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Federal Communications Commission
Office of the Secretary

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Request of Suite 12 Group for a Pioneer's Preference	File No. PP-22

RM-7872

PETITION FOR PIONEER'S PREFERENCE

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September 23, 1991

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PETITION FOR PIONEER'S PREFERENCE

As the innovator and developer of a new multichannel distribution technology -- the CellularVision System -- that provides one-way and two way video, voice, and data service, Suite 12 hereby requests a pioneer's preference.[1/] Today, Suite 12 has also filed a petition for rulemaking that seeks a spectrum reallocation to permit the introduction of a new service -- Multichannel Local Distribution Service ("MLDS")[2/] -- based on this new multichannel distribution technology.

1/ See Establishment of Procedures to Provide a Preference to Applicants Proposing an Allocation for New Services, Report and Order, 6 FCC Rcd. 3488, recon. pending (1991). Suite 12 was an active participant in that proceeding, advocating the adoption of a preference for innovative companies such as Suite 12. See Comments of Suite 12, filed on June 29, 1990.

2/ In its Petition for Rulemaking, contained in Attachment A herein, Suite 12 seeks the reallocation of the 27.5-29.5 GHz ("28 GHz") band for MLDS. Although that band is currently allocated to the point-to-point microwave radio service, it remains fallow. As described in more detail in the Petition for Rulemaking, the introduction of MLDS will enable the public to enjoy several innovative and beneficial services without any foreseeable harm to the 28 GHz's currently assigned users.

Suite 12 is a general partnership formed in 1985 to develop the CellularVision technology and to hold the associated U.S. and international patents.[3] Its affiliate, Hye Crest Management, Inc. ("Hye Crest"), is a New Jersey corporation licensed by Suite 12 to use its patent and to operate the CellularVision technology.

I. SUITE 12'S PROPOSED SERVICE COMPLIES WITH CRITERIA FOR BEING AWARDED A PIONEER'S PREFERENCE

In the Pioneer's Preference Order, the Commission announced that it will award a preference to entities that develop an innovative proposal that leads to the establishment of a new or enhanced service.[4]

Suite 12's CellularVision System, the state-of-art for MLDS, is just such an innovation.[5] CellularVision and MLDS will

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[3] Suite 12's U.S. patent (U.S. Patent No. 4,747,160) was granted in 1988. Suite 12 has also been granted a patent for this technology in Australia and has patents pending in Canada, Mexico, Japan, the United Kingdom, France, Germany, Italy, Spain, Austria, Belgium, Switzerland, Greece, Luxembourg, Holland and Sweden.

[4] Pioneer's Preference Order at para. 47.

[5] CellularVision is a multicell configuration distribution system with return path capability operating in the 28 GHz band. The CellularVision System can offer a host of "one-way" and "two-way" video services, including multichannel video programming, interactive television, and video teleconferencing.

Video programming will be delivered from satellite transponders, terrestrial microwave facilities, or Suite 12's studio to the CellularVision "Central Node." The headend at the Central Node will transmit such programming, via point-to-point links operating in the 28 GHz band, to adjacent cells. Each of these cells will consist of a single omnidirectional transmitter or a small number of broadbeam transmitting antennas that will distribute a minimum of 49 channels of video programming to subscriber transceivers on apartments, hotels, and private homes

(footnote continued)

provide "a different use of spectrum than was previously available."[6] As the Commission stated in the Hye Crest Order, Suite 12's proposal will provide "a novel and innovative use of a previously unused spectrum .... [that offers] a new and much needed multichannel video service ...."[7] MLDS will be the first wireless telecommunications service to employ millimeter wave transmissions on a point-to-multipoint basis and the first wireless telecommunications service designed to offer video distribution and two-way, voice, video and data applications within the same band of frequencies.[8] A MLDS licensee's freedom to combine these applications as the marketplace dictates promises to encourage the development and delivery of additional new and innovative services for the public.

