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Before the
Federal Communications Commission
Washington, D.C. 20554

JUL 1 2 2000

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
)
Technical Standards for Determining)
Eligibility For Satellite-Delivered Network) ET Docket No. 00-90
Signals Pursuant To the Satellite Home)
Viewer Improvement Act)

TO: The Commission

**REPLY COMMENTS OF
THE ASSOCIATION FOR MAXIMUM SERVICE TELEVISION, INC.**

In the Notice of Inquiry (“NOP”) in this proceeding, the Commission sought information and comment on “whether the signal intensity standard used to determine the eligibility of satellite television subscribers to receive retransmitted distant signals of network stations should be modified or replaced.”¹ The Commission made clear that commenters proposing to amend the Grade B signal intensity standard or the planning factors that underlie the standard should “submit a substantive technical justification for their proposals.”² The Commission also stated that “[w]here alternative standards are proposed, commenters should include in their technical showing a methodology for predicting eligibility and for verifying such predictions and should provide information on the accuracy and costs of the prediction model proposed.”³ The Association for Maximum Service Television, Inc. (“MSTV”)⁴ submits these reply comments to highlight that no commenter has submitted new technical evidence that would

¹ See *Technical Standards for Determining Eligibility For Satellite-Delivered Network Signals Pursuant To the Satellite Home Viewer Improvement Act*, Notice of Inquiry, ET Docket No. 00-90 (adopted May 22, 2000), ¶ 1 (“NOP”).

² See *id.* at ¶ 9.

³ See *id.*

⁴ MSTV represents more than 400 local television stations on technical issues relating to analog and digital television services. It worked closely with the Commission in conducting the original TASO study for the analog television service and developing the methodology for allotting and assigning digital television channels.

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support altering or replacing the Grade B signal intensity standard as the standard for determining whether satellite television subscribers are eligible to receive distant network signals under the Satellite Home Viewer Act (“SHVA”), as revised and extended by the Satellite Home Viewer Improvement Act of 1999 (“SHVIA”).⁵ On the contrary, the technical evidence in the record supports the continued use of the existing Grade B intensity standard for purposes of SHVA and otherwise.⁶

I. CHALLENGES TO THE GRADE B INTENSITY STANDARD ARE UNSUPPORTED BY NEW TECHNICAL EVIDENCE

EchoStar Satellite Corporation (“EchoStar”) and the Satellite Broadcasting and Communications Association (“SBCA”) filed comments in response to the *NOI* urging the Commission to alter the Grade B intensity standard to greatly increase the number of satellite subscribers who would be eligible for distant network service under SHVA.⁷ In both cases, the parties fail to provide any new technical evidence to support such a change. The comments submitted by SBCA and EchoStar do little more than restate arguments already thoroughly considered by the Commission and rejected just last year.

In its 1998-1999 *Grade B Proceeding*, the Commission carefully examined whether the existing Grade B signal intensity standard remains the appropriate measure for determining whether a particular household receives an acceptable over-the-air television signal for purposes of SHVA (the “*Grade B Proceeding*”).⁸ In that proceeding, the Commission

⁵ See Consolidated Appropriations Act for 2000, Pub. L. 106-113, § 1000(9), 113 Stat. 1501 (enacting S. 1948, including the Satellite Home Viewer Improvement Act of 1999, Title I of the Intellectual Property and Communications Omnibus Reform Act of 1999).

⁶ See Joint Comments of the ABC, CBS, Fox and NBC Television Network Affiliate Associations at 7-20 and Engineering Statement of IIT Research Institute Center for Electromagnetic Science (“*Joint Affiliates Comments*”); Comments of the National Association of Broadcasters at 31-56 and Engineering Statement of Jules Cohen, P.E. (“*NAB Comments*”).

⁷ See Comments of EchoStar Satellite Corporation (“*EchoStar Comments*”); Comments of the Satellite Broadcasting and Communications Association (“*SBCA Comments*”).

