

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.**

In the Matter of)	
)	
)	
Flexibility for Delivery)	IB Docket No. 01-185
of Communications by Mobile Satellite)	
Service Providers in the 2 GHz Band, the L-Band)	
and the 1.6/2.4 GHz Band)	
)	
Amendment of Section 2.106 of the Commission's)	
Rules to Allocate Spectrum at 2 GHz for Use by the)	ET Docket No. 95-18
Mobile Satellite Service)	

REPLY COMMENTS OF CELSAT AMERICA, INC.

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Celsat America, Inc. ("Celsat"), by its undersigned counsel, hereby submits the following reply comments on the Notice of Proposed Rulemaking regarding flexible use of the mobile satellite service ("MSS") spectrum in the 2 GHz MSS band (the "*Flexible Use Notice*" or "*Notice*").¹

I. INTRODUCTION AND SUMMARY

Every sector of the communications industry is keenly aware that the Commission is seeking additional spectrum resources to satisfy the demand for advanced wireless telecommunications. In light of the challenges the Commission faces in identifying additional spectrum, it behooves the Commission to do all it can to encourage technological innovations that enhance the frequency efficiency of 2 GHz MSS spectrum. Terrestrial

¹ In the Matter of Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band, Notice of Proposed Rulemaking, FCC 01-225 (rel. Aug. 17, 2001).

reuse – first proposed by Celsat in its 1992 petition for rulemaking that lead to the Commission's 2 GHz MSS proceedings -- is just such a technology and will dramatically increase the supply of spectrum.²

As Celsat demonstrated in its Comments in this proceeding, the Commission can and should authorize terrestrial reuse of the 2 GHz MSS band consistent with (1) the requirements of Section 303(y) of the Communications Act of 1934, as amended (the "Act"), (2) the Commission's flexible use policy,³ and (3) the original vision of IMT-2000 services – now known as Third Generation ("3G" or "advanced wireless") services -- which has always contemplated a satellite component. The comments of others in this proceeding offer no evidence whatsoever that should lead the Commission to conclude otherwise. On the contrary, the overwhelming weight of the evidence demonstrates that ancillary terrestrial operations through reuse of the 2 GHz MSS band will advance the public interest by effectively increasing the available supply of spectrum for 3G and other competitive wireless services, all to the benefit of the public. Celsat urges the Commission to reject attempts to hamper the development of 2 GHz MSS systems – which will deploy 3G services -- and to authorize ancillary terrestrial operations for the 2 GHz MSS licensees as soon as possible.

The Commission's proposed definition of "ancillary", together with the satellite coverage requirement, effectively ensure that terrestrial operations will remain truly an-

² Petition for Rulemaking and Request for Pioneer's Preference Filed, Public Notice, 1992 FCC LEXIS 1241 (1992).

³ See Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets, Policy Statement, 15 FCC Rcd 24178 (2000); In the Matter of Principles for Reallocating Spectrum to Encourage the Development of
(continued...)

cillary to the satellite service and will not replace it. For technical reasons, however, it is essential that any terrestrial reuse be operated integrally with the satellite service and under the control of the satellite operator to avoid generating unacceptable interference to the satellite service.

Given that only the satellite licensee can implement an ancillary terrestrial component, the Commission has no reason to call for applications from third parties for terrestrial reuse and no mutual exclusivity exists with regard to these terrestrial operations. Accordingly, the Commission is precluded from auctioning ancillary terrestrial operations by Section 309(j) of the Act. Moreover, the express prohibition on auctioning spectrum used for the provision of international satellite service contained in the Open-Market Reorganization for the Betterment of International Telecommunications Act (“ORBIT Act”) prevents the Commission from auctioning ancillary terrestrial operations as well, given that the Commission's proposed definition of "ancillary" will not change the fundamental nature of these MSS systems.

II. ANCILLARY TERRESTRIAL USE WILL FURTHER THE GOALS OF IMT-2000 AND FOSTER COMPETITION IN THE PROVISION OF ADVANCED WIRELESS SERVICES

As demonstrated in Celsat’s Comments in this proceeding, the authorization of terrestrial reuse will permit MSS licensees to achieve remarkable gains in the efficient reuse of the 2 GHz MSS band, furthering the goal of the Commission and the International Telecommunication Union ("ITU") to promote efficient use of spectrum, and, ul-

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Telecommunications Technologies for the New Millennium, Policy Statement, 14 FCC Rcd 19868 (1999) (the “1999 Policy Statement”).

timately, greatly benefiting consumers.⁴ From the time that the ITU and the Commission laid the foundation for IMT-2000 over a decade ago, they have consistently envisioned that these 3G services would include a satellite component.⁵ Furthermore, IMT-2000 sets forth several technical objectives that provide solid support for the proposal of reusing the satellite spectrum on a terrestrial basis.⁶ Given that Celsat's system is an IMT-2000 system, Celsat urges the Commission to reaffirm its commitment to the original framework of IMT-2000 by permitting Celsat to reuse its spectrum to provide ancillary terrestrial services.⁷

The commenters opposed to ancillary terrestrial operations in the 2 GHz MSS band primarily consist of terrestrial mobile wireless licensees seeking to accumulate more spectrum for their own speculative uses at the expense of 2 GHz MSS operators and without regard to this original vision of IMT-2000. In their comments, these terrestrial

⁴ See Celsat Consolidated Comments ("Celsat Comments") at Summary.

⁵ See *id.* at 2-3 (citing ITU-R M.687-2, International Mobile Telecommunications-2000, at 2 ("IMT-2000"); <http://www.fcc.gov/3G> (visited Oct. 19, 2001); ITU-R M.818-1, Satellite Operation within International Mobile Telecommunications-2000, at 1; United States Proposals for the Work of the Conference, Proposal for Terrestrial and Satellite Components of IMT-2000, Document 12-E, Agenda item 1.6.1 (Apr. 17, 2000)).

⁶ See Celsat Comments at 4-5 (quoting Technical Objective 1.2.7 which provides that one of the goals of IMT-2000 is "[t]o accommodate the use of repeaters for covering long distances between terminals and base stations").