Moreover, CellularVision's extensive frequency reuse ensures that "efficient spectrum use" is assured.[9] This degree of reuse will be possible because cross-polarization isolation will be employed at adjacent cell transmitter sites with alternatively polarized transmitters at each cell; transmitters at one cell will

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(footnote continued from previous page)
throughout a metropolitan area. Narrowband point-to-point links ("response channels") will carry transmissions from the subscriber sites back to the cell sites. This technology is described in greater detail in Suite 12's Petition for Rulemaking.

6/ See Pioneer's Preference Order at para. 48.

7/ Hye Crest Order at para. 24.

8/ And, the Commission has made Suite 12 the only grantee of an equipment authorization for radio transmitters to provide MLDS in the 28 GHz band. FCC ID HVFJA1 (granted October 11, 1989).

9/ See Pioneer's Preference Order at para. 48.

use vertical polarization and the adjacent cell will use horizontal polarization.[10] In this manner, the same band of frequencies can be used for the transmissions between adjacent cell sites, for the transmissions to the subscriber sites, and for the response channel transmissions from subscriber sites back to the cell sites. Because of its high degree of frequency reuse, CellularVision System is extremely spectrally efficient.

With respect to the additional representations to qualify for a preference,[11] Suite 12 states as follows: the pertinent information concerning its plans for implementing its MLDS system are contained in applications to offer MLDS filed by CellularVision;[12] the area in which Suite 12 seeks a preference is the San Francisco, California Primary Metropolitan Service Area; and Suite 12 is unaware of any conflicting licensing rules, such as multiple ownership restrictions, that might restrict Suite 12's eligibility for a license or a preference.

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[10] As discussed more thoroughly in Suite 12's Petition for Rulemaking, this high degree of frequency reuse is also possible because CellularVision will use frequency modulation and narrow beam antennas with very small apertures.

[11] See Section 1.402 of the Commission's Rules, contained in Appendix A of the Pioneer's Preference Order.

[12] See e.g. CellularVision, Inc., File No. 122775-CF-P-91 (appeared on Public Notice August 21, 1991). Suite 12 requests that such applications be incorporated herein by reference. Since the Commission has not yet placed all of Suite 12's applications on public notice, it is not yet possible to give file numbers for all these applications.

II. SUITE 12'S PROPOSAL IS TECHNICALLY FEASIBLE

Suite 12 is confident that its pioneering technology is technically feasible. Suite 12 has undertaken detailed experimental programs to test this technology.[13/] These experiments confirm that the equipment is fully functional and can be produced at costs that make MLDS economically feasible on a mass market basis. In addition, independent organizations, such as the David Sarnoff Research Center, have completed in-depth analyses of the CellularVision System and have entered into agreements to engage in joint research and development.[14/]

Moreover, the recent wave of MLDS applications filed by entities not affiliated with Suite 12 signals a growing confidence in the technical and economic possibility of MLDS.[15/] Since these applicants will use Suite 12's patent, or very similar technology, these applications are also evidence of the confidence in Suite 12's CellularVision technology.

13/ A detailed description of these efforts is described in Suite 12's experimental licenses and applications. Call signs KA2XLG and KA2XVG. Suite 12 requests that those applications and licenses be incorporated herein by reference.

14/ The David Sarnoff Research Center's comprehensive technical analysis of the CellularVision's technical feasibility is attached as Appendix B to Suite 12's Petition for Rulemaking.

15/ Within the past nine months, at least 17 applications have been filed with the FCC by entities not affiliated with Suite 12 to use the 28 GHz band to offer MLDS. See, e.g., LDH International, File No. 10797-CF-P-91 (appeared on Public Notice May 15, 1991); Evanston Transmission Company, File No. 12268-CF-P-91 (appeared on Public Notice June 26, 1991).