⁸ See *Satellite Delivery of Network Signals to Unserved Households for Purposes of the Satellite Home Viewer Act, Part 73 Definition and Measurement of Signals of Grade B Intensity*, Notice of Proposed Rule Making, 13 FCC Rcd. 22977 (adopted Nov. 17, 1998).

considered over 260 pleadings filed by broadcasters, satellite providers, engineers, state and federal agencies, content owners, cable operators, consumers, and others, and concluded in the *Grade B Order* that “the record in this proceeding provides an inadequate basis for changing the Grade B signal intensity values either generally or for purposes of the SHVA specifically.”⁹ In October 1999, in response to petitions for reconsideration filed by EchoStar and DIRECTV, the Commission issued the *Grade B Reconsideration Order* reaffirming its decision to retain the existing Grade B intensity standard without modification.¹⁰

Notably, the parties urging modification of the Grade B standard this time around do not agree on how the standard should be changed. For example, SBCA “recommends a reduction in the receiver noise figure, because improvements in receiver technology have reduced noise at the receiver inputs,”¹¹ while EchoStar claims (incredibly) that “television receiver noise figures are in most cases worse today than in the 1950s.”¹² SBCA urges the Commission to recommend revised Grade B signal strength values of 70.75 dBu for low-band VHF stations, 76.5 dBu for high-band VHF stations, and 92.75 dBu for UHF stations – values previously proposed to the Commission and rejected in the *Grade B Order*.¹³ By contrast, EchoStar urges Grade B signal strength values of 66 dBu (low-band VHF), 77 dBu (high-band VHF) and 84 dBu (UHF).

This lack of consensus reflects the speculative nature of the proposals advanced by SBCA and EchoStar, and the inadequacy of the technical showings presented to support alteration of the Grade B standard. Indeed, SBCA does not even purport to submit new technical

⁹ See *Satellite Delivery of Network Signals to Unserved Households for Purposes of the Satellite Home Viewer Act, Part 73 Definition and Measurement of Signals of Grade B Intensity*, Report and Order, 14 FCC Rcd. 2654, 2674 (adopted Feb. 1, 1999) (“*Grade B Order*”).

¹⁰ See *Satellite Delivery of Network Signals to Unserved Households for Purposes of the Satellite Home Viewer Act, Part 73 Definition and Measurement of Signals of Grade B Intensity*, Order on Reconsideration, 14 FCC Rcd. 17373 (adopted October 5, 1999) (“*Grade B Reconsideration Order*”).

¹¹ See *SBCA Comments* at 6.

¹² See *EchoStar Comments* at 7.

¹³ See *Grade B Order* at 2671-75.

evidence to support its proposal. Rather, it has merely *resubmitted* the technical exhibit it filed with its initial comments in the *Grade B Proceeding*.¹⁴ Thus, the Commission already fully evaluated SBCA's arguments and technical exhibit in the *Grade B Proceeding* – along with some 260 other pleadings pertaining to the Grade B standard – and determined that they provided an insufficient basis for altering the Grade B intensity standard for SHVA or other purposes. As shown below, EchoStar's comments similarly lack any new engineering evidence to support its proposed modifications to the Grade B signal intensity standard.¹⁵

Receiver Noise Figures. Despite overwhelming evidence to the contrary, EchoStar claims that receiver noise figures have worsened since the time of the TASO report.¹⁶ Not surprisingly, EchoStar proffers no technical evidence to support its claim. Indeed, EchoStar purports to support its assertion that *VHF* noise figures have worsened by citing a *purely UHF study!*¹⁷ As the Commission concluded in the *Grade B Order*, it is indisputable that receiver noise figures have greatly improved over the past 40 years: “In the 1950s, the television tuner technology consisted of low cost noisy tubes and attached components. Today, this technology has progressed to modern solid state components that produce lower set noise.”¹⁸

¹⁴ See *SBCA Comments* at ii.

¹⁵ In sharp contrast to the voluminous record submitted in the *Grade B Proceeding*, only two other parties filed comments urging a change in the Grade B intensity standard for SHVA purposes. See Comments of the National Rural Telecommunications Cooperative; Comments of Richard L. Biby, P.E. Neither party presented new technical evidence for the Commission's consideration.

¹⁶ See *EchoStar Comments* at 7-8.