⁷ Celsat's "Master System Application for a GEO Satellite-Based MSS Space/Ground Hybrid Personal Communications Service" demonstrates that its 2 GHz MSS system would implement the IMT-2000 vision of advanced wireless services in many respects, including the use of a small handset comparable to the size of PCS handset today, affordable service rates, extremely high levels of spectrum efficiency in space and through the use of ground towers, roaming capabilities, and extraordinarily high data transmission rates. See FCC File Nos. 26/27/28-DSS-P-94, at Section B (Apr. 2, 1994); see also Letter to Magalie Roman Salas, Secretary, Federal Communications

(continued...)

wireless licensees argue that rather than improve the efficiency of the MSS band through terrestrial reuse, the Commission should reallocate the entire 2 GHz MSS band for terrestrial-only purposes.⁸

In licensing 2 GHz MSS operators, however, the Commission expressly rejected challenges to the 2 GHz MSS allocation, finding that the terrestrial mobile wireless parties had provided "no credible information" warranting a finding that 2 GHz MSS is no longer in the public interest.⁹ Moreover, the Commission already has denied the Petition for Rulemaking filed by Cellular Telecommunications and Internet Association ("CTIA") insofar as it requested a reallocation of the entire 2 GHz MSS band for terrestrial uses.¹⁰ In any case, concerns regarding the allocation of additional spectrum for these possible

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Commission, from Brian Weimer, Skadden, Arps, Slate, Meagher & Flom LLP (Mar. 15, 2000).

⁸ See, e.g., Cingular/Verizon Wireless Comments at 2, 6, 16, 22-23; see also AT&T Wireless Comments at 9.

⁹ See ICO Services Limited, Order, DA 01-1635, ¶¶ 30-31 (Int'l Bur. July 17, 2001) (rejecting terrestrial wireless carriers' request to defer licensing 2 GHz MSS systems ("ICO Order")).

¹⁰ See Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, Memorandum Opinion and Order and Further Notice of Proposed Rulemaking, FCC 01-224, ¶ 58 (rel. Aug. 20, 2001) ("3G Further Notice"), recon. pending. CTIA also argues in its Comments that the failure of a 2 GHz MSS licensee to comply with its implementation milestones should be "conclusive evidence" of the lack of viability of a licensee's plans and automatically trigger reallocation of the spectrum to advanced wireless services. See CTIA Comments at 13-14. There are many valid factors that could prevent a licensee from meeting its milestones – such as a launch failure – which essentially have no bearing on the viability of a 2 GHz MSS operator's business plans. The better policy would be for the Commission to establish a presumption that the completion of each milestone for 2 GHz MSS operators serves as conclusive evidence of the viability of the 2 GHz MSS licensee's business plan and should make such licen-

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new terrestrial uses should have been raised in response to the *3G Further Notice*.¹¹ In short, the Commission should again affirm its findings that 2 GHz MSS "will provide new and expanded regional and global data, voice, and messaging services[,]...enhance competition in the mobile satellite and terrestrial communications services....[and] thereby promote development of regional and global communications to underserved communities in the United States...as well as worldwide."¹² Given these recent findings as to the public interest benefits of 2 GHz MSS, the Commission should authorize ancil-

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see eligible to obtain a pro rata portion of the 2 GHz MSS spectrum abandoned by other 2 GHz MSS licensees.

¹¹ Contrary to the suggestion of Cingular and Verizon Wireless, the Commission is not required to stay the terrestrial reuse proceedings merely because there is a pending Application for Review of the 2 GHz MSS licenses. See Cingular/Verizon Wireless Comments at 6. The case cited by Cingular/Verizon Wireless, Cincinnati Bell Tel. Co. v. FCC, 69 F.3d 752 (6th Cir. 1995) is inapposite. In Cincinnati Bell, the Sixth Circuit found that it was arbitrary and capricious for the Commission, in issuing new ownership rules for wireless communications services, to refuse to address in the underlying rulemaking proceeding whether it should rescind a requirement that Bell Operating companies ("BOCs") provide cellular service only through a structurally separate entity (i.e., the "structural separation" requirement). The court ruled that, "agencies normally are not required to deal with every aspect of a problem in one proceeding," but held that given the unique circumstances of that case (an exceedingly long delay in addressing the issue and the disparate treatment that would be caused to the BOCs), it was necessary for the Commission to address the structural separation issue in the rulemaking. See Cincinnati Bell, 69 F.3d at 767-68 (citing National Ass'n of Broadcasters v. FCC, 740 F.2d 1190, 1270 (D.C. Cir. 1984)). Here, on the other hand, the Commission has not refused to address whether 2 GHz is a viable service but in fact, as explained above, has already addressed that issue in licensing 2 GHz MSS systems. See ICO Order ¶¶ 30-31. Furthermore, the Commission has expressly rejected the portion of the rulemaking petition filed by CTIA requesting reallocation of the entire 2 GHz MSS spectrum. See 3G Further Notice ¶¶ 23, 58. Consequently, Cingular/Verizon Wireless' contention that the Commission must defer authorizing terrestrial reuse pending a final determination on the 2 GHz MSS allocation is meritless.

¹² Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band, 15 FCC Rcd 16127, ¶ 1 (2000) ("2 GHz MSS Order").

lary terrestrial use in furtherance of the original goals of IMT-2000 as well as the ultimate objectives of the Commission in licensing 2 GHz MSS systems.

Not only do the terrestrial parties ignore the fundamental framework of IMT-2000, they also advance the erroneous claim that flexible use of the 2 GHz MSS spectrum would constitute a "windfall" to 2 GHz MSS operators.¹³ In fact, the Commission recently addressed and rejected the same argument in the *2.5 GHz Order*¹⁴ where it permitted ITFS and MMDS fixed wireless service incumbents to engage in mobile operations in their fixed wireless service bands.¹⁵ The Commission held that granting flexible use is not a "windfall" but "simply allows incumbent licensees an additional option" and is "consistent with the type of flexibility already afforded other types of licensees, such as cellular and broadband PCS."¹⁶ Permitting ancillary terrestrial use of the 2 GHz MSS spectrum likewise will not constitute a "windfall" but merely will provide 2 GHz MSS operators with "an additional option" in providing better and more efficient service to the public.¹⁷ Indeed, if anyone will enjoy a "windfall" by the authorization of terrestrial re-

¹³ See AT&T Wireless Comments at 4; CTIA Comments at 11.