As this brief summary of Suite 12's pioneering efforts illustrates, Suite 12 has invested significant time and substantial resources to develop the CellularVision System. Work on a prototype system began over six years ago and has culminated in the development of low cost, mass quantity production receivers and the building of transmitters. In addition, developmental work continues today. For example, Suite 12 has a demonstration site in place at the David Sarnoff Research Center which delivers multichannel video as well as two-way audio and video teleconferencing. Earlier experimental demonstrations were conducted in Asbury Park and Freehold, New Jersey. Additional experimental work includes verifying the absence of interference between MLDS and other nearby transmissions. In sum, Suite 12 is an ideal candidate for the Commission's Pioneer Preference.

III. CONCLUSION

As described in this Petition, Suite 12 has developed both a new technology and a new service that warrants the grant of a Pioneer's Preference.

Respectfully submitted,

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September 23, 1991

Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

Petition Of Suite 12 Group For Amendment Of Part 21 Of The Commission's Rules To Allocate Spectrum For, And To Establish Other Rules And Policies Regarding, Multichannel Local Distribution Service In The 27.5-29.5 GHz Band	)	RM-_____

To: The Commission

PETITION FOR RULEMAKING

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SUMMARY

In keeping with its Communications Act mandate to "encourage the provision of new technologies" to the public (47 U.S.C. § 157 (1991)), the Commission should reallocate the spectrum and establish rules necessary to permit the introduction of Multichannel Local Distribution Service ("MLDS") in the 28 GHz band.

MLDS will provide substantial benefits to the public by transforming this now fallow frequency band into an innovative and competitive one. MLDS is capable of immediately providing interactive high quality video, voice, and data services throughout a market without having to wire the entire community.

MLDS will help satisfy the public's demand for additional sources of multichannel video programming as well as two-way voice and data service. As such, MLDS will provide a viable competitive alternative to cable television and other communications services; such competition spurs innovation, encourages program diversity, increases service quality, and lowers prices.

While no radio frequencies other than the 28 GHz band can adequately accommodate MLDS, there are a variety of frequency bands already allocated to point-to-point microwave use that can accommodate any point-to-point operators that may be displaced by a reallocation of the band to MLDS. MLDS will provide substantial benefits to the public by transforming a frequency band that is now fallow into one that will provide an innovative

and competitive two-way interactive communications system that is capable of providing all the quality and attributes of a "fiber cable" type service to all members of a given community on a need basis without the requirement to wire the entire community.

In light of these factors, Suite 12 respectfully requests that the Commission initiate a rulemaking to reallocate the 28 GHz band for the provision of MLDS. In the event that the Commission initiates such a rulemaking, it should adopt licensing and technical rules that permit MLDS to become a viable service.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

Petition Of Suite 12 For Group Amendment Of Part 21 Of The Commission's Rules To Allocate Spectrum For, And To Establish Other Rules And Policies Regarding Multichannel Local Distribution Service	)	RM-_____

PETITION FOR RULEMAKING

Suite 12 Group ("Suite 12"), by its attorneys, hereby petitions the Commission to amend Part 21 of the Commission's Rules to allow Multichannel Local Distribution Service ("MLDS") to be offered in the 27.5-29.5 GHz ("28 GHz") band.[1/]

Suite 12 is a general partnership formed in 1985 to develop the CellularVision technology necessary for MLDS and to hold the associated U.S. and international patents.[2/] Hye Crest Management, Inc. ("Hye Crest") and CellularVision, Inc. are New Jersey corporations that are licensed by Suite 12 to use its patent and to operate the CellularVision technology.

1/ This band is currently allocated to the point-to-point microwave radio service. See 47 C.F.R. § 21.700 (1991) et seq.

2/ Suite 12's U.S. patent (Patent No. 4,747,160) was granted in 1988. Suite 12 has also been granted a patent for this technology in Australia and has patents pending in Canada, Mexico, the European Community, Japan, and a host of additional countries.

