

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of )  
)  
Amendment of Part 101 of the )  
Commission's Rules To Streamline ) **WT Docket No. 00-19**  
Processing of Microwave Applications )  
in the Wireless Telecommunications )  
Services )  
)  
Telecommunications Industry )  
Association Petition for ) **RM 94-18**  
Rule Making )

To: The Commission

**JOINT COMMENTS OF TELENETICS CORPORATION  
AND SOUTHWEST MICROWAVE, INC.**

1. Introduction. These comments are filed jointly by Telenetics Corporation ("Telenetics") and Southwest Microwave, Inc. ("Southwest") in response to the *Notice of Proposed Rule Making* ("NPRM") in the above-captioned proceeding, FCC 00-33, released February 14, 2000. Telenetics and Southwest are both manufacturers of electronic equipment. Their product lines include analog RF systems operating in the 23 GHz band that provide cost-effective solutions to the needs of private and public sector users that are threatened by certain of the Commission's proposals, particularly those relating to frequency tolerance and spectrum efficiency.<sup>1</sup> Adoption of the proposals would drive up costs substantially and could force all systems to digital operation. Marketplace forces are at work that will eventually make digital operation cost-effective for all applications, but it is currently not cost-effective in many instances, and it is premature to force that result by regulation.

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<sup>1</sup> These Comments focus on the Commission's proposals for the 23 GHz band and do not address other proposals in this proceeding.

2. Product Lines and User Base. The NPRM recognizes that microwave links are used for short-range video links,<sup>2</sup> with applications that include perimeter surveillance and remote video monitoring.<sup>3</sup> Similar equipment is used for short-range interconnection of local area networks, telephone PBX equipment, and similar operations to allow buildings on non-contiguous property to share communications systems. Users of these links include schools, universities, hospitals, state and local governments, airports, transportation authorities, and business entities of all kinds and sizes. Many of these entities have limited budgets and rely on government funding.

3. Impact of Proposals. The frequency tolerance and spectrum efficiency proposals in the NPRM are inappropriate, if not completely unachievable, for analog equipment. Adoption of the proposals will require companies like Telenetics and Southwest to discontinue their analog lines and to design and market only digital systems. Analog video systems are currently available in the \$5,000-\$8,000 price range. Digital systems to provide the same function would at least triple the price of the customer's product solution. That price level would drive many existing users out of the market, leaving them without adequate security and surveillance capability and unable to interconnect their buildings.<sup>4</sup>

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<sup>2</sup> The typical range of such links is about 4-5 km.

<sup>3</sup> NPRM at Par. 65.

<sup>4</sup> While optical fiber can theoretically be substituted for microwave links, it is not available from

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carriers in many areas, particularly outside major urban markets; and it is prohibitively costly for a single user to install fiber where rights of way are required over non-owned property. Thus many users must depend on microwave links to meet their broadband connectivity needs.

4. Frequency Tolerance. While the proposed tightening of the permitted frequency tolerance from 0.03% to 0.001% may appear attractive in terms of consistency with other bands, it is not realistic for analog video applications using 50 MHz channels. Telenetics and Southwest are not aware of any history of complaints of adjacent-channel interference from equipment manufactured to the current specification. Traditionally, analog emission masks have been more stringent than digital emission masks; and there is no reason not to address the adjacent-channel problem directly, by restricting out-of-band emissions, rather than by the indirect frequency tolerance approach that will raise costs significantly.<sup>5</sup> Telenetics and Southwest urge that the permitted frequency tolerance remain at 0.05% for 50 MHz channels in the 21.8-22.2 and 23.0-23.2 GHz bands and be tightened to not less than 0.003% for channels of 30 MHz or less channels that are created in remainder of the 23 GHz band.