¹⁴ See Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, First Report and Order and Memorandum Opinion and Order, ET Docket No. 00-258, FCC 01-256, ¶¶ 18, 27 (rel. Sept. 24, 2001) ("2.5 GHz Order").

¹⁵ See id. In the 2.5 GHz Order, AT&T Wireless claimed that granting flexibility would provide incumbents with an "unwarranted windfall and would deprive potential competitors of the opportunity to bid on licenses that will be needed to provide 3G services." Id. ¶ 18.

¹⁶ Id. ¶ 27.

¹⁷ As Celsat demonstrates in its Comments, authorizing flexible use of 2 GHz MSS spectrum is consistent with the Commission's 1999 Policy Statement in which the Commission stated that "[f]lexible allocations may result in more efficient spectrum (continued...)

use in the 2 GHz MSS band, it is the American public, which will enjoy enhanced service offerings at an affordable price because the technological innovation of terrestrial reuse will greatly enhance the frequency efficiency of 2 GHz MSS spectrum.

Terrestrial wireless companies also suggest that the Commission should not permit terrestrial reuse because it will give MSS licensees an unfair competitive advantage.¹⁸ The Commission has expressly stated, however, that permitting flexible use of spectrum serves the public interest and the goals of the Act precisely because it will increase competition.¹⁹ Moreover, the Commission has determined that one of the public interest benefits of 2 GHz MSS is that such service "will enhance competition in...terrestrial communications services...."²⁰ In short, terrestrial reuse of the 2 GHz MSS band is fully consistent with the Commission's goal of fostering effective competition whenever possible and the cries of an unfair competitive advantage should be ignored.

In sum, the Commission should remain committed to the original vision of IMT-2000 by (i) reaffirming the public interest benefits of 2 GHz MSS and (ii) authorizing 2

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markets." See 1999 Policy Statement ¶ 9. Furthermore, the Commission has granted flexible use of spectrum on numerous occasions, including for PCS, WCS, and new services on television channels 60 to 69; it has also proposed flexible use of spectrum for new services operating on television channels 52 to 59. See 2.5 GHz Order ¶ 20.

¹⁸ See Cingular/Verizon Wireless Comments at 11-12.

¹⁹ See Amendment of the Commission's Rules to Permit Flexible Service Offerings in the Commercial Mobile Radio Services, 11 FCC Rcd 8965, ¶ 22 (1996) ("Allowing service providers to offer all types of fixed, mobile, and hybrid services in response to market demand will allow for more flexible responses to consumer demand, a greater diversity of services and combinations of services, and increased competition. This is consistent with the goals of the 1996 Act, which seeks to increase competition between the various providers of telecommunications services").

²⁰ See 2 GHz MSS Order ¶ 1.

GHz MSS licensees to reuse their satellite spectrum terrestrially in an ancillary manner, which will further the public interest by increasing the pool of available spectrum and stimulating competition in wireless mobile services.

III. AS PROPOSED IN THE *NOTICE*, FLEXIBLE TERRESTRIAL OPERATIONS IN THE 2 GHZ MSS BAND WILL BE TRULY ANCILLARY TO THE SATELLITE SERVICE

A. The Proposed Definition of Ancillary Operations Ensures that 2 GHz MSS Will Continue to Be Fundamentally a Satellite Service

In the *Flexible Use Notice*, the Commission seeks comment on its proposed definition of “ancillary” for purposes of the so-called “ancillary terrestrial component” in the 2 GHz MSS band. Specifically, the Commission states that “[w]e intend the term ‘ancillary’ terrestrial services to refer strictly to services provided by MSS operators that are integrated with the satellite network, use assigned MSS frequencies, and are provided for the purpose of augmenting signals in areas where the principal service signal, the satellite signal, is attenuated.”²¹ The Commission notes that “[w]e expect the character of such services to remain the same whether provided by satellite or terrestrially.”²² Celsat fully endorses the Commission’s carefully drawn definition of ancillary because it ensures that terrestrial operations remain truly ancillary to the satellite service.

Notwithstanding the Commission’s very focused definition, several parties claim that the proposed flexible operations would not be truly “ancillary” but would constitute a completely new service requiring reallocation of the 2 GHz MSS spectrum.²³ The

²¹ Flexible Use Notice ¶ 30.

²² Id.

²³ See CTIA Comments at 2, 3-4; AT&T Wireless Comments at 2-4; Rural Cellular Association (“Rural Cellular”) Comments at 2.

Commission's own reflections on its proposed definition of ancillary belie these allegations:

We note that the Commission at times uses the term "ancillary" to refer to the use of spectrum or facilities to provide services of a nature different from the service ordinarily offered over the facilities, for example, as the Commission has used the term "ancillary" to describe "subscription television programming, computer software distribution, data transmission, teletext, interactive services, [and] audio signals..." in the context of additional services that may be provided by Digital Television licensees. We do not intend that the term "ancillary" in the context of this *Notice* refer to services that differ materially in nature or character from the principal services offered by the MSS providers.²⁴

In other words, even with the addition of an ancillary terrestrial component, 2 GHz MSS will remain fundamentally a satellite service, and, accordingly, no new allocation is required.

In addition to the very narrow definition of ancillary, the Commission has proposed to adopt certain conditions designed to ensure that terrestrial reuse remains truly ancillary to the satellite service. For example, the Commission has proposed to permit ancillary terrestrial operations only after the MSS operator demonstrates that it can provide coverage consistent with the current obligations of 2 GHz MSS providers 100 percent of the time.²⁵ Celsat supports this coverage requirement because it effectively ensures that ancillary terrestrial use will always be part and parcel of a fully functioning satellite system.²⁶

²⁴ Flexible Use Notice ¶ 30.

²⁵ See id. ¶ 32.