I. INTRODUCTION

This Petition requests the Commission to initiate a rulemaking to reallocate the 28 GHz band for a new service -- Multichannel Local Distribution Service ("MLDS"). By innovatively utilizing novel frequency reuse and cellular distribution technologies, MLDS is the first wireless telecommunications service designed to offer video distribution and two-way voice and data applications. If the Commission adopts various technical parameters proposed in this Petition, these applications will be able to provide meaningful competition to existing and future services offered by cable television operators and local telephone companies. Such competition will enable consumers to enjoy lower prices, increased choice, and improved service quality. In addition, this competition will accelerate the introduction of new and innovative services. Moreover, because the 28 GHz is not being used for its allocated purpose, reallocation to MLDS will transform a fallow band into a commercially useful and publicly beneficial one.

II. DESCRIPTION OF CELLULARVISION'S MLDS SYSTEM

Suite 12's FCC authorizations are illustrative of its efforts to develop the CellularVision technology and to introduce MLDS in the 28 GHz band.[3/] For example, the Commission recently

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[3/] In a companion petition filed today, Suite 12 requests that the Commission grant it a "Pioneer's Preference" for such efforts. See Establishment of Procedures to Provide a Preference to Applicants Proposing an Allocation for New Services, Report and Order, 6 FCC Rcd 3488, recon. pending.

licensed Suite 12's affiliate, Hye Crest, to construct and operate a prototype MLDS video system in the New York metropolitan area.[4] In addition, Suite 12 holds experimental licenses to develop and market the CellularVision technology in four cities[5] and it is the only grantee of an equipment authorization for radio transmitters to provide MLDS in the 28 GHz band.[6]

Suite 12's CellularVision MLDS system is a multicell configuration distribution system with return path capability operating in the 28 GHz band.[7] Within each cell, a frequency band of 1 GHz employing one polarization, vertical or horizontal, can be used for multichannel video programming distribution, and

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[5] See Hye Crest Management, Inc., Memorandum Opinion and Order, 6 FCC Rcd. 332 (1991) ("Hye Crest Order"). Throughout this Petition for Rulemaking, Suite 12 often relies on the Hye Crest Order as support for its positions. Although Suite 12 recognizes that Hye Crest involved a waiver proceeding and not a full-blown reallocation, the Hye Crest Order represents the only, and therefore best, evidence of the Commission's current views regarding MLDS.

[5] Call signs KA2XLG (equipment test license in New Jersey, New York, and Pennsylvania) and KA2XVG (market test license in New York). In addition, Suite 12 has an application pending to conduct market tests of video, voice, and data MLDS in Los Angeles, California.

[6] FCC ID HVFJA1 (granted October 11, 1989).

[7] Appendix B of this Petition contains a complete technical description of the CellularVision MLDS design prepared by the David Sarnoff Research Center, Princeton, New Jersey, entitled "Suite 12 System Analysis for Video Distribution and Secondary Services" (hereinafter referred to as the "Sarnoff Report").

the opposite polarization can be used for two-way services to customers, such as interactive television, video teleconferencing, high speed data transmissions, and voice.[8]

Because of its high degree of frequency reuse, CellularVision will be extremely spectrally efficient. This degree of reuse will be possible because cross-polarization isolation will be employed at adjacent cell transmitter sites with alternatively polarized transmitters at each cell; transmitters at one cell will use vertical polarization and the adjacent cell will use horizontal polarization. Adjacent sites will employ opposite polarization. In this manner, the same frequencies can be used for the transmissions between adjacent cell sites, for the transmissions to the subscriber sites, and for the response channel transmissions from subscriber sites back to the cell sites. This high degree of frequency reuse is possible because of the unique characteristics of FM and millimeter waves, namely, the strong signal capture effect of FM; the intermodulation and noise tolerance of FM; the high directivity antenna for small aperture areas;[9] large path loss for small distances; and, prudent use of

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[8] Although video applications of the CellularVision technology have been more thoroughly tested, and are, thus, the primary focus of this Petition, Suite 12 is actively developing, and has demonstrated, data and voice applications of this technology. Therefore, Suite 12 requests that the Commission's examination of this Petition include such applications.

