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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20054

SEP 15 1997

In the Matter of,	)	
	)	
Reallocation of Television Channels 60-69, the 749-806 MHz Band	)	ET Docket No. 97-157
	)	

COMMENTS OF MOTOROLA

Richard C. Barth
Director of Telecommunications Strategy
and Regulation
Motorola
1350 Eye Street, NW
Washington, DC 20005
(202) 371-6959

Stuart E. Overby
Assistant Director, Spectrum Planning
Motorola
1350 Eye Street, NW
Washington, DC 20005
(202) 371-6940

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SUMMARY

The FCC's *Notice of Proposed Rule Making* (*Notice*) relating to the future use of the 746-806 MHz frequency band now used for TV broadcast channels 60-69 has largely been superseded by Congressional action. Following the release of the *Notice* which proposed to reallocate this band for public safety and commercial fixed, mobile and broadcast services, Congress adopted the Balanced Budget Act of 1997 ("*Budget Act*") directing the FCC to allocate 24 MHz of spectrum between 746-806 MHz for public safety services by January 1, 1998, and to commence assignment of licenses for such services by September 30, 1998. The *Budget Act* also specifies that the remaining 36 MHz in this band shall be allocated for commercial use and instructs the FCC to begin competitive bidding for these licenses after January 1, 2001.

Motorola's strong support for reallocating the 746-806 MHz band for land mobile use, including public safety, has been well documented in various phases of the FCC's digital television proceedings. Since the FCC has decided to defer service rule proposals and interference protection criteria to subsequent phases of this proceeding, Motorola's comments are limited for the most part to supporting FCC proposals to designate TV channels 63, 64 and 68, 69 for public safety use with the remaining sub-bands designated for commercial fixed and mobile services. Motorola opposes, however, the flexible use proposal for the 36 MHz commercial allocation and recommends that additional broadcast use of this spectrum be prohibited. Finally, Motorola urges the FCC to take all steps necessary to facilitate the speedy relocation of incumbent broadcasters from this band to enhance the near term availability of this band for public safety and other land mobile operations.

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COMMENTS OF MOTOROLA

I. Introduction

Motorola hereby submits these comments in response to the above-referenced *Notice of Proposed Rule Making* relating to the future use of the 746-806 MHz frequency band now used for TV broadcast channels 60-69.[1] In this *Notice,* the Commission solicits public comment on whether to allocate 24 MHz from this band for public safety fixed and mobile uses and whether to allocate the remaining 36 MHz for commercial fixed, mobile, and broadcasting services.[2] Licenses for the commercial allocation are proposed to be issued through competitive bidding procedures.[3]

To a great extent, the public debate initiated by the *Notice* has been superseded by Congressional action. Following the release of the *Notice,* Congress adopted the Balanced Budget Act of 1997 ("*Budget Act*") which, in part, directed the FCC to allocate channels 60-69 for public

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[1] *Notice of Proposed Rule Making,* ET Docket No. 97-157, FCC 97-245, released July 10, 1997 [*hereinafter Notice*].

[2] *Notice* at ¶1.

[3] *Id.*

safety and other commercial services.[4] More specifically, the *Budget Act* requires the Commission to allocate 24 MHz of spectrum between 746-806 MHz for public safety services by January 1, 1998, and to commence assignment of licenses for such services by September 30, 1998.[5] The *Budget Act* also specifies that the remaining 36 MHz in this band shall be allocated for commercial use and instructs the FCC to begin competitive bidding for these licenses after January 1, 2001.[6]

Motorola's strong support for reallocating the 746-806 MHz band for land mobile use, including public safety, has been well documented in various phases of the FCC's digital television proceedings.[7] Given the Congressional directive, there is no need to repeat here the public interest benefits to be derived from this action. Thus, the remainder of these comments will focus on some of the specifics of the reallocation including recommendations on band plans, flexible use provisions and incumbent protection rights noting, however, the FCC's decision to defer service rule proposals and interference protection criteria to subsequent phases of this proceeding. Generally, Motorola supports the Commission's proposals to designate spectrum at 764-776 MHz and 794-806 MHz (TV channels 63, 64 and 68, 69) for public safety use with the remaining sub-bands for commercial fixed and mobile services. Motorola opposes, however, the flexible use proposal for the 36 MHz commercial allocation and recommends that additional

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[4] *See* Balanced Budget Act of 1997, P.L. 105-33, §§ 3003, 3004.