²⁶ In this regard, Celsat concurs with the proposals of Motient and New ICO that, before the FCC considers revoking an MSS operator's authorization if satellite coverage falls below 100% due to a failed satellite, 2 GHz MSS licensees should be granted a reasonable period of time to correct the problem or replace the failed satellite. See Motient Comments at 24-25 (suggesting a maximum two-year limit during which the

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Contrary to the assertions of some commenters, the carefully crafted definition of "ancillary", together with the satellite coverage requirement, ensure that 2 GHz MSS providers will not migrate toward terrestrial-only operation.²⁷ Even if it were possible as a legal matter to provide terrestrial-only MSS, however, the economics of the satellite business effectively prevent any such migration from occurring. The fundamental advantage of satellite technology is ubiquitous coverage. It would make little economic sense to build ground towers in areas *already* covered by the satellite and where the satellite signal is not attenuated. In fact, the unattenuated signal of the MSS licensees' satellites will cover nearly the entire land area of the United States. Accordingly, 2 GHz MSS providers will have no economic incentive to convert their 2 GHz MSS systems into terrestrial-only systems.²⁸ In short, these commenters have offered no evidence that the proposed terrestrial reuse of 2 GHz MSS spectrum will be anything other than "ancillary" to the satellite system as described in the *Flexible Use Notice*.

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MSS operators should be permitted to operate terrestrial facilities without satellite coverage, taking into consideration the time to procure "long-lead" parts to assemble a spare satellite); New ICO Comments at 44 (suggesting three months as a reasonable replacement deadline for "all but the most unexpected outages"). Moreover, the possibility that a licensee may lose customers if it does not meet the conditions of providing service is an issue facing all Commission licensees serving customers under license conditions (including terrestrial wireless companies), and such concerns in no way demonstrate that conditioning ancillary terrestrial operations on satellite service coverage would be ineffective. See AT&T Wireless Comments at 6.

²⁷ See, e.g., AT&T Comments at 5; Rural Cellular Comments at 3; Inmarsat Comments at 27; Stratos Comments at ii.

²⁸ The American Petroleum Institute ("API") suggests that any MSS operator should be required "to support their requests to provide terrestrial service with technical evidence that they are unable to provide MSS service to particular locations that they seek to serve." API Comments at 5. As noted above, given the Commission's satellite coverage precondition, 2 GHz MSS licensees will have no incentive to deploy unnecessary terrestrial operations and, therefore, API's suggestion is unnecessary.

CTIA erroneously suggests that for flexible terrestrial operations to be truly ancillary, the terrestrial component "would need to be considerably more limited" than as described in the *Flexible Use Notice*.²⁹ For example, CTIA suggests that 2 GHz MSS systems use "dual mode" handsets.³⁰ Terrestrial reuse, however, will enable MSS operators to employ "single mode" handsets which, among other things, would eliminate the more complex (and ultimately more costly) alternatives of using dual mode handsets and entering into numerous roaming agreements with terrestrial providers. Additionally, dual mode handsets may require users to obtain two telephone numbers -- one for the terrestrial network and one for the satellite network.³¹

CTIA also argues that the Commission should require that "the predominant use of the service be the provision of the primary MSS service in any particular geographic area" or that a terrestrial component be limited to terrestrial repeaters in urban areas.³² It is contradictory for CTIA to suggest that the "*predominant* use of the service" should be the satellite service and yet simultaneously recommend that the terrestrial component consist *solely* of terrestrial repeaters in urban areas. Furthermore, CTIA provides no evidence that such arbitrary restrictions would ensure that terrestrial operations remain "ancillary" to the satellite service. In fact, such requirements would discourage the creation of innovative technologies which would result in more efficient uses of the spectrum. Absent such restrictions, ancillary terrestrial operations will be far more likely to increase

²⁹ CTIA Comments at 6.

³⁰ See id.; see also Stratos Comments at 10-11.

³¹ See Globalstar Comments at 14-15.

³² CTIA Comments at 6.

the MSS customer base, stimulate investment, and foster competition in the wireless services market, all of which provide further justification for authorizing flexible use of MSS spectrum consistent with the requirements of Section 303(y) of the Act.³³

B. The Commission Should Provide Maximum Flexibility to the 2 GHz MSS Licensees In Implementing Ancillary Terrestrial Use

Granting maximum flexibility to the 2 GHz MSS licensees in implementing ancillary terrestrial reuse will serve the public interest by ensuring the most efficient possible use of the 2 GHz MSS spectrum, spurring new technological developments and investment, increasing options for satellite operators to employ the 2 GHz MSS band spectrum in its highest valued use and, thereby, fostering competition.³⁴

In this regard, the Commission should reject CTIA's suggestion that allowing 2 GHz MSS operators to provide terrestrial reuse outside of their Selected Assignment would impair the Commission's ability to reallocate spectrum.³⁵ CTIA's suggestion ignores the fact that 2 GHz MSS licensees are already permitted to provide satellite service outside of their Selected Assignments on a secondary basis where spectrum has not yet been selected or where licensees have entered into sharing agreements.³⁶ If a 2 GHz MSS operator provides satellite service outside of its Selected Assignment, permitting

³³ See 47 U.S.C. § 303(y)(2)(B) (requiring that new flexible uses do not deter investment in communications services, systems, and technology development).

³⁴ Cf. 2.5 GHz Order ¶¶ 24-25 (setting forth benefits of flexible spectrum use).

³⁵ See CTIA Comments at 14.

³⁶ On July 17, 2001, the Commission granted the 2 GHz MSS licensees access to a 3.5 MHz spectrum segment in each transmission direction (Selected Assignment) on a primary basis, and gave them the ability to operate in the 2 GHz band outside of the Selected Assignment on a secondary basis subject to certain conditions. See, e.g., Celsat America, Inc., DA 01-1632, File Nos. 26/27/28-DSS-P-94 et al., ¶¶ 8-9 (Int'l Bur. July 17, 2001).

ancillary terrestrial operations in that portion of the band on a secondary basis will enhance the satellite service. Given the Commission's goal of maximizing the efficient use of spectrum by allowing flexible use, it makes little sense to prevent the 2 GHz MSS licensee from the flexible use of spectrum across all portions of the 2 GHz MSS band used by that licensee for MSS.

In addition, the concern of CTIA that 2 GHz MSS licensees could be difficult to extricate from portions of the 2 GHz MSS outside of their Selected Assignments is unfounded. Indeed, the same argument was raised in the 2 GHz MSS licensing proceeding and the Commission ultimately rejected it in favor of permitting use of the entire 2 GHz MSS band on a secondary basis. The Commission concluded that its approach "is designed to allow MSS systems to begin providing service in any available frequencies during the incumbent transition process, to encourage use of spectrum, and to facilitate inter-system coordination in the band when later entrants begin operations."³⁷

Consistent with granting maximum flexibility to MSS operators providing ancillary terrestrial services, the Commission should also adopt its proposal – as supported by Constellation, Motient, and New ICO – to permit MSS licensees, at their own risk, to build out terrestrial base stations and test such facilities prior to fulfilling coverage conditions.³⁸ Celsat agrees with the Commission's observation that "[p]ermitting advance construction and testing of terrestrial components would enable MSS operators to turn on their terrestrial service as soon as they have met their satellite coverage... require-

³⁷ 2 GHz MSS Order ¶ 21.