[9] For example, a 7.5 inch antenna at 28 GHz will have a gain of 32 dB and a beamwidth of 4.3 degrees. This is equivalent to an 8 foot antenna at 2.2 GHz

polarization isolation.[10]

Video programming will be delivered from satellite transponders, terrestrial microwave facilities, or Suite 12's studio to the CellularVision "Central Node." The headend at the Central Node will transmit such programming, via point-to-point links operating in the 28 GHz band, to adjacent cells. Each of these cells will consist of a single omnidirectional transmitter or a small number of broadbeam transmitting antennas that will distribute at least 48 channels of video programming to subscriber transceivers at apartments, hotels, and private homes throughout a metropolitan area.

A typical cell diameter is expected to be between six to twelve miles, although the actual radius will depend upon the output power and antenna gain of the transmitter, the antenna gain of the transceiver and the acceptable amount of rain attenuation.[11] The transmitting antenna gain will be approximately 10 dB, and will use traveling wave tube amplifiers with an output power of up to 250 watts (typical output power will be 100 watts). Subscriber transceivers will use antennas with a diameter between 3 inches (horn antenna) and 15 inches (dish

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[10] FM Satellite receivers with in-band overlapping channels utilize polarization isolation which provides excellent picture quality and conservation of bandwidth

[11] The precise assumptions and link calculations leading to a path length of six to twelve miles are contained in the Sarnoff Report at Section I, "System Performance Parameters."

antenna); the aperture area will be 9 to 177 square inches. A seven and one-half inch antenna will yield a range equal to .75 of the 15 inch antenna[12/]

Narrowband point-to-point links ("response channels") will carry transmissions from the subscriber sites back to the headend.[13/] Such links in each cell can carry up to 16,600 simultaneous telephone circuits and numerous high speed data applications.[14/] If path blockage should occur, it can be overcome by using low power repeaters, passive inverter repeaters, or short range reflectors that will redirect the beam down the side of a shadowed building or fill-in the shadow areas.[15/] The active repeaters will use small size receiving antennas and solid state power amplifiers of an output power of -3 to +6 dBm (one half milliwatt to 4 milliwatts) for transmission. Path lengths of

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12/ See Sarnoff Report at 22.

13/ Assuming the typical video transmission parameters described in this section, the subscriber transceiver would need an output power of 0.6 milliwatts (-2.2 dBm) to carry a 30 kHz channel back to the cell site. This channel could support a single FM voice channel or a digital data channel of up to 40.5 Kbps/sec. Larger channel bandwidths can be provided with higher subscriber power outputs.

14/ In addition, recent evidence indicates that MLDS can also operate in a mobile environment with certain consumer receivers operating as collector nodes for distribution to and from the central node.

15/ One of the benefits of operating in the 28 GHz band is that, by using short range line-of-sight links, the likelihood of path blockage is small.

up to 2 miles can be accommodated using this configuration. Passive reflectors can be used to redirect the beam for path lengths up to 0.3 mile.

The MLDS system with its array of narrow beamwidth receiver antennas and alternate adjacent cell polarization insures interference free reception, maximum frequency reuse, and repeatability of signal into adjacent cells or shadow areas. The system acts as an infinite number of point-to-point radios with one central point. From the receivers' perspective, it is a point-to-point connection.

III. THE 28 GHZ BAND IS IDEALLY SUITED FOR MLDS

The 28 GHz band is the most appropriate band in which to offer MLDS. Of the potentially available microwave bands, only the 28 GHz band is unoccupied, is able to transmit a high quantity and quality of MLDS service to all potential customers, enables a MLDS licensee's widebeam transmissions to coexist with its point-to-point operations, and has existing MLDS equipment with which to operate. These factors will enable MLDS to be introduced to the public in an expedient and efficient fashion.