¹⁷ See *id.*, citing J.B. O'Neal, *Television Receiver Noise Figure Study* (Mar. 1980). The cited study reported noise figures for 32 receivers measured at *UHF Channel 34*. See *id.*, Appendix, at 51.

¹⁸ See *Grade B Order* at 2674; see also *NOI* at ¶ 12 (“[D]ealing with the planning factors for DTV, the Commission recognized that receivers have in many cases improved beyond the current Commission requirements and will probably get even better in the future.”); *NAB Comments* at 43 (“appropriate planning factors for the receiver noise figure should not exceed 6, 7, and 9 for the three channel ranges – and are no doubt lower today given advances in technology.”); *Joint Affiliates Comments* at IIT Engineering Statement at 7 (“Using the more modern noise factors would make the Grade B signal intensity values for each band less than they are now.”); Bronwen Lindsay Jones, *Subjective Assessment of Cable Impairments on Television Picture Quality*, 1992 NCTA Technical Papers, at 9 (“In the past two years, television receivers have achieved vast improvements.”).

Carrier-to-RMS Noise Ratio. In its comments, “EchoStar submits that consumers in the current television reception environment would view a much higher ratio of peak visual carrier to noise as ‘passable.’”¹⁹ EchoStar provides no technical evidence to support this contention. Indeed, the Commission already considered and dismissed this argument in the *Grade B Proceeding*, concluding that “[a]lthough there is some speculation in the comments that viewer expectations have changed, no current study documents this or replicates the initial TASO study that correlated viewer judgments of television picture quality with specific signal levels.”²⁰ EchoStar has presented no new evidence to support a different conclusion here.

Transmission Line Losses. EchoStar claims that “contemporary receive antenna feedlines would be expected to have additional [transmission line] losses, particularly at UHF, when compared with the planning factors.”²¹ Again, however, EchoStar fails to provide the Commission with any new technical evidence to support modification of this planning factor or deviation from its decision in the *Grade B Order* that the transmission line loss values should not be changed.²²

Receiving Antenna Gain Figures. EchoStar claims that “[t]he antenna gain assumptions on which the Grade B planning factors were based are outdated and must also be adjusted by as much as 6 dBd.”²³ EchoStar provides no current information to back up this claim, citing only 20-year old reports that the Commission already has evaluated and determined do not warrant amendment of the Grade B planning factors. As explained in detail by the NAB, an evaluation of affordable, commercially-available antennas demonstrates that “the current planning factors for antenna gains are, if anything, conservative.”²⁴ IIT Research Institute

¹⁹ See *EchoStar Comments* at 9.

²⁰ See *Grade B Order* at 2673.

²¹ See *EchoStar Comments* at 11.

²² See *Grade B Order* at 2673-74 (rejecting the argument that the Grade B standard should be amended because “the typical household now has multiple television receivers necessitating antenna lead splitters that increase line loss”). See also *NAB Comments* at 50-51; *Joint Affiliates Comments* at IIT Engineering Statement at 6.

²³ See *EchoStar Comments* at 11.

²⁴ See *NAB Comments* at 45-50.

(“IIT”) agrees, stating in the engineering statement accompanying the *Joint Affiliates Comments*: “The current planning factors have receiving antenna gains based on 1952 television receiving antenna technology. In the intervening years things have improved.”²⁵

Dipole Factors. EchoStar urges an upward adjustment of the dipole factors used to calculate the Grade B intensity standard, but again fails to submit a technical showing to support this adjustment.²⁶ If there is any adjustment to the dipole factor, it should be limited to the UHF band, and should be made in conformance with the proposals set forth by the NAB and the Joint Affiliates.²⁷