³⁸ See Flexible Use Notice ¶ 45; Motient Comments at 30; New ICO Comments at 46; Constellation Comments at 29.

ments."³⁹ In short, it is in the public interest for the Commission to grant 2 GHz MSS operators maximum flexibility in constructing, testing, and providing ancillary terrestrial operations in the 2 GHz MSS spectrum.

IV. GIVEN THE DIFFICULTIES OF FREQUENCY SHARING IN A MOBILE ENVIRONMENT, ANCILLARY TERRESTRIAL OPERATIONS IN THE 2 GHz MSS BANDS MUST BE LIMITED TO THE 2 GHz MSS LICENSEES

For all of the reasons set forth above, the Commission should permit 2 GHz MSS licensees maximum flexibility to implement ancillary terrestrial operations across the 2 GHz MSS band. Given the myriad technical issues that arise concerning frequency sharing in a mobile environment, however, only the 2 GHz MSS licensee can implement ancillary terrestrial operations for its system while avoiding interference with its satellite operations.

Contrary to the allegations of some parties, from a technical perspective, only the satellite licensees can appropriately coordinate ground reuse of the 2 GHz MSS spectrum. As demonstrated in Celsat's Technical Annex attached hereto, in order to assure adequate separation between a satellite user and a terrestrial cell, each terrestrial user must be assigned only the frequencies that are not then being used by any satellite customer within an exclusion zone of at least 32 kilometers of the terrestrial cell.⁴⁰ Celsat plans to reuse its satellite spectrum allocation scores of times over the contiguous United States with multiple beam technology.⁴¹

³⁹ Flexible Use Notice ¶ 45.

⁴⁰ See Technical Annex attached hereto at 2.

⁴¹ See id.

Through careful and immediate real-time coordination by the satellite operator of user locations and frequency selections, interference issues arising from terrestrial reuse can be resolved efficiently and effectively.⁴² To accomplish such coordination, however, it is essential that only the 2 GHz MSS operators be authorized to provide terrestrial operations in the 2 GHz MSS band.⁴³ As explained in further detail in the Technical Annex, it would be impossible to implement viable ancillary terrestrial operations while controlling interference without real-time coordination at each call setup time between the satellite and ancillary terrestrial services. To effectuate real-time coordination, the terrestrial service must be operated integrally with the satellite service and under the immediate and direct control of the satellite operator. Thus, the 2 GHz MSS spectrum cannot be made available to independent operators.⁴⁴

⁴² See id. at 2-3. The Society of Broadcast Engineers, Inc. ("SBE") and Telenor Broadband Services AS ("Telenor") erroneously suggest that terrestrial reuse will result in an inefficient use of the spectrum. See SBE Comments at 7-10; Telenor Comments at 6-8. In this regard, the suggestion of The Wireless Communications Division of the Telecommunications Industry Association ("WCD") that "interference protection guidelines must be presented and studied well prior to any Commission decision on the feasibility of ancillary services within the 2 GHz MSS band" is simply an attempt to delay implementation of flexible operations in the 2 GHz MSS band. WCD Comments at 7. In fact, Celsat proposed terrestrial reuse nearly 10 years ago, and other companies such as New ICO and Motient have studied such proposed ancillary terrestrial uses at length. The record in this proceeding amply demonstrates the technical feasibility of ancillary terrestrial use by MSS licensees and no further interference studies are required in order for the Commission to move forward with its flexible use proposal.

⁴³ See Technical Annex at Part I.

⁴⁴ See id. WCD erroneously presumes that "any terrestrial use of 2 GHz MSS spectrum will require the segmentation of the band to separate it from satellite use." WCD Comments at 1. Otherwise, claims WCD, the satellite "handset will be overwhelmed by the power of the mobile terrestrial base stations" Id. at 3. As demonstrated in the Technical Annex, the satellite operator alone can both realize the efficiencies of reuse and resolve interference issues. In this regard, the Commission should also reject Iridium's proposal to establish a secondary terrestrial service ("STS") on MSS

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Precluding the introduction of independent operators in the 2 GHz MSS band is also wholly consistent with the Commission's recent decision in the *2.5 GHz Order*, where it refused to allow new terrestrial mobile wireless carriers into the ITFS and MMDS bands because the new users would result in a “very high risk of disrupting” the existing service providers.⁴⁵ Given that allowing new terrestrial wireless parties to provide ancillary terrestrial services in the 2 GHz MSS band would result in interference to 2 GHz MSS licensees, the Commission should limit ancillary terrestrial operations in the band to the 2 GHz MSS licensees.

In this regard, there is no need for the Commission to reallocate a portion of the 2 GHz MSS band in order to authorize ancillary terrestrial operations as CTIA suggests.⁴⁶ The Commission may provide for such services in the U.S. Table of Allocations simply by adding a new footnote to indicate that 2 GHz MSS operators may deploy ancillary terrestrial services on a primary basis within their respective selected assignments and on a secondary basis outside of their respective selected assignments. Such an approach is consistent with the Commission's allocation for complimentary terrestrial services in the

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bands. According to Iridium, STS would be available to all interested parties through competitive bidding and could permit independent reuse of this spectrum while ensuring that interference levels affecting MSS operations are adequately controlled. See Iridium Comments at 3, 5-8. Such a proposal is fundamentally flawed. See generally Technical Annex. Likewise, Boeing's suggestion that terrestrial reuse cannot be accomplished in the 2 GHz MSS downlink is technically erroneous. See Technical Annex at Part II.

⁴⁵ See *2.5 GHz Order* ¶ 27.