5. Spectrum Efficiency. A requirement for spectrum efficiency of 1 bps per MHz may promote more efficient data applications; but it does not take into account real-time video applications. That kind of measurement cannot be applied to analog video links, and it should in no event be construed to require the elimination of cost-effective analog operations. Sales figures

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<sup>5</sup> By way of comparison to other bands, a tolerance of 0.005% is permitted in the 10.5-11.7 GHz band, where channels are as narrow as 1.25 MHz. The tolerance should not be stricter in a higher band where the technology is less mature and more multiplication is required for a stable oscillator. The tolerance is 0.001% in the 18.8-18.9 MHz band (Digital Electronic Messaging Service); but there is a smaller variety of operations in that band, making it easier to serve all customers with digital systems.

indicate that sales of analog FM video systems continue to exceed sales of data transmission systems in the 23 GHz band. As indicated *supra*, removing analog systems from the marketplace would work a significant hardship on users with important needs but limited economic resources.

6. There are data applications where a 1 bps/Hz specification would be unduly burdensome and would require many customers to pay the cost of much higher capacity systems than they need to meet their applications. For example, a majority of wireless video surveillance operations require a low speed return data signal for camera control, typically at a data rate of less than 56 kbps, where not enough information is transmitted for a 1 bps/Hz specification to be realistic. Customers should not be denied the ability to operate low data rate RF channels, whether in support of analog channels or otherwise, and should not have to forego critical management functions because of an imposed minimum data rate.<sup>6</sup>

7. There is also a class of network radios supporting full duplex Ethernet traffic used for LAN to LAN interconnection. These systems employ analog FM transmitters with a two-level FSK type modulation. They are highly cost-effective alternatives to T-1 circuits, and in most applications outperform T-1s, but would be eliminated from the market by the cost increases that would be imposed by a 1 bps/MHz specification. This class of radio supports Ethernet and multiple T-1 traffic at the same time, allowing users to have a cost-effective and reliable alternative to landline circuits and is sometimes the only solution where optical fiber is not available. For example, one 50 MHz

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<sup>6</sup> Moreover, if a minimum bps/Hz standard is adopted, the Commission should clarify that the it includes all data bits, including those used for overhead functions such as forward error correction, framing and other important data management functions.

channel can allow a user to interconnect both LANs and PBXs with a single link. To drive these units off the market would deprive customers of choices, reduce competition, and raise costs.

8. In short, adoption of the proposed frequency tolerance and spectrum efficiency proposals would harm users with needs by depriving them of cost-effective solutions. The needs of these users are important. Examples of video applications and typical users (provided by Telenetics) include:

Traffic monitoring:

- State and federal transportation authorities
- Broadcasters (both network and local stations)

Judicial arraignment activities:

- City and state court systems

Security surveillance:

- Law enforcement agencies
- Weapons Test ranges (White Sands Test Facility, Yuma Proving Grounds)
- Weapons storage areas (military bases)
- Military flight line (Air Force bases)
- Airport restricted areas
- Railroad switching yards

Distance learning in remote classrooms

Short-haul broadcast studio-transmitter links (Low Power and TV Stations)

Examples of LAN interconnection include:

- School District Networking (District Office to campus sites, Internet and administrative services)

- Corporate LAN and PBX extensions

- Medical Administration LAN extensions

9. Additional Spectrum. Southwest and Telenetics support the allotment of an additional 200 MHz for low power operations. There is spectrum congestion in some areas that would be relieved by additional spectrum. However, a frequency tolerance of 0.03% should be adopted for this spectrum, with 50 MHz bandwidth permitted, so that economically priced analog systems will be

available. Operation at low power reduces the impact of one system on neighboring systems, and there is less need for stringent technical specifications that raise costs. As discussed *supra*, out-of-band emission limitations have historically been sufficient to control adjacent-channel interference and should continue to be effective.