[5] *Id.* at § 3004.

[6] *Id.*

[7] *See, e.g.,* Comments of Motorola, MM Docket 87-268, November 22, 1996 at pp. 3-7.

broadcast use of this spectrum be prohibited. Finally, Motorola urges the FCC to take all steps necessary to facilitate the speedy relocation of incumbent broadcasters from this band so that the utility for land mobile operations may be enhanced.

II. Band Plan Specifics

The scope of the *Notice* is self-admittedly narrow and, for the most part, confines itself to the need for the reallocation and incumbent rights issues. Technical service rules and interference protection standards are specifically deferred to subsequent proceedings.[8] Nonetheless, the *Notice* seeks comment on a proposed sub-allocation band plan that would allocate TV channels 63, 64, 68 and 69 for public safety use and channels 60, 61, 62, 65, 66, and 67 to commercial fixed, mobile and broadcasting services.[9] The *Notice* bases this proposal on the fact that channels 63, 64, 68 and 69 are relatively lightly used and offer fewer restrictions for near term public safety use.[10] Also, the *Notice* notes the advantages of the public safety allocation being immediately adjacent to existing public safety allocations at 806-824 MHz and states that the proposed configuration would provide sufficient separation for two-way paired channel operations.[11]

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[8] *Notice* at ¶1.

[9] Notice at ¶12, 13.

[10] *Id.* at ¶11.

[11] *Id.*

Motorola supports this sub-allocation arrangement as proposed in the *Notice*. In addition to the greater opportunity for near-term public safety use, there are other definite advantages to the plan proposed by the *Notice*. As noted by the Commission, two-way land mobile operations benefit from the assignment of channel pairs where the mobile transmit frequency is separated from the base station transmit frequency. The maximum *consistent* separation that can be achieved in the 746-806 MHz band is 30 MHz.[12] Maintaining a consistent channel pairing across the entire band will allow manufacturers to achieve economies of scale in the production of equipment thus lowering costs to both public safety and commercial operations. Also, the resultant 30 MHz separation will not provide any formidable challenges for designing equipment compatible with systems in the existing 800 MHz allocations.[13] The FCC's proposal to designate channels 63, 64, 68 and 69 for public safety use and the remaining spectrum for commercial use is consistent with establishing a uniform 30 MHz separation across the band for paired channels and is therefore supported by Motorola.

Motorola does recommend that the band 776-806 MHz (channels 65-69) be designated for mobile transmit operations and that the band 746-776 (channels 60-64) be designated for base station transmit operations. This would place the lower power mobile transmit bands immediately adjacent to the mobile transmit bands of the existing 800 MHz land mobile

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[12] This would pair frequencies in channel 60 with 65, channel 61 with 66, channel 62 with 67, channel 63 with 68, and channel 64 with 69.

[13] The existing 800 MHz allocations at 806-824/851-869 MHz bands are separated by 45 MHz. Software dependent radios can be developed to operate on channels spread by both 45 MHz and 30 MHz.

allocations greatly enhancing the compatibility of the two allocations.[14] This will particularly benefit public safety users of TV channels 68 and 69 (as proposed by the *Notice*) both in the near term as well as after the DTV transition period has expired.[15] Further, it is a necessary step to allow handsets to cover both the existing 806-824 MHz band and the new 746-806 MHz band, thereby enhancing interoperability.

The Commission also requested comments on whether the presence of high power TV transmitters on channels 65-67 would interrupt signals transmitted by public safety entities using paired frequencies. As the Commission is well aware, land mobile stations can receive adjacent channel interference from high powered analog broadcast stations. This has been well documented, for example, in the case involving the Atlanta analog broadcast station operating on TV channel 69 which caused widespread interference to land mobile base stations "listening" for low power mobile and portable transmissions on the adjacent band beginning at 806 MHz.[16] Regardless of how the 746-806 MHz band is sub-allocated for public safety and commercial use,

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[14] If reversed, co-sited or nearby base station transmitters in the 796-806 MHz sub-band would create a substantial interference potential to base station receivers immediately adjacent in the 806-821 MHz band.

