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BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C.

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FEDERAL COMMUNICATIONS COMMISSION
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In the Matter of	)	
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Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band, Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz Frequency Bands for Government Operations	)	IB Docket No. 97-95 RM-8811

PETITION FOR RECONSIDERATION OF GE AMERICAN COMMUNICATIONS, INC.

GE AMERICAN COMMUNICATIONS, INC.

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SUMMARY

GE Americom seeks reconsideration of the *Report and Order* (the "*Order*") designating frequencies between 36.0 and 51.4 GHz (the "V-band") in order to correct several major defects in the *Order*'s plan for V-band spectrum.

First, reconsideration is necessary because the *Order* fails to allocate the minimum necessary spectrum for the continued development of Fixed Satellite Services ("FSS") in the United States. Because of common atmospheric effects, the V-band may offer the only feasible frequencies for the next generation of FSS systems. Yet the *Order* designates only 2 GHz of uplink and downlink spectrum for geostationary ("GSO") *and* non-geostationary ("NGSO") FSS.

Second, reconsideration is necessary because a significant part of the *Order*'s FSS-designated spectrum is useless internationally. To function most efficiently, and to be commercially viable, FSS systems typically require globally consistent allocations. Yet the *Order* designates fully 25 percent of downlink FSS spectrum in frequencies where FSS has no worldwide allocation.

Third, reconsideration is necessary because the *Order* refuses to provide sufficient technical protection to GSO/FSS use of V-band spectrum. In light of the limited spectrum in the V-band that must be used by both GSO and NGSO FSS systems, such protections are fundamental to the development of any realistic business plan. Until it is clear the extent to which GSO and NGSO systems can and must share spectrum, the *Order*'s band plan cannot satisfy its goals of facilitating commercial FSS development of the V-band.

The Commission should adopt a revised spectrum plan that resolves these failings in the *Order*. It should designate at least an additional two gigahertz for FSS uses in the V-band. It should take steps to ensure that the existing and additional FSS spectrum is within international FSS allocations. Finally, it should pledge that any sharing rules that will govern FSS-designated spectrum will make certain that the band is commercially viable for GSO/FSS systems.

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Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band, Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz Frequency Bands for Government Operations	)	IB Docket No. 97-95 RM-8811

To: The Commission

PETITION FOR RECONSIDERATION OF GE AMERICAN COMMUNICATIONS, INC.

GE American Communications, Inc. ("GE Americom"), pursuant to Section 1.429 of the Commission's rules, 47 C.F.R. § 1.429, hereby seeks reconsideration of the *Order* in the above-captioned proceedings.[1] Aspects of the *Order* are contrary to Commission policy and to the record in these proceedings and accordingly must be modified as described below.

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[1] Specifically, GE Americom seeks reconsideration of the identified aspects of the *Report and Order, Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz Frequency Bands for Government Operations*, IB Docket No. 97-95 (rel. December 23, 1998) (the "*Order*").

INTRODUCTION

The continued development of Fixed Satellite Services ("FSS") in the United States depends on the rational designation of spectrum from 36.0-51.4 GHz (the "V-Band"). Above 51 GHz, FSS systems currently cannot make feasible use of any spectrum because common atmospheric conditions attenuate the high-density transmissions necessary for FSS to use these frequencies. Below 36 GHz, the spectrum already is becoming congested, both with operational or proposed FSS systems and with the operations of other services. Yet, the demand for FSS is unabated.

The *Order* does not provide adequate spectrum or technical guidance for FSS with regard to this critical band. The *Order* fails in three key respects:

- it designates too little spectrum to FSS;
- it does not ensure that the spectrum it does allocate to FSS coincides with actual international allocations; and
- it refuses to provide any technical reassurances that geostationary ("GSO") FSS systems will be able to share the band with non-geostationary ("NGSO") systems.

GE Americom urges the Commission to remedy each of the above three defects in order to enable the next generation of FSS systems to serve the United States.

First, the Commission should allocate at least one additional gigahertz of uplink and of downlink spectrum for FSS systems. The *Order*'s designations ignore the comments and reply comments of nearly the entire satellite industry (collectively, "FSS Comments") in allocating only 2 GHz of uplink and of downlink

frequencies for GSO *and* NGSO FSS systems in the band. Based on the allocations present prior to the *Order*, the comments to the proceeding, and any reasonable independent assessment of future satellite usage, that amount of FSS V-band spectrum is not sufficient.

