

**Bi-Level Technologies**

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# Reply Comments to FCC Notice Of Inquiry on Consumer Electronics Compatibility Rules

Ron D Katznelson



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

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In the Matter of )

Implementation of Section 17 of the Cable  
Television Consumer Protection and )  
Competition Act of 1992 )Compatibility Between Cable Systems and )  
Consumer Electronics Equipment )

ET Docket No. 93-7

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**REPLY COMMENTS OF  
MULTICHANNEL COMMUNICATION SCIENCES, INC.**

April 21, 1993

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**REPLY COMMENTS OF**  
**MULTICHANNEL COMMUNICATION SCIENCES, INC.**

**1 Introduction**

Multichannel Communication Sciences, Inc. ("MCSI"), hereby replies to the comments submitted in response to the Federal Communications Commission's ("Commission") Notice Of Inquiry in the above-captioned proceeding ("NOI"). As the developer of the Addressable Digital Broadband Descrambling Access Control technology , on which many parties have commented, MCSI sees the need to clarify certain facts and misconceptions related to Broadband Descrambling.

While no production Digital Broadband Descramblers ("DBD") are available, engineering prototype hardware units have been developed and the fundamental technical feasibility of low cost Broadband Descrambling and Signal Denial has been demonstrated. It is perhaps because MCSI's explanations and demonstrations of its technology have not yet received the widest publicity<sup>1</sup>, that some of the commenting parties may have mischaracterized the features and the capabilities of the technology. To that end, the responses provided herein are based on demonstrated features of the technology and on related product configuration designs and cost

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<sup>1</sup>. The first public technical disclosure of MCSI's Broadband Descrambling technology is scheduled for a technical paper to be presented by Ron Katznelson at the National Cable Television Association show in San Francisco, June 7, 1993.

estimates that have been verified by an expert manufacturing consultant to a consortium of cable companies. For purposes of brevity, these reply comments do not provide an exhaustive analysis of all comments regarding DBD but merely address some key concerns of commenting parties.

## 2 Security

New *incompatible* enhanced analog video scrambling with modern levels of security has been developed by MCSI for implementation in Broadband Descramblers<sup>2</sup>. Some commenting parties ignored this feature of the technology and referred only to its operating modes that are constrained for compatibility with existing sync suppression formats<sup>3</sup>. Yet, for cable systems that thus far have refrained from using scrambling and will begin to employ Broadband Scrambling/Descrambling as the first scrambling system<sup>4</sup>, or for cable systems that will have made a full transition to such formats after a sync suppression compatibility period, the new DBD enhanced security method will provide levels of security that rivals today's modern analog security. In this regard, while not compatible with all presently employed scrambling formats, DBD can be seen as offering security options comparable to those offered by many of the new set-top based analog scrambling methods. These set-top based methods may be used in modes that are compatible with existing sync suppression formats but (like DBD) are not compatible with all existing scrambling formats and *are largely incompatible with each other when operated in their new secure modern modes*. More specifically, for example, MCSI is unaware of any Jerrold set-top descramblers that are compatible with Scientific Atlanta's new "Split-Sync" video inversion scrambling methods. Just like these new set-top descramblers, DBD devices cannot be expected to meet every access control compatibility need, and hence in selecting the access control means that is most appropriate for their operations, cable operators would weigh very carefully the merits of placing DBD under any heavier compatibility burdens than are placed on set-top technologies against the benefits of providing Simultaneously Clear Addressable Tiered

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<sup>2</sup>. MCSI at 3 of Appendix A.

<sup>3</sup>. Time Warner at 33, Zenith at 4.

<sup>4</sup>. According to MCSI's market studies, over 15.5 million cable subscribers are served by cable systems that do not use scrambling as means for access control.

Services ("SCATS")<sup>5</sup> to their subscribers.

Although during the phasing-in period of a compatible migration into cable systems employing sync suppression scrambling, the operator will be precluded from employing the new enhanced DBD security features as described above immediately upon deployment of DBD, other security measures will be available. These measures are local denial on otherwise clear (or even sync suppression scrambled) channels for subscribers for which DBD devices have been installed. This will ensure that pirate boxes that are able to illegally descramble existing formats are rendered useless due to the enhanced denial processing that further scrambles the channels to which that subscriber is not entitled. DBD may offer local video denial or audio denial<sup>6</sup> on selected channels. The demonstrated audio blocking capability of DBD was apparently unknown to Zenith<sup>7</sup>.