[15] Similarly, placing the other half of the public safety allocation at channels 63 and 64 separates these operations from the high power broadcast transmitters that will remain after the DTV transition on channels 59 and below. Thus, the FCC's proposal minimizes potential interference to public safety and maximizes spectrum availability.

[16] *See* Broadcast Corp. of Georgia, *Memorandum Opinion and Order,* 96 F.C.C. 2d 901 (1984). Due to this case and other interference situations, the FCC modified the responsibilities and obligations of broadcast stations in order to lessen the prospect of interference between television stations and adjacent channel land mobile services. *See* Resolution of Interference Between UHF Channels 14 and 69 and Adjacent-channel Land Mobile Operations, *Report and Order*, MM Docket No. 87-465, 6 FCC Rcd 5148 (1991).

adjacent channel interference to public safety will remain an issue in some parts of the country so long as the existing analog broadcast stations and DTV assignments continue to operate in the 746-806 MHz band.

In future phases of this proceeding, Motorola will be prepared to submit recommendations that seek to maximize spectrum use for land mobile applications during the DTV transition period while ensuring adequate interference protection to the broadcast services. These recommendations will involve a combination of geographic and frequency separation proposals that will inevitably reduce the amount of spectrum available for land mobile operations including public safety services. The impact of these separations on public safety spectrum availability cannot be lessened simply by designating other frequencies within the 746-806 MHz band to public safety. While this is a necessary component of this difficult reallocation that can only be fully resolved as the broadcast incumbents relocate to their "core" allocation, Motorola urges the FCC to not exacerbate the problem by allowing high power broadcast stations to participate in the competitive bidding for the commercial spectrum. Such "new" broadcast facilities would reduce the amount of spectrum available for adjacent channel public safety operations without the promise of eventual relocation.

III. Flexible Use Proposal for the Commercial Allocation

The *Notice* proposed to allocate 36 MHz from the 746-806 MHz band for fixed and mobile services while retaining the existing broadcast allocation for primary services.[17] While doing so, the *Notice* recognizes that "retaining the allocation of this spectrum for broadcasting, however, raises certain concerns" and points out that "permitting a diverse array of services and technologies to share the same spectrum could pose technical challenges in avoiding interference."[18] The *Notice* seeks comments on how these issues may affect the proposed allocations.

In the recently adopted *Budget Act,* Congress addressed the FCC's authority to allocate spectrum for flexible use.[19] While affirming the FCC's basic authority, Congress indicated that the FCC can only adopt flexible use allocations if 1) flexible use is consistent with international agreements, 2) it is required by public safety allocations, 3) it is in the public interest, 4) it will not deter investment in services and technology, or 5) it will not result in harmful interference among users. In so doing, Congress noted that "unlimited flexibility can introduce a level of entrepreneurial uncertainty that could ultimately retard the development of new services and technology."[20]

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[17] *Notice* at ¶13.

[18] *Id.* at ¶15.

[19] *See Balanced Budget Act of 1997*, P.L. 105-33, § 3005.

[20] *See Title III -- Communications and Spectrum Allocations Provisions*, Committee Report to *Balanced Budget Act of 1997* at Section 3005.

As demonstrated by the successful allocation at 470-512 MHz where the land mobile services shares UHF-TV channels 14-20 with the television broadcast service in 11 cities, sharing between these services can work.[21] However, given the disparity of technical operations between the two services (*i.e.,* higher power versus lower power, single transmitting site versus wide area coverage, one-way versus two way operation, wide-band versus relatively narrow channels), such shared use of the commercial services allocation will most likely reduce overall spectrum efficiency and would negatively impact the spectrum available to both the public safety and commercial land mobile services in specific markets. Motorola is skeptical that adequate service rules and frequency coordination procedures can be developed to overcome these technical disparities and allow additional full power broadcast stations to use this spectrum in an efficient manner.

Permitting high-powered broadcast stations in the 746-806 MHz allocation for commercial services will affect the efficient use of that allocation versus a more conventional allocation to the fixed and mobile services. First, by definition, broadcast is one-way service whereas fixed and mobile applications normally require paired spectrum for two-way operations. A broadcaster that obtains as much as six megahertz for television operations would "orphan" the paired six megahertz in the designated service area rendering it useless for two-way applications.[22] Thus, the value and utility of the orphaned spectrum is severely reduced.[23]

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[21] *See* Section 90.301 *et. seq.* of the FCC's Rules.