Second, the Commission should reconsider the *Order* to ensure that all spectrum allocated to FSS in the V-band parallels international allocations. As the FSS Comments made clear, domestic FSS frequencies must align with international allocations in order to limit potential interference and to make the most efficient and effective use of these systems' capabilities. Yet at least one quarter of FSS's downlink designations in the *Order* do not coincide with global FSS allocations. The *Order* neglected the importance of worldwide allocations to the success of FSS systems when it chose not to designate FSS spectrum consistent with existing international allocations. Alternatively, the premature issuance of the *Order* precluded steps that might have reduced the risk now faced solely by FSS entities.

Third, the Commission should reconsider the *Order* because it simultaneously slashed the available FSS spectrum in the V-band to less than half of the spectrum formerly accessible to FSS systems on a co-primary basis and refused to address the implications of GSO and NGSO systems sharing the slim remaining spectrum. Under the current plan, any practical GSO/FSS system may well require the use of all or almost all of the range of frequencies designated by the *Order* for FSS systems. Accordingly, until GSO/FSS parties know to what extent

their proposed systems will be able to act without NGSO-required limits, they cannot develop a rational business plan for using any V-band spectrum.

I. FIXED SATELLITE SERVICES REQUIRE MORE V-BAND SPECTRUM THAN DESIGNATED BY THE *ORDER*

The V-band is critical for the continued development and deployment of fixed satellite services. Below the V-band, existing allocations are unable to satisfy the ever-growing demand for broadband satellite applications. Above 51 GHz, common atmospheric effects, including rain, attenuate satellite transmissions to the extent that such spectrum currently has no practicable FSS use.

In March 1997, the Commission, through a *Notice of Proposed Rule Making*, proposed to designate particular frequencies in the V-band to particular services in order to facilitate commercial development of the band.[2] The *Notice*, which was issued and subject to comment prior to any general application window for V-band FSS systems, proposed only 2 GHz of uplink and of downlink FSS-designated spectrum. In comments to the *Notice*, the entire satellite industry agreed that such a reduced amount, which was less than half that allocated to FSS systems in the band, did not reflect the V-band's importance to the future of FSS.

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[2] *Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band, Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations*, IB Docket No. 97-95, 12 FCC Rcd 10130 (1997) ("*Notice*").

Many FSS Comments proposed alternative plans, all of which agreed that the Commission should increase and, in a number of instances, double the number of V-band frequencies to be designated for FSS systems.[3]

The critical nature of the band to FSS became even more clear after the comments and reply comments to the *Notice* had been filed. In September 1997, in response to the first general filing window for such applications, 15 applications for FSS systems that proposed to use V-band frequencies were filed. These applications confirmed what the Commission already, by this point, should have known: the FSS industry required more than the 2 GHz of uplink and of downlink frequencies suggested by the *Notice*.[4]

Despite such clear evidence that the *Notice* had miscalculated the need for FSS-designated frequencies in the V-band, the *Order* does not improve upon the *Notice*'s proposals: the *Order* designates only 2 GHz of uplink and downlink V-band frequencies for FSS use. The *Order* does not explain why this designation is enough for future FSS systems, especially when contrasted against the 5.6 GHz that is afforded terrestrial wireless services.[5] The *Order* also does not discuss why the

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[3] *See, e.g.*, GE Americom Reply Comments at 11; Reply Comments of Hughes Electronics, Inc. at 24-25.

[4] As an illustrative example, GE Americom proposed to use 6 GHz of V-band frequencies in its application.

[5] In this regard, the logic underlying the *Notice* was easier to fathom than that underlying the *Order*. In the *Notice*, the Bureau stated that it had made its proposals based on "applications now pending," and discussed the only two space-based systems that had filed applications at that point. *Notice* at ¶ 10. On such a limited record, it might have been defensible to designate only 2 MHz of uplink and

V-band, as the "last frontier" for the foreseeable future of usable satellite frequencies, is somehow more critical to terrestrial services than FSS. Nor does the *Order* address how this limited designation is intended to "expedite the commercial development of the 36-51.4 GHz spectrum" by FSS, *Notice* at ¶ 9, especially as the *Order* refuses to propose the technical rules necessary for any GSO/FSS entity to determine whether a V-band proposal could be economically viable. In particular, it is not clear how the Commission could know that 2 GHz of uplink and of downlink FSS designations in the V-band would be sufficient for all FSS systems before knowing to what extent GSO and NGSO systems are able to share that spectrum.[6]

Rather, the *Order* justifies its refusal to amend the *Notice*'s proposed amount of FSS-designated spectrum, despite the extensive evidence supporting such changes, on two slender arguments.[7] First, the *Order* argues that, as it is not

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downlink frequencies to FSS. In the *Order*, however, the Bureau was aware of several times more FSS applications, *see Order* at ¶ 28, and yet did not amend the amount of FSS-designated spectrum in the V-band.