Urban Noise. EchoStar provides the Commission with no new technical evidence to support its proposal to adopt the current Grade A urban noise factors for the Grade B intensity standard.²⁸ Rather, its proposal is based on speculation and vague assertions about demographic changes – assertions rejected by the Commission in the *Grade B Order*. In that context, the Commission considered arguments by EchoStar, SBCA and other satellite providers that “radio frequency noise in outlying areas has increased so that rural areas are today more akin to urban areas of the 1950’s.”²⁹ The Commission concluded that no change to the urban noise figure was warranted, however, finding that “the technology of receivers and antennas has kept pace with changing consumer expectations and increased noise.”³⁰ Moreover, as IIT notes, “[w]hile in some areas, there has been further urban development since the original noise levels were determined, there is no current measured data to show that the levels have in fact increased and, even if so, by how much.”³¹ And even if it were assumed that noise levels have increased based on the extent of urban development, “there also has been an increased awareness of electrical and

²⁵ See *Joint Affiliates Comments* at IIT Engineering Statement at 5.

²⁶ See *EchoStar Comments* at 13-14.

²⁷ See *Joint Affiliates Comments* at 20 and IIT Engineering Statement at 5; *NAB Comments* at 51-52 and Cohen Engineering Statement at ¶ 8.

²⁸ See *EchoStar Comments* at 14-16.

²⁹ See *Grade B Order* at 2673.

³⁰ See *id.* at 2674.

³¹ See *Joint Affiliates Comments* at IIT Engineering Statement at 3.

radio noise and its impact on consumer electronic devices and, with this awareness, a concomitant increase in attempts to shield noise generators.”³² The Grade B urban noise figure should not be changed absent a comprehensive study that measures and evaluates urban noise levels, taking into account improvements in technology for mitigating the effects of such noise.

II. NO CHANGE TO THE MEASUREMENT METHODOLOGY IS WARRANTED

In its comments, EchoStar urges the Commission to “recommend a clarification of its measurement methodology whereby intensity for all local stations would be measured with the consumer’s antenna oriented towards the network station most frequently watched by the consumer,” claiming that “[s]uch a change would . . . be consistent with the SHVIA, which has added the specification of a ‘stationary’ antenna.”³³ As set forth in detail by the Joint Affiliates and the NAB, EchoStar’s proposal flies in the face of the legislative intent behind SHVIA.³⁴ The Commission’s methodology for measuring signal strength at particular locations should not be changed.

III. GHOSTING CANNOT APPROPRIATELY BE INCLUDED IN THE ELIGIBILITY STANDARD FOR SHVA

EchoStar asserts that the impact of ghosting must be included in the Commission’s eligibility standard for SHVA, and claims to have devised “an objective mechanism for evaluating ghosting for purposes of determining such eligibility.”³⁵ EchoStar’s proposal is illusory, however. Fundamentally, it does not provide any means for predicting the existence, let alone the severity, of ghosting. Rather, it states that “[a]dditional research is underway . . . to determine whether any generalizations can be made concerning the impairments caused by ghosting in specific classes of receiving situations (e.g., LU/LC types).”³⁶ But as the

³² See *id.* at IIT Engineering Statement at 4.

³³ See *EchoStar Comments* at 18.

³⁴ See *Joint Affiliates Comments* at 18-20 (citing extensive SHVIA legislative history clarifying that use of the term “stationary” was not intended to suggest that SHVA eligibility could be determined based on an improperly oriented antenna, *i.e.*, an antenna pointed away from the TV transmitter in question); *NAB Comments* at 33-39 (same).

³⁵ See *EchoStar Comments* at 18-19.

³⁶ See *id.* at 25.

Joint Affiliates explain, “[g]hosting at a particular location is dependent on numerous variables including weather, time of year for areas with deciduous trees, wind, and even moving vehicles and aircraft, so the presence cannot be predicted with any accuracy.”³⁷ The complexity and variability that makes ghosting impossible to predict is well explained by IIT: “Multipath propagation to a specific location is highly individual in its sensitivity to small changes in numerous variables, many of which are additive. . . . To keep track of even a subset of these variables for every target residence and consider the unlimited number of potential multipath reflectors and the reflection coefficients associated with them accurately seems an insurmountable task.”³⁸ Because there is no scientifically accepted model for predicting ghosting, ghosting cannot be considered in determining eligibility for distant network service under SHVA. The Commission properly reached this conclusion in the *Grade B Proceeding*, and EchoStar has failed to provide any new technical evidence that would support a departure from this conclusion.