⁴⁶ See CTIA Comments at 7.

satellite Digital Audio Radio Service.⁴⁷

V. THE PLAIN LANGUAGE OF SECTION 309(J) OF THE COMMUNICATIONS ACT AND THE ORBIT ACT PROHIBIT AUCTIONS FOR ANCILLARY TERRESTRIAL OPERATIONS

Because it can only permit the 2 GHz MSS licensees to implement ancillary terrestrial use in the 2 GHz MSS bands, the Commission does not need to accept initial applications for a new service as CTIA argues,⁴⁸ but can – as the Commission suggests – “modify[] the U.S. licensee’s space station license to permit such operations, upon the request of a licensee that demonstrates that it has met the conditions for such operations.”⁴⁹ By limiting ancillary terrestrial components to existing 2 GHz MSS operators, there would be no mutual exclusivity to trigger the auction requirement under Section 309(j) of the Act.⁵⁰

⁴⁷ See Amendment of the Commission's Rules with Regard to the Establishment and Regulation of New Digital Audio Radio Services, 10 FCC Rcd 2310 at Appendix (adding Footnote No. US327 to the U.S. Table of Allocations, 47 C.F.R. § 2.106, providing that “[t]he band 2310-2360 MHz is allocated to the broadcasting-satellite service (sound) and complimentary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution 528.”).

⁴⁸ See CTIA Comments at 8.

⁴⁹ Flexible Use Notice ¶ 33.

⁵⁰ 47 U.S.C. § 309(j). The Commission rightly recognizes the inapplicability of auctions to authorizing current licensees to engage in ancillary terrestrial operations:

If we were to determine in this proceeding to permit provision of terrestrial services in the 2 GHz and L band spectrum, but limit such authority only to MSS operators providing such service on an ancillary basis, our obligation to use competitive bidding under Section 309(j) would not appear to be implicated, in part because terrestrial rights would be linked to pre-existing MSS authorizations and operations. Under such circumstances there would not

(continued...)

Even if Section 309(j) applied to ancillary terrestrial operations in the 2 GHz MSS band, however, the plain language of Section 647 of the ORBIT Act prohibits auctioning the 2 GHz MSS spectrum as it is currently allocated:

Notwithstanding any other provision of law, the Commission shall not have the authority to assign by competitive bidding orbital locations or *spectrum used for the provision of international or global satellite communications services*.⁵¹

The Commission has consistently characterized the 2 GHz MSS band as spectrum that will be used for international and global service.⁵² Such a characterization is consistent with the international allocation of the 2 GHz bands. Portions of the 2 GHz MSS band are currently allocated for MSS internationally in both Region 1 (which includes Africa, Europe, Northern and Western portions of Asia) and Region 2 (which includes the Americas and Greenland).⁵³ Moreover, the Commission has expressly noted that 2 GHz MSS operations may occur outside the United States “subject to the regulatory requirements of those countries in which these systems may seek to operate.”⁵⁴ Thus, the 2 GHz MSS bands as currently allocated in the U.S. constitute “spectrum used for the provision

(...continued)

be mutually exclusive applications triggering the competitive bidding provisions of Section 309(j).

Flexible Use Notice ¶ 39.

⁵¹ 47 U.S.C. § 765f (emphasis added).

⁵² See Flexible Use Notice ¶ 8 (“Upon launch, these new systems are expected to provide mobile, voice, data, Internet, and other services to consumers *around the world.*”); 2 GHz MSS Order ¶ 1 (stating that 2 GHz MSS systems will provide “global” services and will promote development of “global communications to unserved communities in the United States, its territories and possessions, including rural and Native American areas, *as well as worldwide.*”) (emphasis added).

⁵³ See 47 C.F.R. § 2.106.

⁵⁴ See 2 GHz Order ¶ 1 n.2.

of international or global satellite communications service” and is not subject to auction under the plain language of the ORBIT Act.⁵⁵

As AT&T Wireless observes, in enacting the ORBIT Act, “Congress wished to avoid triggering a situation in which MSS providers would be required to bid for spectrum in numerous jurisdictions, creating the potential for long delays in obtaining licenses and exponentially increasing the costs of providing service”⁵⁶ These Congressional concerns are no less applicable to the use of competitive bidding for ancillary terrestrial reuse in the 2 GHz MSS band than they are for the use of competitive bidding for the primary international satellite services in the band. Given that the global reach of the satellite systems will exist even after the ancillary terrestrial component has been implemented – and that terrestrial reuse of the 2 GHz MSS band likely will *hasten* the deployment of these important services around the globe – auctioning ancillary terrestrial use in the U.S. will trigger the very concerns noted above by AT&T Wireless: long delays in obtaining licenses and increased costs of providing service.⁵⁷

⁵⁵ AT&T Wireless effectively agrees that auctions are not implicated here as it suggests that auctioning would only occur “to the extent the spectrum in question is reallocated for terrestrial use.” AT&T Wireless Comments at 17. Similarly, Cingular/Verizon Wireless admit that “terrestrial uses deemed...purely ancillary to satellite service [are] arguably within the scope of the ORBIT Act.” Cingular/Verizon Wireless Comments at 15. As explained above, however, the Commission is not required to reallocate spectrum to terrestrial uses in authorizing an ancillary terrestrial component in the 2 GHz band.

⁵⁶ AT&T Wireless Comments at 16-17.

⁵⁷ As Telephone and Data Systems, Inc. (“TDS”) points out, the Commission indicated in the 1999 Notice of Proposed Rulemaking relating to 2 GHz MSS rules that auctioning 2 GHz MSS spectrum could result in other countries auctioning 2 GHz MSS spectrum as well, which could cause service delays and raise national sovereignty issues. Consequently, the Commission found that there was a strong justification for avoiding mutual exclusivity in the satellite services. See TDS

(continued...)

The Commission seeks comment in the *Flexible Use Notice* on the applicability of *National Public Radio v. FCC*⁵⁸ to "the ORBIT Act exemption from competitive bidding and the issues raised in this proceeding."⁵⁹ In *National Public Radio*, the U.S. Court of Appeals for the D.C. Circuit held that the plain language of Section 309(j)(2) of the Act⁶⁰ -- which exempts non-commercial education broadcasters ("NCEs") from auctions -- prohibited the Commission from requiring NCEs to participate in any auctions, "regardless of the type of license they seek."⁶¹ In so holding, the court vacated a Commission ruling that Section 309(j)(2) only exempted non-commercial licensees from competing in auctions when NCEs applied for reserved non-commercial educational licenses or permits.⁶² Given that *National Public Radio* focuses on a category of licensee (namely NCEs) as opposed to a category of spectrum (namely "spectrum used for the provision of international or global satellite communications services" as provided in the ORBIT Act), the case is not directly applicable to the issues facing the Commission in this proceeding. If *National Public Radio* stands for anything, however, it is that if "Congress has directly spoken to the precise questions at issue ... that is the end of the matter; for the court, as

(...continued)

Comments at 8-9 (citing Establishing Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band, Notice of Proposed Rulemaking, 14 FCC Rcd 4843, 4849-50 (1999)). In this regard, Cingular/Verizon Wireless' statement that "the purpose of the auction statute and the public interest outweigh any purported desire to avoid mutual exclusivity" is invalidated by the Commission's prior determinations in the 2 GHz MSS proceeding. Cingular/Verizon Wireless Comments at 10.