[22] Motorola recognizes that FCC rules could be developed to require the broadcast applicant to purchase both halves of paired channel blocks. Multiple high powered broadcast facilities operating in 746-806 MHz will result in even more adjacent channel interference in the particular

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Second, interference conflicts between co-channel broadcast and land mobile systems are inevitable near the service area border when mobile units would inadvertently roam into the broadcast station's intended service area. Co-channel land mobile systems operating in neighboring service areas can devise channel assignment schemes to prevent "rogue" mobile units causing interference to the adjacent system's receivers. Introducing additional broadcast operations would appear to be incompatible with such a market-based solution. In the shared 470-512 MHz band, sharing is accomplished through the use of generous co-channel spacing separations that provide a geographic guard band between the two services to minimize the opportunity for neighboring mobile units to approach a TV station's service area.[24] Motorola believes that more sophisticated sharing criteria than that used at 470-512 MHz can be deployed at 746-806 MHz to maximize potential use by public safety and commercial licensees during the transition period. Unfortunately, adding more broadcast stations to the 746-806 MHz band would have the opposite effect reducing use by public safety and commercial systems in both the near-term and long-term.

(...Continued)
market and further reduce the amount of spectrum available for land mobile services throughout the service area.

[23] Motorola notes that there are examples of commercial one-way applications that could be more compatible with two-way services. One-way messaging operations, for example, would also "orphan" one-half of a channel pair, but the amount of necessary spectrum – 25 or 50 kHz versus 6 MHz – results in far less impact to spectrum efficiency and should be accommodated by the FCC.

[24] *See* Section 90.309 of the FCC's Rules.

Third, as mentioned above, high power broadcast stations operating in the commercial allocation will impact the use of adjacent channels by public safety. In developing the DTV allotment table in MM Docket No. 87-268, the FCC attempted to provide 110 miles of separation between DTV allotments and adjacent channels used by land mobile in certain cities.[25] Although Motorola believes that this mileage separation, originally developed for operations between 470-512 MHz, is excessive protection for operations near 800 MHz, it demonstrates the magnitude of the problem; use of the public safety allocation will be impacted in areas approximately 100 miles from an adjacent channel commercial broadcast facility.

Finally, hopes of harmonizing cross-border spectrum use with Mexico and Canada will be substantially limited if broadcast services are "mixed" with land mobile services near the borders. Even if mechanisms are in place within the U.S. to allow such mixed use, these mechanisms may not directly apply across the borders and will likely result in bilateral treaties that limit spectrum availability for land mobile use near the borders. This was the case in the 470-512 MHz band where Canadian broadcast stations precluded the use of land mobile allocations in Buffalo, Detroit and Cleveland. Lack of harmonization negatively impacts both public safety and commercial applications as it generally reduces potential equipment market sizes and thus increases costs and prevents cross-border interoperability.

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[25] *Sixth Report and Order*, MM Docket No. 87-268, FCC 97-115, released April 21, 1997 at ¶¶152, 164.

While these interference issues are an expected deployment challenge during the DTV transition period and temporary means can be used to reduce their impact, the problem will eventually remedy itself once the incumbent analog broadcast stations relocate to the core television allocation. Given the dire need of the public safety community for this spectrum, and the fact that spectrum use will already be restricted during the transition, it is not appropriate to compound the problem by allowing additional full powered broadcast use in the band. Effective spectrum management and efficient spectrum use requires that the FCC reject this proposal and instead allocate this band for primary fixed and mobile applications and encourage the eventual withdrawal of all broadcast operations. [26]

IV. Incumbent Rights Issues

The final issues discussed by the *Notice* concern the impact of the reallocation of this band upon certain incumbent users of the 746-806 MHz band. First, the *Notice* addresses the continued secondary status of low power television (LPTV) stations and TV translators and seeks comment on any additional considerations to further mitigate the impact to these operations on channels 60-69 during the transition period.[27] While emphasizing that any accommodation of these secondary operations should not impede public safety or other uses of the spectrum, the *Notice* seeks comments on whether LPTV and TV translators should be, for