10. Antenna Specifications. Telenetics and Southwest support the proposals to allow the use of smaller antennas, as this change would make microwave technology available to some users who are now precluded by physical size restrictions at their location. As with frequency tolerance vs. out-of-band emission limits, direct rather than indirect regulation can ensure protection against interference. Size, gain, and beamwidth restrictions can be removed, substituting reliance on restrictions on emissions off the center-beam. Off-beam emissions can be kept within limits by varying antenna gain and/or power levels, thereby allowing more flexibility in individual system design without adverse impact on other users.

11. Channel Plan. The proposed channel assignment plan is not objectionable, except that flexibility to vary from the plan should be permitted where spectrum occupancy by other users dictates. There are video systems in the field that operate with a return link using a reverse carrier on an adjacent channel. These systems operate successfully where separated channels are not available. Thus a uniform mandatory transmit-receive channel separation with no exceptions would unduly restrict the flexibility of system designers to meet the needs of some customers in congested environments.

12. Conditional Licensing. Southwest and Telenetics support an expansion of conditional licensing to the extent that coordination with government users permits. The coordination process is generally effective in ensuring protection of other users from interference. Once the coordination

process has been completed, a user should be able to commence operation to meet its needs as soon as practicable.

13. Marketplace Forces. Telenetics and Southwest recognize the importance of increasing the capacity of limited spectrum resources, including the possible eventuality of all operations in the 23 GHz band migrating to digital modulation. There are marketplace forces at work that are anticipated to drive down the cost of digital components and to make more digital operations economically realistic. These include the advent of the Local Multipoint Distribution Service ("LMDS"), which will increase the volume of demand for, and thus lower the cost of, digital components; but LMDS is developing at a slower pace than some people anticipated. Also, the increasing demand for LAN interconnectivity will generate demand for new digital link systems and presumably drive down the cost of components. However, these effects have yet to be achieved in the component market.

14. Conclusion. Although future developments may change the picture, the elimination of analog video and data links is premature at this time and would result in dramatically increased costs for many users operating on fixed budgets and relying on government funding programs. They would be particularly harmful to small market and rural users for whom non-radio technologies are not available. Therefore, Southwest and Telenetics urge the Commission not to eliminate the use of analog equipment with 0.03% frequency tolerance and 50 MHz channels or to impose a 1 bps/kHz minimum efficiency specification at this time unless it is clear that these requirements will not apply to analog systems or low-speed data links in support of analog systems. Grandfathering existing systems now in the field is not sufficient, because there is a continuing demand for new equipment for security and other operations, and the development of analog system improvements should not

be frozen. The future of analog operations may be re-examined in a new proceeding in the future, when the cost of digital components has become more realistic for universal application.

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Respectfully submitted,

/s/ Peter Tannenwald

Peter Tannenwald

Counsel for Telenetics Corporation  
and Southwest Microwave, Inc.

**DECLARATION OF WILLIAM KOSOFF**

WILLIAM KOSOFF hereby declares as follows:

1. I am Director-Wireless Broadband Group of Telenetics Corporation.
2. I have read the foregoing "Joint Comments of Telenetics Corporation and Southwest Microwave, Inc." ("Comments").
3. The factual information in the Comments is true and correct to the best of my knowledge and belief.
4. The Comments accurately reflect the position of Telenetics Corporation.
5. The information in Paragraph 8 of the Comments regarding typical applications and customers was provided by a representative of Telenetics Corporation and is true and correct to the best of my knowledge and belief.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 18, 2000

/s/ William C. Kosoff  
William Kosoff  
Director-Wireless Broadband Products

**DECLARATION OF JAMES CHEAL**

JAMES CHEAL hereby declares as follows:

1. I am Director of Research of Southwest Microwave, Inc.
2. I have read the foregoing "Joint Comments of Telenetics Corporation and Southwest Microwave, Inc." ("Comments").
3. The factual information in the Comments is true and correct to the best of my knowledge and belief, except for information supplied by Telenetics Corporation, which I do not know to be inaccurate.
4. The Comments accurately reflect the position of Southwest Microwave, Inc.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 17, 2000

/s/ James Cheal  
James Cheal