In contrast, the remaining microwave frequencies are unsuitable for MLDS.[16/] As the Commission has previously determined, "...the 28 GHz band is the most suitable frequency band available for providing the proposed omni-directional video

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16/ Frequency bands above 40 GHz were not considered because (1) they do not appear in Parts 21 or 94 (2) there is excessive rainfall attenuation in that band, and (3) equipment costs would be too expensive.

distribution service because the other bands allocated to common carriers and private operational fixed licensees are too narrow in bandwidth, not sufficiently contiguous, or not adequately protected to support 24 video channels."[17/]

Specifically, the frequencies below 13.25 GHz are already widely used and, in some areas, heavily congested. And, frequencies below 10 GHz are not suitable because of the large antenna size requirement for a given gain; 10 GHz antennas are approximately three times the size of those that will be used for 28 GHz for a given gain or beamwidth. Moreover, neither the 17.7-19.7 GHz, the 21.2-23.6 GHz, nor the 31.0-31.3 GHz band possess sufficient bandwidth to support the capabilities that can be offered by MLDS.[18/] The 38.6-40.0 GHz band is not as wide as the 28 GHz band, is subject to interference from broadcast television station operators, and is much more susceptible to greater rainfall attentuation.

Reallocation of the 28 GHz band for MLDS is all the more desirable because it will not necessitate the displacement of existing users. As the Commission recently determined, there is

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[17/] Hye Crest Order, 6 FCC Rcd at 334, ¶ 21. Such frequencies are particularly inadequate now that MLDS technology has advanced to the point that at least 48 television channels can be delivered per cell. See Sarnoff Report at 39.

[18/] For example, the various existing licensees in the 17.7-19.7 GHz and 21.2-23.6 GHz bands logistically preclude the existence of a contiguous band to support at least 48 video channels. For an explanation of importance of such capacity, see discussion at Section V., infra. Likewise, the 31.0-31.3 GHz band's 300 MHz of bandwidth is not enough for at least 48 video channels.

virtually no existing demand for point-to-point microwave use in this band. "The 28 GHz band was made available for point-to-point use in 1959, and since that time, little use of the band has been made."[19]

Nor is a reallocation of the 28 GHz band likely to harm future point-to-point users. As the Commission has found, "the foreseeable demand by point-to-point microwave radio carriers for use of the 28 GHz band ... is practically non-existent."[20]

Indeed, if an unforeseen demand for point-to-point microwave service arose, frequency bands other than 28 GHz are available to accommodate such demand.[21] "The 28 GHz band is one of five frequency bands allocated for short-haul microwave use. Only two of these bands, 17.7-19.7 GHz ('18 GHz band') and 21.2-23.6 ('23 GHz band') are presently utilized ..., and there has been no

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[19] Hye Crest Order at 336, n. 13. As further support for this conclusion, the Commission noted that the only equipment capable of utilizing the 28 GHz frequencies is Suite 12's prototype MLDS equipment. See id. at 334, ¶ 22. To the extent that an existing 28 GHz point-to-point operator was discovered, its use could be grandfathered. It appears that MLDS and grandfathered point-to-point systems can operate within the same area without mutual interference, provided that careful engineering and coordination practices are employed. See Sarnoff Report at 81; See, also, Hye Crest Order at 333-34, ¶ 16.

[20] Hye Crest Order at 334, ¶ 23 (footnote omitted). Although the Commission's findings regarding the lack of foreseeable point-to-point demand were limited to the New York metropolitan area, since New York is the most congested radio environment in the U.S., it is safe to project that such demand is unlikely to arise elsewhere.

[21] Enormous unused capacity already exists for point-to-point communications in these bands. See Sarnoff Report at Appendix 3, "Point-to-Point Interference."

evidence presented to suggest that either band is approaching saturation."[22] The Commission has noted that techniques, such as narrowing the bandwidth of licensed channels, tighter frequency stability and the imposition of a "bits per second per Hertz" spectral efficiency standard, could be employed to increase capacity for point-to-point microwave services in those bands.[23]

By allowing the 28 GHz band to remain allocated solely for point-to-point use, the Commission will only sanction the squandering of a scarce and valuable resource. As demonstrated above, point-to-point microwave users have been unable or unwilling to utilize this spectrum. Rather than allow it to remain unused, Suite 12 urges the Commission to reallocate this band for MLDS. Such action will transform a frequency band now lying fallow into one that is commercially useful and publicly beneficial.