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[26] Many of the interference concerns expressed here relate primarily to additional high-power broadcast stations whereas low power television stations may pose a lesser impact. Nonetheless, Motorola would still be concerned about one-way broadcast stations "orphaning" as much as 6 MHz of paired spectrum. Also, increased co-channel separations would be required to reduce interference from co-channel mobile stations to fixed LPTV receivers.

example, permitted to negotiate private arrangements with new licensees under which the new licensees would tolerate otherwise unacceptable levels of interference from LPTV or TV translator stations.[28]

Motorola recognizes the impact that the DTV assignment policy will have on the LPTV and translator services and further recognizes the compounding effect of this reallocation. Motorola supports the adoption of flexible policies that will allow a maximum number of these stations to continue providing service to the American public. For the majority of these stations, Motorola believes that the FCC should encourage the relocation of these stations to other broadcast spectrum but would also support allowing LPTV interests to negotiate with new licensees in the 746-806 MHz to allow continued operation at higher levels of received interference to the new users for some period of time.[29] However, the needs of public safety and other primary services must take priority. With a compelling record before it, the FCC concluded that "the important benefits of spectrum recovery, such as providing new spectrum for public safety, outweigh the impact that this action will have on secondary LPTV and TV

(...Continued)

[27] *Notice* at ¶19.

[28] *Id.* at ¶20.

[29] Such agreements may be particularly useful during the DTV transition period where land mobile deployment schedules may be extended due to the continued existence of full-power broadcast stations. Further, in developing interference criteria in future phases of this proceeding, the FCC must remember to adequately define all potentially affected licensees of primary services so that they are party to such private negotiations.

translator operations."[30] Thus, while Motorola believes that some flexibility is appropriate, the continued existence of LPTV and translators should not unduly preclude new primary services. Motorola notes that an early end to the DTV transition period is the most significant action that could benefit the LPTV and translator stations and urges the FCC to remain vigilant in its efforts to encourage the broadcast industry to complete its conversion to digital technology so that more efficient use of the spectrum can begin.

The *Notice* also addresses the status of pending TV station construction permits, applications and allotment petitions affecting use of the 746-806 MHz band.[31] Once again, the *Notice* indicates its desire to maximize the availability of the 746-806 MHz band for public safety and new services, but tentatively concludes that stations for which a construction permit has been granted should be treated the same as operating TV stations and receive protection from new service providers.[32] While acknowledging that there has been little activity with regard to some of these permits, the FCC asks whether it should allow permittees to negotiate with new

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[30] *Notice* at ¶18. The Commission's decision to relocate LPTV and TV translators from the 746-806 MHz band has been subsequently addressed by Congress. In the *Balanced Budget Act of 1997,* Congress adopted Section 337(e) requiring the FCC to clear all broadcast television licensees from the band and explicitly recognizes that this includes LPTV and TV translator licensees. *See Conference Report*, Section 3004, page 10. Congress urges the FCC to assign frequencies below 746 MHz for dislocated LPTV stations provided that such assignments are consistent with the digital television table of allotments. *See Conference Report*, Section 3004, page 11.

[31] *Notice* at ¶21.

[32] *Id.*

spectrum users to relinquish their rights. Comments are also sought on whether applications for new broadcast facilities and petitions for allocations should simply be dismissed.

The rights of broadcast licensees who hold construction permits in channels 60-69 is an issue that requires direct FCC oversight and intervention. As noted by the Commission, there are 22 such permits in this band and 11 are currently operating under program test authority but that "there has been little activity with regard to a few of these permits."[33] In protecting the rights of these incumbents, the FCC must verify the intent of these permittees to ensure that no unjust enrichment is transferred. Parties that have not invested the requisite levels of due diligence in construction should not hold hostage new primary service licensees.

