitted,
FIXED WIRELESS COMMUNICATIONS COALITION



By: Ronald D. Coles, for DMC Stratex Networks, Inc.
5860-G Post Corners Trail
Centerville VA 20120
703-815-6992
Member, FWCC

January 8, 2001

FIXED WIRELESS COMMUNICATIONS COALITION

The Fixed Wireless Communications Coalition was formed by terrestrial fixed microwave users and suppliers to assure that adequate spectrum resources are available for current and future terrestrial fixed microwave communications. Such action is necessary because spectrum allocation and re-allocation actions currently under consideration at the FCC require fixed microwave interests to speak with a common voice. Additionally, the Coalition works for a regulatory climate both at the FCC and the ITU that permits the manufacture, operation, and use of terrestrial fixed microwave systems.

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CO-CHAIRS

Leonard R. Raish
Fletcher, Heald & Hildreth, PLC
1300 North 17th Street, 11th Floor
Arlington, VA 22209
703-812-0400

Andrew Kreig
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Association International
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Suite 810
Washington, D.C. 20036-4001

CERTIFICATE OF SERVICE

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445 12th Street, S.W.
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Washington, D.C. 20554

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Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Donald Abelson, Chief
International Bureau
Federal Communications Commission
445 12th Street, S.W., 6th Floor
Washington, D.C. 20554

Roderick Kelvin Porter, Deputy Chief
International Bureau
Federal Communications Commission
445 12th Street, S.W., 6th Floor
Washington, D.C. 20554

Richard B. Engelman, Chief
Planning & Negotiations Division
International Bureau
Federal Communications Commission
445 12th Street, S.W., Room 7A-760
Washington, D.C. 20554

Damon Ladson, Deputy Chief
Planning & Negotiations Division
International Bureau
Federal Communications Commission
445 12th Street, S.W., Room 7A-761
Washington, D.C. 20554

Ronald Repasi, Chief
Satellite Engineering Branch
International Bureau
Federal Communications Commission
445 12th Street, S.W., Room 6A-505
Washington, D.C. 20554

Thomas J. Sugrue, Chief
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W., Room 3C252
Washington, D.C. 20554

D'Wana Terry, Chief
Public Safety & Private Wireless Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW, 4th Floor
Washington, D.C. 20554

Herb Zeiler, Deputy Chief
Public Safety & Private Wireless Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW, 4th Floor
Washington, D.C. 20554

John Cimko, Chief
Policy Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W., Room 3C124
Washington, D.C. 20554

Rebecca Dorch, Deputy Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Bruce Franca, Acting Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Julius Knapp, Chief
Policy & Rules Division
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Karen Rackley, Chief
Technical Rules Branch
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Geraldine Matise, Deputy Chief
Policy & Rules Division
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W., 7th Floor
Washington, D.C. 20554

Ed Jacobs
International Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Mark Young
International Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

International Transcription Service
1231 20th Street, N.W.
Washington, D.C. 20037