6/ *See* Part III *infra.*

7 *Id.* at ¶ 28. The *Order* also rejects certain band plans proposed by satellite commenters as being "not in accord with Commission decisions regarding the 36.0-51.4 GHz band made in other ongoing proceedings." *Id.* at ¶ 29. Such a flat rejection is not only baseless, as the Commission clearly may correct errors made in prior rulemaking proceedings through later proceedings, but also appears contrary to the intent of the instant proceeding.

The *Notice* explained that one of the primary aims of the instant proceeding was to establish an overall, governing framework for the V-band: "In light of the competing proposals involving frequencies between 36 and 51 GHz [and] the two ongoing rulemakings involving frequencies in this range . . . we believe it useful to describe an initial overall policy and framework that we *intend to follow* in developing services using this spectrum." *Notice* at ¶ 9 (emphasis added). Such a

imposing "underlay licenses" or other non-satellite designations in FSS-designated spectrum, FSS users will need less spectrum than the minimum outlined in the *Notice*. *Id.* Second, the *Order* implies that not all the wireless designations are likely to be used by terrestrial services, noting that certain of these terrestrial-designated frequencies "may ultimately be auctioned for any allocated service." *Id.*

Neither of these rationalizations justify the lack of heed paid the critical and obvious need for sufficient V-band FSS designations. The first defense simply re-states a principle not in dispute in this proceeding -- designated spectrum for a particular service is better than non-designated spectrum. However, it does not suggest why the *Order* should provide so much more designated spectrum to terrestrial services than FSS. As the *Order* recognizes, most of the V-band is allocated on a co-primary basis for "fixed, mobile, fixed-satellite . . . and mobile satellite . . . services." In other words, prior to the *Order*'s designations, satellite

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clear statement of intent gave all commenters every reason to expect that this proceeding was to provide the plan to which other proposals had to conform. In fact, a number of commenters, GE Americom included, agreed that any other approach to the V-band would result in inconsistency and unfairness. As such, the Commission cannot have meant to reject alternative plans for the entire V-band offered as part of this proceeding simply on the basis that these plans did not take into account every other concurrent rulemaking that affects the V-band. To do so would be to ignore the Commission's own *Notice*, which made clear that this proceeding was to govern those other concurrent proceedings affecting the V-band.

If, in fact, the *Order* rejected alternative plans simply because they may have contradicted some aspect of a parallel proceeding *that this proceeding was intended to govern*, then that rejection suggests that the *Order* neither adhered to the intent of the *Notice* nor properly considered the reasons and the rationale for these alternative plans. Accordingly, the Commission must reconsider its rejection of these alternative plans.

and terrestrial services had roughly equal rights to the band. Nonetheless, the *Order* grants terrestrial services far more designated spectrum than it does satellites. In such an instance, it cannot be enough for the Commission to justify its rationale because it is "difficult to compare an amount of dedicated spectrum with an amount of shared spectrum." *Order* at ¶ 28. The Commission made the same conversion for terrestrial services in the *Order*, and yet determined that FS is to receive a much higher amount of designated spectrum. In lieu of compelling reasons to the contrary, any similar conversion with regard to FSS spectrum must result in additional FSS-designated spectrum in the V-band.[8]

Nor does the Commission's refusal to implement "underlay" licenses explain why FSS received so little spectrum as compared to fixed services. FSS and FS parties alike criticized underlay licenses. The concept contradicted the entire rationale of the *Notice*, which aimed to develop an overall framework of *separate* designations for the V-band. The elimination of underlays thus benefits the entire band plan. Accordingly, FSS systems should not be singled out for less V-band spectrum in the *Order* because such a proposal was not implemented.