⁵⁸ 254 F.3d 226 (D.C. Cir. 2001).

⁵⁹ Flexible Use Notice ¶ 39.

⁶⁰ 47 U.S.C. § 309(j)(2).

⁶¹ See National Public Radio, 254 F.3d at 231 (emphasis added).

⁶² See id. at 228, 231.

well as the agency, must give effect to the unambiguously expressed intent of Congress."⁶³ The ORBIT Act's prohibition on the use of auctions to issue international satellite licenses could not be clearer – and its applicability to the licenses issued to the 2 GHz MSS licensees could not be more direct – and, accordingly, the Commission should refrain from auctioning ancillary terrestrial use of the 2 GHz MSS band.

VI. CONCLUSION

For the foregoing reasons, the Commission should reaffirm that 2 GHz MSS remains in the public interest and permit 2 GHz MSS licensees to engage in ancillary terrestrial operations with maximum flexibility across the entire 2 GHz MSS band.

Respectfully submitted,

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⁶³ Id. at 228 (quoting Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837 (1984)).

TECHNICAL ANNEX

I. Ancillary Terrestrial Reuse of 2 GHz MSS Spectrum Can Only be Accomplished if the 2 GHz MSS Licensees are Authorized for Such Uses to the Exclusion of Independent Operators

The technical issues involved with terrestrial reuse of 2 GHz MSS spectrum require that the satellite operators be the only entities authorized to use the satellite and terrestrial frequencies involved with such reuse.

It would be impossible to implement a viable terrestrial service while controlling interference without real-time coordination at each call setup time between the satellite and terrestrial services. To implement real-time coordination, the terrestrial service must be operated integrally with the satellite service and under control by the satellite operator. Thus, this spectrum cannot be separately assigned to an independent operator. The FCC must either permit the owner of the space spectrum to also reuse it on the ground, or that ground spectrum will lie fallow, wasting a natural resource.

As described in New ICO's proposal, there are four possible ways that satellite spectrum can be shared terrestrially as given in the table below.

Possible Sharing Modes

Sharing Mode	Uplink Spectrum Shared	Downlink Spectrum Shared
Forward Band (Conventional)	Terrestrial Return Links	Terrestrial Forward Links
Reverse Band (Reversed)	Terrestrial Forward Links	Terrestrial Return Links
Downlink Duplex	Not Shared	Terrestrial Forward & Return Links
Uplink Duplex	Terrestrial Forward & Return Links	Not Shared

The Forward Band or Conventional mode is the most straight forward allowing the user terminal to transmit to either the satellite or cell site in the satellite uplink band and receive from either within the satellite downlink band. The dual mode user terminal is simplified by using this mode, however, as the number of terrestrial users increases, so does the interference level at the satellite effectively place a limit on supported terrestrial capacity.

The Reverse Band mode reverses the transmit and receive band for the user terminal when it operates terrestrially with respect to its satellite operation. The dual mode user terminal must reverse its transmit and receive bands when it switches between satellite and terrestrial; however, this reverse mode can have significant advantages in controlling interference at the satellite.

The Downlink Duplex mode eliminates interference with the satellite but allows sharing of only 1/2 the spectrum (only the downlink, not the uplink spectrum). The Uplink Duplex mode also allows sharing of only 1/2 the spectrum (only the uplink, not the downlink spectrum) and eliminates interference with the satellite user but does not eliminate interference by the satellite user with the terrestrial service. Otherwise, it has no real advantages and terrestrial capacity will still be limited by interference at the satellite.

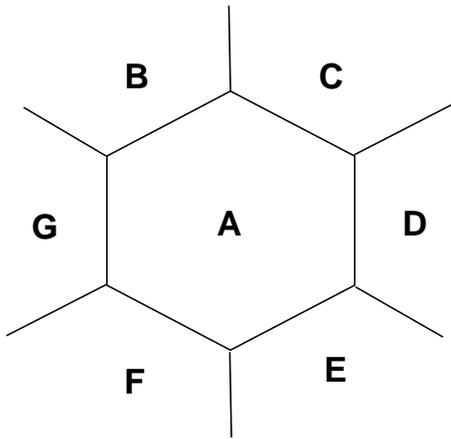
In any mode except Downlink Duplex, overall terrestrial power levels received at the satellite must be continually monitored and controlled in order to maximize supported terrestrial capacity while avoiding interference with the satellite services. New ICO's Appendix A to its Comments in this proceeding, entitled "Benefit of Integrating MSS Satellite/Ancillary Terrestrial Components," showed that, using its system parameters, maximum terrestrial capacity would be seriously reduced due only to interference levels at the satellite if the terrestrial service is operated independently from the satellite service.

In any mode, interference between the ground based satellite users and the terrestrial services reusing the same frequencies would be impossible to avoid with independent system operators. To control this interference source, the satellite frequencies must only be shared with terrestrial services that are geographically separated from the satellite user by at least a small distance so that, in general, they are separated by the local horizon.