DBD requires that the controlled channels be configured in video frame synchrony for transmission. Some in the cable industry have expressed concern about the reduction of security in cases where groups of channels are made video frame synchronous. For example, Time Warner Entertainment Co. ("Time-Warner") expressed concern is that the availability of sync timing for one channel supplies the pirate with sync information for other secured channels in the group<sup>8</sup>. Implicit in this concern, is the assumption that pirate decoders could be constructed to receive one channel and supply a sync recovery signal for another. There is ample evidence that Time-Warner's concern is unfounded and that over a dozen of the most valuable premium cable channels on every cable system have been transmitted in such video frame synchrony for many years without causing this type of "frame lock sync piracy". Time Warner's own operation practices at its satellite uplink facilities in Hauppauge, New York causes the transmission of all its cable channels in video frame synchrony due to "House Genlock" Sync: *HBO, HBO-2, HBO-3, Cinemax, Cinemax 2, Comedy Central* and *USA Network* are all frame synchronous with one master sync signal. Similarly, the following Viacom channels, also emanating from a satellite uplink facilities in Hauppauge, are all frame synchronized to one sync

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<sup>5</sup>. See MCSI's definition of SCATS, MCSI at 9.

<sup>6</sup>. MCSI at page 4 of Appendix A.

<sup>7</sup>. Zenith at 4.

<sup>8</sup>. Time-Warner at 33.

source: *Showtime, Showtime 2, The Movie Channel, Flix, Viewer's Choice 1, Viewer's Choice 2, MTV, VH-1 and Nickelodeon*. Thus every cable system carrying these groups of channels is doing so in frame synchrony for many years. Yet, after all that time, no pirate decoders that obtain sync from one channel to illegally descramble another have been discovered. The fact is that none of these hypothetical pirate decoders are likely to ever materialize, presently or upon the introduction of DBD, because it is much easier for the pirates to employ simple means for illegally modifying existing addressable descramblers to permanently enable them to descramble every premium channel available on the cable system by using the in-channel sync timing.

### **3 Complexity and Costs**

Unlike previous descrambling concepts that have a linear relationship between their complexity and the number of channels processed simultaneously, the DBD technology offers designs with complexities that are piecewise fixed for a range of channels from 0 up to 36, from 37 up to 72, etc.<sup>9</sup> This is apparently misunderstood by CableVision Industries Corp. ("CVI") as evidenced from their comments and from their unfounded subscriber devices pricing estimates<sup>10</sup>.

While a typical DBD is likely to be priced by MCSI's designated manufacturers or licensees at price levels per addressable subscriber that are comparable to those incurred by the purchase of 1.3 set-top descramblers per addressable home<sup>11</sup>, the headend costs are indeed higher due to the incorporation of frame synchronizers<sup>12</sup>. Therefore, MCSI agrees with CVI that DBD may not be cost effective in smaller cable systems in which fixed headend incremental costs must be shared by a few subscribers<sup>13</sup>.

### **4 Compatibility with Digital Video Compression**

The DBD technology is compatible with the provision of Digital Video Compression

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<sup>9</sup>. MCSI at page 3 of Appendix A.

<sup>10</sup>. CVI at 7.

<sup>11</sup>. This is the average number of addressable descramblers in addressable homes, due to the need for Additional Outlet.

<sup>12</sup> A 19" rack containing 10 video frame synchronizers can be purchased for approximately \$1300 per channel from Prime Image, Inc. 19943 Via Escuela, Saratoga, CA 95070.

<sup>13</sup>. CVI at 7.

("DVC") signals and will allow these signals to pass through into homes that in the future might employ DVC decoders. Time-Warner correctly points out that DBD is not capable of processing or decompressing DVC signals<sup>14</sup>. It is also true that no analog set-top descrambler purchased today and in the next few years will be compatible with DVC. As Time-Warner characterizes DVC, "... the technology is embryonic. Not enough is known at this point to make intelligent choices"<sup>15</sup>. MCSI submits that the DBD technology will provide an alternative to future investments in analog set-top descramblers and as such, there is no reason to expect it to be any more DVC compatible than analog set-top descramblers purchased for service past the end of this century.