IV. REALLOCATION OF THE 28 GHz BAND FOR MLDS WILL ADVANCE THE PUBLIC INTEREST

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[22] Hye Crest Order, supra, at 334, ¶ 23. "Although Manhattan probably has the most crowded microwave spectrum in the country -- perhaps in the world -- there appears, nevertheless, to be sufficient spectrum space in the 18 and 23 GHz short-haul bands to accommodate many new systems." C. Jackson, High Capacity Transmission Alternatives in Lower Manhattan (April 15, 1987) at 34.

[23] See id. If the Commission nevertheless concludes that there is a significant need for point-to-point licensees to operate in the 28 GHz band, it can allow such use on a secondary basis to MLDS or pursuant to waiver provided that the point-to-point licensee could adequately demonstrate that alternative point-to-point microwave bands are unavailable. Moreover, the 18 and 23 GHz bands could provide for the existence of over 14,000 full duplex microwave point-to-point transmitters in any 3 mile radius. Sarnoff Report at 120.

Reallocation of the 28 GHz band for the establishment of MLDS will create widespread public benefits. As the Commission has found, this service provides "a novel and innovative use of a previously unused spectrum .... [It offers] a new and much needed multichannel video service ... in competition with cable television and other video delivery and distribution services...."[24/] Moreover, reallocation of this band for MLDS will further the Commission's goals of promoting diversity of video programming, substituting competition for regulation in the video marketplace, stimulating new innovative services, and offering competitive alternatives to voice and data services provided by local telephone companies.

One of the principal benefits of reallocating the 28 GHz band for MLDS will be to help ensure that the public's unsatisfied demand for multichannel video distribution service can be met.[25/] As proposed herein, MLDS will be able to offer

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24/ Hye Crest Order, supra, at ¶ 24. Since the Commission rendered these pronouncements, Suite 12 has technically advanced its system -- most notably, by introducing a return path capability -- so that CellularVision is now an MLDS system. These advancements promise to significantly increase the benefits annunciated by the Commission.

25/ The most obvious manifestation of this demand is the phenomenal growth of cable television subscribership. "The number of cable subscribers has grown from 37 million in 1984 to 53 million in 1989. . . . Overall audience ratings for basic cable programming services has doubled since 1984, now exceeding, on average, the total all-day audience share of any major television network affiliate." Competition, Rate Deregulation and the Commission's Policies Relating to the Provision of Cable Television Service ("Cable Report"), 67 RR2d 1771 at 1776, ¶ 4 (footnotes omitted). Similarly, MMDS has grown from 54,000

(footnote continued)

approximately 48 video channels of programming. With such a complement of channels, MLDS licensees can provide subscribers with a degree of programming diversity that rivals that provided by cable. In addition to offering those programs customarily offered by cable television systems, MLDS' FM format allows for

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(footnote continued from previous page)
subscribers in 1987 to more than 300,000 in 1991. Remarks of Commissioner Ervin S. Duggan before the Wireless Cable Association, "Inquire Whose Son This Stripling Is ...": The Growth and Future of Wireless Cable, Denver, Colorado at 2 (July 23, 1991) (Rel. by the FCC July 24, 1991) ("Duggan Speech").