In the *Grade B Order*, the Commission explained that increasing signal strength also increases the severity of ghosting, noting that even the engineer retained by a satellite provider to advocate increasing the Grade B signal intensity standard “acknowledges that his proposed values do not deal with the problem of ‘multipathing’ (*i.e.*, ghosting or multiple images due to signal reflection) and acknowledges that the stronger signal intensity he proposes ‘may make the effect of multipathing more pronounced.’”³⁹ The Commission upheld its decision on reconsideration, rejecting EchoStar’s claim that ghosting should be included in the eligibility standard for SHVA. In the *Grade B Reconsideration Order*, the Commission found that because no one had provided “any new facts or arguments that describe how to predict and measure multipathing,” it should not be used in determining eligibility under SHVA.⁴⁰ The Commission

³⁷ See *Joint Affiliates Comments* at 20.

³⁸ See *id.* at IIT Engineering Statement at 9.

³⁹ See *Grade B Order* at 2671 (citation omitted).

⁴⁰ See *Grade B Reconsideration Order* at 17379.

stated that while it welcomed “concrete solutions to the ghosting problem, any solution must be objective and verifiable.”⁴¹ While EchoStar purports to present a new methodology for incorporating ghosting into the SHVA eligibility standard, its proposal is not supported by objective or verifiable data. In particular, EchoStar has presented no technical data to address the basic problem cited in the *Grade B Proceeding* that “multipath ‘interference’ created by the same signal is very difficult to measure objectively.”⁴² EchoStar’s proposal to incorporate ghosting into the standard for determining SHVA eligibility is purely speculative, without any concrete technical data to support it.

Moreover, as both the NAB and the Joint Affiliates explain in their comments, “technical solutions already exist to eliminate the impact of ghosting.”⁴³ NAB properly points out that “a distant-signal eligibility standard should assume that viewers have made all reasonable efforts to obtain over-the-air signals, including, at a minimum, taking the steps described by neutral experts (such as the Consumer Electronics Association) to obtain strong signals and minimize ghosting.”⁴⁴ To the extent that viewers consider multipathing a significant problem, the appropriate way to address this problem is through the already-proven, commercially-available ghost-cancellation technology,⁴⁵ and not through an alteration in the SHVA eligibility standard. In short, “[a]ny methodology required to incorporate the prediction of ‘ghosting’ will not produce meaningful results and will unnecessarily complicate the determination of SHVA eligibility. ‘Ghosting’ has nothing to do with predicting whether a

⁴¹ See *id.*

⁴² See *id.*

⁴³ See *Joint Affiliates Comments* at 20; *NAB Comments* at 53-54.

⁴⁴ See *NAB Comments* at 53-54. For example, “viewers can also take personal action to minimize or eliminate multipath effects such as moving the receiving antenna vertically or horizontally or rotating it away from the source of the interference as well as utilizing a more directive (higher gain) antenna to better discriminate against the interfering multipath signal.” See *Joint Affiliates Comments* at IIT Engineering Statement at 9.

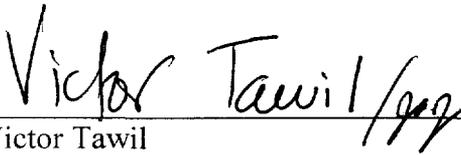
⁴⁵ See *NAB Comments* at 54 (“ghosting can be almost completely eliminated through an already-proven, off-the-shelf technology, namely ghost-cancellation”); *Joint Affiliates Comments* at IIT Engineering Statement at 10 (“Ghost cancelling integrated circuits are available from at least one manufacturer that can be used to eliminate the impact of ‘ghosting’ on picture quality.”).

residence receives a signal of Grade B intensity, and it has no place in the determination of Grade B signal strength.”⁴⁶

IV. CONCLUSION

For the foregoing reasons, the Commission should recommend the continued use of the existing Grade B signal intensity standard without modification as the standard for determining eligibility for distant network signals under SHVA.

Respectfully submitted,



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⁴⁶ See *Joint Affiliates Comments* at IIT Engineering Statement at 10.