## **5 Pressures for Full Addressability Will Increase**

Virtually all commenting parties in this proceeding acknowledge the fact that program marketing trends and other provisions of the Cable Television Consumer Protection and Competition Act of 1992 ("Cable Act")<sup>16</sup> will drive cable operators to achieve full addressability within the next 10 years. However, if addressable scrambling with set-top descramblers provides the sole means of arriving at 100% addressability, the central goals of Section 17 of the Cable Act are unlikely to be achieved with minimal costs to consumers and cable operators. MCSI submits that DBD provides the lowest costs in arriving at full addressability while providing subscribers the relief intended by Congress in Section 17 of the Cable Act. The utilization of both the descrambling and denial capabilities within DBD devices in tiered cable programming and premium services may be the best illustration of this point:

Assume, for example, that today a cable system with 50,000 basic subscribers carries 30 basic channels in the clear and 10 scrambled channels for which addressable descramblers are required. Assume further, that there are 20,000 addressable subscribers in the system and the operator wishes to unbundle the 30 channel tier and offer a Statutory Basic tier of 13 clear channels and the other 17 satellite cable programming channels are to be configured as Expanded Basic. Assume further that only 1000 subscribers (2%) opt for the Statutory Basic without the Expanded Basic. If the operator elects to retier by scrambling all 17 satellite delivered channels,

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<sup>14</sup>. Time-Warner at 33.

<sup>15</sup>. Time-Warner's Appendix: *Answers to Specific NOI Questions* at 24.

<sup>16</sup> Pub. L. No. 102-385, 102 Stat. 1460 (1992).

he must purchase addressable converters for 29,000 subscribers (roughly 38,000 set-tops including Additional Addressable Outlets) and convince his current non-addressable subscribers to accept set-top installations *before* the transition to scrambling. Alternatively, the operator may opt to supply the 1000 Statutory Basic subscribers with band reject traps. This solution suffers from truck roll costs, inflexibility and even outright impossibility of handling the broadcast (Must Carry) channels within the Statutory Basic tier while still effectively trapping all other 17 channels without excessive trap cascades and the resultant signal degradations<sup>17</sup>.

In contrast, compatible DBD can be supplied to the 1000 subscribers of the Statutory Basic tier and they can be addressed for denial of all 17 Expanded Basic channels, while providing these subscribers with full access to scrambled channels on an addressable basis. This can be done without Buy-Through requirements and without the need for addressable set-top devices. As the system employs the DBD technology, set-top descramblers of subscribers in need of compatibility relief can be replaced by Broadband Descramblers over time, and an economically graceful migration to full DBD for analog signals can be effected with allowance for digital services pass-through to the home. Hence, even if all addressable subscribers are supplied with DBD devices, only 21,000 devices will be required as opposed to 38,000 set-top descramblers. In this example, the use of DBD can provide the lowest cost and most subscriber friendly solution for dealing with the tiered access control environment.

## **6 The Commission Must Provide Cable Operators With Incentive Rate Benchmarks for SCATS in Order to Minimize Service Costs to Subscribers**

MCSI has explained in its Comments the benefits of providing cable operators with a separate benchmark rate if they provide SCATS to their subscribers<sup>18</sup>. MCSI submits that in the current environment of rate roll-backs as recently ordered by the Commission, and due to cable operators' ability to pass equipment costs to their subscribers, the absence of Commission's allowance for higher rate benchmarks for cable operators who provide SCATS will discourage cable operators from utilizing technologies that solve the compatibility problem that Congress sought to solve. Absent such incentives, cable operators' only option will be to continue to

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<sup>17</sup> Time-Warner at 48, NCTA at 17.

<sup>18</sup> MCSI at 14-15.




supply subscribers with more set-top descramblers as in the first case of the example above, at costs to subscribers that far exceed those which they will incur if charged an incremental fee for SCATS offering. MCSI believes that once these incentives are in place, cable operators will be best positioned to make their own determination as to the access control method that best serve their subscribers. Hence, the offering of SCATS, and the related benefit from such incremental benchmark by cable operators must be voluntary. MCSI strongly believes that mandating the offering of SCATS would not be in the public interest.

## Conclusion

For the foregoing reasons, MCSI respectfully recommends that the Commission adopt rules for the regulation of cable services and equipment consistent with the Reply Comments herein in order to assure compatibility between cable systems and consumer electronics equipment.

Respectfully submitted,

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