As the following citations suggest, the Commission has been assiduous in its pursuit of additional video services to meet this demand and to substitute competition for regulation whenever possible. The Commission's quest for additional video services to meet these two goals can continue to be furthered by adopting the reallocation requested herein. In 1982, the Commission allocated spectrum and adopted rules for the Direct Broadcast Satellite ("DBS") service. See An Inquiry into the Development of Regulatory Policy in Regard to Direct Broadcast Satellites, Report and Order, 90 FCC 2d 676 (1982); recon. den., 53 RR 2nd 1637 (1983), vacated in part sub. nom. National Association of Broadcasters v. FCC, 56 RR 2nd 1105 (1984). In 1983, the Commission created the Multichannel Multipoint Distribution Service ("MMDS") and allowed MMDS operators to use both licensed and leased frequencies for video distribution. See Amendments of Parts 2, 24, 74 and 94 of the Commission's Rules and Regulations in Regard to Frequency Allocation to Instructional Television Fixed Service, Memorandum, Opinion and Order, 94 FCC 2d 1203 (1983). In 1983, the Commission also permitted the use of private operational fixed microwave bands for the distribution of entertainment video programming. See Various Methods of Transmitting Program Material to Hotels, Memorandum, Opinion and Order, 99 FCC 2d 715 (1983). In 1986, the Commission undertook an investigation of the scrambling of satellite television signals and access to those signals by home dish owners. See Inquiry into the Scrambling of Satellite Television Signals, First Report, 2 FCC Rcd. 1669 (1987); Second Report, FCC 88-67 (released March 11, 1988). In 1990, the Commission adopted a variety of rule changes to "encourage and facilitate competitive multichannel video delivery systems." Amendment of Parts 21, 43, 74, 78, and 94 of the Commission's Rules, Report and Order, 5 FCC Rcd. 6410, (1990). More recently, in opening the 18 GHz band for
(footnote continued)

programming decisions to be made on a cell-by-cell basis, thereby encouraging MLDS licensees to cater to the specialized interests and needs of different racial, religious, and ethnic groups within its particular service area, including localized educational programs.

In addition to satiating the demand for multichannel video service, the introduction of MLDS will also foster competition with cable television and other video distribution services.[26/] As the Commission has long been aware, increased competition leads to lower prices and increased program diversity for the public. "As has been demonstrated in communications market after communications market, as competition increases both costs and prices go down. Head-to-head competition places an exceptionally high premium on cutting costs and putting the customer first .... [H]ighly competitive markets also spur product differentiation, innovation, and service quality."[27/]

(footnote continued from previous page)
multichannel video distribution, the Commission found that "the public interest [will be promoted] by encouraging competition in the video distribution marketplace." Amendment of Part 94 of the Commission's Rules to Permit Private Video Distribution Systems of Video Entertainment Access to the 18 GHz Band, Report and Order, 6 FCC Rcd. 1270, 1271, ¶ 9 (1991).

26/ Hye Crest Order, 6 FCC Rcd at 334, ¶ 24.

27/ Statement of FCC Chairman Alfred C. Sikes on the Commission's Cable Television Report (July 26, 1990).

Provided that the Commission awards sufficient radio spectrum to each MLDS licensee,[28] MLDS will be a robust competitor to cable television; MLDS will provide the channel capacity, signal quality, and broad subscriber coverage offered by cable television. Indeed, the ability of MLDS to serve as a genuine alternative to cable may enable the marketplace, rather than government regulation, to mitigate many of the perceived deficiencies of current cable systems.[29]

In addition, MLDS will offer public benefits that cable does not. For example, it will provide service in those areas where the installation of cable television is lagging or unavailable. While urban areas can create logistical nightmares for wiring cable television systems,[30] by their very nature, "wireless"

28/ See infra Section V.B.

29/ "[A] number of subscribers and municipalities have expressed alarm about especially sharp rate hikes .... Coupled with rising frustration over the poor quality of technical and customer service some subscribers have received from their local cable operators, such rate increases have fueled broader concerns that cable operators exercise market power." Cable Report, 67 RR 2nd at 1776, ¶ 6. Citing the General Accounting Office's Third Report on Cable Rates released July 18, 1991, FCC Commissioner Ervin Duggan recently stated, "since ... 1986, basic cable rates have increased between 56 and 61 percent --- more than three times the general inflation rate. Between December '89 and April '91, average monthly rates for the lowest-priced service increased by nine percent, while the average number of channels offered decreased by one. Average monthly rates for the most popular basic cable service, optional or 'expanded basic,' increased, over those 15 months, by 15 percent." See Duggan Speech, supra, at 2.

30/ "Urban markets are by definition dense and congested which generally hamper attempts to wire and construct cable lines, as well as delay service repair runs." Remarks of Amos Hostetter,
(footnote continued)