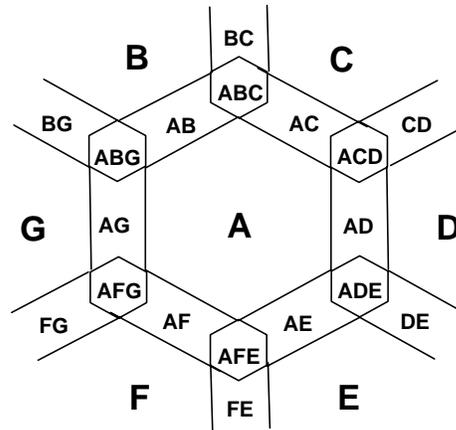
To assure adequate separation each terrestrial user must be assigned only the frequencies that are not being used by any satellite customer that is within an exclusion zone (32 km or larger) of the terrestrial cell. Celsat plans to reuse its satellite spectrum allocation scores of times over the contiguous United States with multiple beam technology as indicated by the left hand side of the figure on page 3. Even with full use of the spectrum by the satellite, only a portion of the spectrum allocation is utilized at any one location at any one time (one seventh in the example of the figure). This leaves most of the allocation available for reuse terrestrially. As indicated by the right hand side of the figure below, sub-bands B, C, D, E, F, and G can be reused terrestrially in Region A as long as proper coordination is maintained.

The figure below demonstrates how, with careful coordination, most of the assigned satellite frequency spectrum can be reused terrestrially while avoiding interference even when it is fully utilized by the satellite service.

Share Frequencies Only In Graphically Separated Regions -- Example



Satellite: 7 or more Cell Reuse



Terrestrial Overlay Showing Excluded Frequencies

With a fixed satellite reuse pattern such as 7-cell reuse, geographic separation of satellite and terrestrial users on the same frequency can be assured. In this figure, it is assumed that the satellite spectrum reuse is implemented by dividing the coverage region into clusters of cells. For the 7-cell reuse example, each cell within each cluster of 7 would be assigned a different portion of the allocated MSS spectrum and each frequency segment would be reused by the satellite many times but with geographic separation sufficient to allow roll off of the satellite antenna (typically hundreds of km) before the next reuse. In the above example within the interior of the "A" cell all frequencies except the "A" segment would be available for reuse by a terrestrial service. On the borders of the cells, all except two or three of the frequency segments would be available for terrestrial reuse. Most of the spectrum, therefore, would be available for terrestrial reuse over the entire service area as long as terrestrial frequency assignments are carefully coordinated with satellite frequency assignments.

In order to implement terrestrial reuse and to control interference, the system operator must know at all times which frequencies are being used and will first assign unused satellite frequencies to terrestrial users. Once these are filled, frequencies will only be assigned to a terrestrial user that is at a sufficient geographic distance to avoid interference from a satellite user on the same frequencies. This means that both terrestrial and satellite user locations must be known and utilized in channel assignments for users on a real-time basis at each call setup time. The only practical way that this can be implemented is that the same satellite operator controls both the satellite and terrestrial services thus precluding assignment of terrestrial spectrum to independent operators.

II. Boeing's Interference Analysis for Terrestrial Reuse is Flawed

The Boeing Company's ("Boeing") conclusion that "sharing between MSS service and an ancillary terrestrial service in the downlink band cannot be accommodated because of harmful interference to any MSS licensee in an adjacent band" (Boeing Comments at 12-13, emphasis in original) is based on a flawed interference analysis.

Specifically, in Boeing's "forward band sharing" model, Boeing calculates terrestrial base station interference levels based on out-of-band interference levels of -56.5 dBW/4-kHz as defined in New ICO's proposal. See Boeing Comments, App. A at 3. Such out-of-band emission levels would seem to apply when the base station is at maximum power (i.e., when it is serving a maximum number and at the maximum fading) and when the affected Boeing terminal is at the peak of the main lobe (at 17 dBi gain). Under such a model, the base station's beam would likely be pointed at or near the horizon so that to be in this peak position, the Boeing user terminal would need to be a considerable distance (likely greater than 20 km) from the base station and with clear line-of-sight between. Gain would be expected to drop off significantly if the user terminal moved closer and away from the beam peak. Also, the base station with power control would rarely be at maximum power level so that the conditions analyzed by Boeing would rarely exist and average interference levels would likely be 10s of dBs below the values assumed by Boeing.

In the reverse band sharing case where interference is generated by the ancillary terrestrial component ("ATC") user terminal instead of the base station, Boeing again uses New ICO's estimate of worst-case out-of-band interference (-93.5 dBW/4-kHz) for a cdma2000 user terminal. See Boeing Comments at 4. This level also seems to apply when the user terminal is at maximum power. With power control, the user terminal would likely very rarely operate at maximum power level and most of the time would be operating significantly below this level. Boeing's analysis assumes that six ATC user terminals are interfering with a Boeing user terminal all at maximum power and with no fading or blockage to attenuate interference -- an unrealistic condition.

Moreover, Boeing assumes the blockage and fading between either the ATC base station (forward band sharing) or the ATC user terminal (reverse band sharing) to be zero. See Boeing Comments at 3-4. An accurate analysis would include some loss to account for an average level of blockage and fading.

In addition, Boeing's user terminals are also assumed to have 0 dB gain and a 200°K front end (noise temp.). See Boeing Comments at 3-4. Boeing's aircraft antennas can be presumed to point upwards, and interference would come from below into a sidelobe with -10 dB gain or less. Furthermore, a 200°K front end performance would be very difficult to achieve. With front end performance closer to the 400°K , the interference threshold would be increased by at least 3 dB.

When all the effects describe above are realistically considered, the analysis presented by Boeing could be high by 30 to 50 dB in the forward band sharing case and 20 dB or more in the reverse band sharing case, completely invalidating Boeing's conclusions. Accordingly, terrestrial reuse should not be precluded from the 2 GHz MSS downlink.

Exhibit A

DECLARATION OF DAVID D. OTTEN

DECLARATION OF DAVID D. OTTEN

I, David D. Otten, Chairman and Chief Executive Officer of Celsat America, Inc., hereby certify under penalty of perjury that:

I have been involved in the engineering of major satellite and ground based communications, navigation, and electro-optical programs for over 40 years. I received a Bachelor's Degree in Electrical Engineering from the Fournier Institute of Technology and a Master's Degree in Electrical Engineering from the University of Illinois. I am the technically qualified person with overall responsibility for preparation of the technical information contained in the foregoing Reply Comments of Celsat America, Inc. The technical information contained in the Reply Comments is true and correct to the best of my knowledge and belief.

/s/ David D. Otten_____

David D. Otten

Dated: November 13, 2001

CERTIFICATE OF SERVICE

I, Michael Murphy, hereby certify that on this 13th day of November, 2001, copies of the foregoing "Reply Comments of Celsat America, Inc." were served by courier on the following parties:

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