The *Order*'s second defense, which suggests that some FS-designated spectrum will be auctioned, again does not explain why the *Order* does not

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[8] This argument is only strengthened by the need for FSS V-band spectrum. Unlike terrestrial services, which currently can operate immediately above 51 GHz, common atmosphere conditions preclude any current, practicable use of these frequencies by FSS. As a result, any decision in designating spectrum in these bands should favor FSS, rather than FS.

designate additional V-band spectrum to FSS. The Commission clearly intends the *Order*'s designations to structure the V-band. The *Order* refuses to adopt an "open" designation for segments of the band that are to be auctioned, *id.* at n. 82, precisely because leaving such designations "open" would be contrary to the Commission's "goals in these bands." *Id.* at ¶ 29. Yet, in trying to claim that FSS systems have been treated fairly, the *Order* suggests that some of the terrestrial designations could be obtained, through auction, for satellite use.

The Commission cannot have it both ways. The *Order* states that such to-be-auctioned, wireless-designated frequencies will "be used primarily for terrestrial fixed and mobile services;" *id.* at ¶ 36; it should not pretend the possibility that this spectrum will be distributed through auctions (in which satellite parties may, at least theoretically, participate) is sufficient reason to designate more than 1.5 GHz of additional V-band spectrum to terrestrial services. The Commission must know that, in practice, any auction in FS-designated spectrum necessarily will favor terrestrial bidders, as the timing of the auctions and the segmentation or channelization of the frequencies, to suggest only two examples, undoubtedly will be targeted to terrestrial services. Moreover, to be successful in such an auction, a satellite entity, by the nature of its system, would have to buy the same block of frequencies throughout much of the country if it hopes to launch a viable multipoint service. As a result of such procedural and technical realities, it is virtually certain that spectrum designated terrestrial, even

if ultimately auctioned, will be used by terrestrial services. Given this virtual certainty, the Commission must reconsider its decision to give less spectrum to FSS services based on any concern that to-be-auctioned, FS-designated spectrum might somehow escape FS control.

In sum, under the *Order*, FSS receives only four total gigahertz of designated V-band spectrum, which must be shared by both NGSO and GSO/FSS systems as well as MSS and BSS applications.[9] FS receives more than 33 percent more frequencies than satellite services in the V-band. The *Order* does not justify this disproportionate designation but merely adheres to the proposals made in the *Notice*, despite the recent evidence of the need for additional V-band frequencies for FSS systems. The Commission must reverse the *Order* by designating, exclusively to FSS, two or more additional gigahertz within the V-band.

II. THE ORDER IGNORES THAT FSS-DESIGNATED SPECTRUM MUST BE CONSISTENT WITH ESTABLISHED INTERNATIONAL ALLOCATIONS

FSS Comments emphasized in the record the need for consistent global V-band spectrum satellite designations. Unlike ground-based services, for which differing international allocations do not substantially increase system complexity,

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[9] *See id.* at ¶ 32. For purposes of business planning, this designation is made even smaller by the *Order*'s refusal to provide GSO/FSS systems reasonable technical assurances with regard to spectrum sharing. For instance, a single omnidirectional NGSO system could have significant preclusive effects on more traditional GSO/FSS systems attempting to use the band. *See* Part III *infra*.

global allocations for satellites are virtually essential to permit integrated satellite systems capable of providing international communications. Without globally consistent allocations, satellite systems cannot enable their users to benefit from satellites' inherently efficient use of spectrum. Moreover, inconsistent FSS frequencies would increase the costs of building, operating and using the satellite, as well as increasing the launch costs associated with the satellite.

Because the *Order* makes only 2 GHz of downlink frequencies available to FSS in the V-band, it is all the more critical that this designation coincides with established international FSS allocations. The *Order*, however, deals with the global consistency of its FSS designations almost as an afterthought. The *Order* assigns 25 percent of FSS's downlink V-band designations to a band where, internationally, there is only a partial, provisional FSS allocation.[10] In other words, should the provisional international allocation end or be substantially modified,

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[10] *Id.* at ¶ 30 & n.76 (noting that even this provisional allocation does not extend to a number of countries in Region I.) The *Order* also concluded that it should exchange 500 MHz of spectrum between 40.0-40.5 GHz to be designated for wireless services for another 500 MHz of spectrum from 41.0-41.5 GHz that was to be designated for FSS. *Id.* at ¶ 32. Although the *Order* suggests that this switch is to align the FSS designation with an existing international allocation, the *Order* also notes that the reversal, which was attributed to the Fixed Section of the Telecommunications Industry Association, benefits wireless services as well. *Id.* Of course, regardless of the reason for the swap, the end result at least gives FSS a designation of 500 MHz that is consistent with international allocations. That the Commission only was willing to make this change after the Fixed Section proposed it, however, suggests the Commission was not focused on this issue throughout the proceeding, and should consider it more extensively in its reconsideration.