Motorola recognizes that these permittees have been protected in the development of the DTV allocation table and have been assigned DTV channels within the core broadcast allocation. This is entirely appropriate for stations that have demonstrated good faith efforts in satisfying the FCC's construction requirements. Should the Commission have any knowledge that some permittees have not progressed with the construction of their station in a timely fashion, these permittees should be required to demonstrate why their permits should not be revoked. Further, while Motorola supports permitting these permittees and the licensees of new services to negotiate the early withdrawal of the broadcast license, Motorola is concerned that some permittees could attempt to extract excessive payments for their consideration. While it would be appropriate for new licensees to compensate permittees for various costs accrued over the

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[33] *Id.*

years, permittees should not expect windfall profits due to their position as an incumbent licensee. This is particularly true for licensees that have not actually constructed.[34]

Finally, the *Notice* seeks comments on the recommended disposition of pending applications for vacant TV allotments within channels 60-69 as well as pending petitions for changes to the analog allotment table that affect the use of channels 60-69. Motorola supports the FCC's tentative proposals to dismiss these pending applications and petitions as this action would enhance the availability and value to this spectrum for other uses. The investment of these parties is now minimal and, as stated above, the public interest benefits accrued in the reallocation of this spectrum outweigh this potential loss of service. Motorola would not object to the FCC accepting modifications to these applications and petitions to relocate within the core broadcast allocation if this can be done without infringing upon the rights of other parties interested in providing broadcast service in those communities.[35]

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[34] Motorola supports a flexible FCC policy that would allow the broadcast permittee to avoid constructing its analog facility within channels 60-69 in anticipation of constructing its DTV station within the core broadcast allocation. Given the differing interference protection standards associated with the analog and digital TV formats, the permittees may be required to wait several years before completing the digital construction. Under these circumstances, the FCC should waive the broadcast construction requirements in return for the early recovery of spectrum in the 746-806 MHz band.

[35] The Notice also asks whether, or under what circumstances, the Commission should continue to permit stations authorized on channels 60-69 to relocate transmitting antenna sites or to increase radiated power or antenna height up to the maximum values in the service. *Notice* at ¶21. Existing broadcasters in this band should be discouraged in proposing technical changes during the transition period that increase their interference potential or preclusive effect toward new uses of the spectrum. While some circumstances are unavoidable, the loss of a transmitting tower for example, FCC policies should not permit undue expansion of facilities. This is consistent with the requirements placed on other incumbents of reallocated spectrum. *See, e.g.*, §101.81 of the FCC's Rules [discussing future licensing for point-to-point microwave systems in the personal

(Continued...)

In considering the rights of incumbent and future broadcast use of the 746-806 MHz band, the FCC must recognize that prolonging their occupancy of this band limits significantly the availability of the band for public safety and other land mobile operations. As it stands today, the existence of broadcast stations will preclude the use of the full 24 MHz to be allocated to public safety in New York, Los Angeles, Chicago and other major markets where spectrum is needed most. While we understand that the *Budget Act* limits FCC flexibility to accelerate the DTV transition, Motorola believes that some forum is needed to consider whether special considerations can be developed to better encourage the relocation of analog broadcast stations from channels 60-69 to other portions of the spectrum.[36]

V. Conclusion

Congress has instructed the FCC to proceed expeditiously in reallocating the 746-806 MHz band for public safety and commercial services. This action is the first of several that are necessary before this band can achieve its promise of offering important services for the

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communications service's band at 1850-1990 MHz.].

[36] Section 3003 of the *Budget Act* requires the FCC to extend the term of analog broadcast licenses beyond the anticipated deadline of 2006 if certain DTV deployment levels have not yet been achieved. In considering how to implement this Congressional directive, the FCC must consider how to resolve the conflict between expediting the availability of channels 60-69 for public safety and other land mobile uses. *Pro forma* extensions of analog broadcast licenses will undermine the usefulness of the spectrum for public safety use and require the FCC, NTIA and the Congress to reevaluate whether it has adequately addressed the needs of the public safety community as articulated by the PSWAC committee and whether immediate additional allocations are necessary.

American public. Thus, Motorola encourages the FCC to resolve quickly this phase of the proceeding and to direct its attention to the development of appropriate service rules and sharing criteria that will enable the band to be used to its maximum efficiency during the DTV transition.

Respectfully Submitted,

Richard C. Barth
Director of Telecommunications Strategy
and Regulation
Motorola
1350 Eye Street, NW
Washington, DC 20005
(202) 371-6959

Stuart E. Overby
Assistant Director, Spectrum Planning
Motorola
1350 Eye Street, NW
Washington, DC 20005
(202) 371-6940

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