FSS/GSO would have access to only 1.5 GHz of globally consistent downlink spectrum in the V-band.

FSS entities should not have to bear this considerable risk. The Commission did not have to issue the *Order* until it can be sure that the partial, provisional allocation was to become fully worldwide and permanent. Alternatively, it could have positioned all of FSS's restricted downlink spectrum in bands that coincided with existing global allocations. It did neither.

The Commission must reconsider this aspect of its *Order*. At the very least, it should replace the 500 MHz within the provisional international FSS allocation with 500 MHz that is contiguous to existing FSS downlink designations and that would be in spectrum already internationally allocated to FSS uses. Likewise, assuming the Commission adds significant FSS-designated spectrum to the band plan on reconsideration, it also should strive to place as many of these additional designations as possible in internationally allocated FSS bands. By so doing, the Commission only will increase the efficiency and utility of each of the FSS designations in the V-band. Such re-designation would advance one of the aims of the *Notice*: to designate spectrum "in a manner that promotes . . . seamless satellite . . . networks." *Notice* at ¶11.

Alternatively, the Commission might withdraw the *Order* and delay any new action on the band until it has ensured that all spectrum currently designated for FSS use will be within existing international FSS allocations. This

approach will make certain that FSS alone will not bear the risk for any failure to make permanent and worldwide the provisional, partial international allocation. In either instance, the Commission cannot neglect the danger that changes in international allocations could preclude the most efficient use of FSS V-band designations to the detriment of FSS development and the public alike.

III. THE FAILURE OF THE *ORDER* TO PROVIDE BASIC TECHNICAL REASSURANCES ON GSO/NGSO SHARING EXACERBATES THE LACK OF FSS-DESIGNATED SPECTRUM

A stated purpose of the *Notice* was to "foster better business planning and expedite commercial development" of the V-band for all designated services. *Notice* at ¶9. As noted throughout the FSS Comments, the commercial development of satellite systems requires significant long-term preparation and investment. At times, this planning may require certain, limited assumptions. However, such assumptions must be based on some reasonable foundation and must have a significant likelihood of accuracy. An incorrect assumption at the start of a plan can transform an otherwise attractive project into a failure. Accordingly, commercial FSS development demands a reasonable sense of the variables underlying a project.

The extent of spectrum available and the technical protections afforded such spectrum are two such variables. They are not independent. The more spectrum available to FSS, the less protective any rules governing the sharing of that spectrum may need to be. The less spectrum available, the more the sharing

rules must provide sufficient safeguards to reassure those FSS entities willing to invest the resources into designing new systems that their systems will be able to function as necessary.

The *Order* does not offer sufficient reassurances for the planning of GSO/FSS systems on either issue. As discussed, the *Order* does not provide sufficient FSS spectrum. The *Order* also fails to provide any technical safeguards for GSO/FSS systems. This lack of such technical safeguards exacerbates the lack of usable V-band spectrum. Without sensible sharing rules, GSO/FSS interests do not know how or to what extent their use of V-band frequencies can overlap or interact with NGSO/FSS systems. As a result, they do not know how much of the limited V-band frequencies they actually will be able to use.[11] Without technical protections aimed at ensuring sufficient spectrum for GSO/FSS use, GSO/FSS planners cannot evaluate the potential parameters of any proposed system in order to develop a serious business plan.

During the FSS Comments, it was widely assumed that the spectrum designated for FSS uses would be sufficient to develop business plans without knowing precisely the restraints GSO/NGSO sharing might impose. The limited spectrum designated to FSS by the *Order*, however, has shattered this assumption. Such modest designations make it very possible that any practical GSO/FSS system will require the use of all or virtually all of the range of FSS frequencies designated

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[11] As noted, without such protections, a single omnidirectional NGSO system could have catastrophic effects on any GSO/FSS systems attempting to use the band.

by the *Order*. Yet the *Order* does not even attempt to indicate how FSS spectrum in the V-band is to be shared. *See Order* at ¶ 32.

The Commission must eliminate this additional threat to GSO/FSS development of the V-band. In addition to designating additional FSS spectrum, it should take steps to protect any GSO/FSS system using spectrum within those designations.

CONCLUSION

For the foregoing reasons, the Commission must reconsider the *Order* and revise the spectrum designation plan for the V-band to better respond to the needs of the FSS industry.

Respectfully submitted,

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