

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

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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 )  
\_\_\_\_\_)

CS Docket No. 98-201  
RM No. 9335  
RM No. 9345

To: The Commission

**PETITION FOR RECONSIDERATION AND/OR CLARIFICATION**

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March 15, 1999

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## SUMMARY

EchoStar Communications Corporation (“EchoStar”) hereby files its petition for reconsideration and/or clarification in the above-captioned proceeding.<sup>1</sup> EchoStar believes that the Commission should take a number of actions with respect to its *Order* so as to: (1) ensure that the definition of “Grade B” intensity more accurately correlates with modern notions of acceptable service and takes account of the all-important “ghosting” problem; (2) minimize the cost and complexity associated with signal-strength measurement; and (3) optimize the model for predicting the presence of Grade B intensity at individual households. Specifically, EchoStar requests that the Commission take the following actions.

**First**, the Commission should reconsider its decision not to adopt new, SHVA-specific values for “Grade B intensity.” Recognizing that “Congress did not freeze the Grade B rules in place when it enacted the SHVA,” the Commission affirmed its authority to “modify Grade B intensity values for all purposes.”<sup>2</sup> However, the Commission failed to recognize its authority to change Grade B intensity values specifically for SHVA purposes.<sup>3</sup> Courts,<sup>4</sup> and indeed the Commission itself,<sup>5</sup> have consistently recognized agencies’ authority to employ the

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<sup>1</sup> *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, FCC 99-14 (rel. Feb. 2, 1999) (“*Order*”).

<sup>2</sup> *Order* at ¶¶ 30-31.

<sup>3</sup> *Order* at ¶ 31, ¶ 43.

<sup>4</sup> See, e.g., *Abbott Labs v. Young*, 920 F.2d 984, 987 (D.C. Cir. 1990); *Comite Pro Rescate de la Salud v. Puerto Rico Aqueduct and Sewer Auth.*, 888 F.2d 180 (1<sup>st</sup> Cir. 1989); *Aquarius Marine Co. v. Pena*, 64 F.3d 82, 88 (1<sup>st</sup> Cir. 1995).

<sup>5</sup> See, e.g., *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission’s Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed*

(Continued ...)

same terms differently for different purposes. The Commission should recognize its authority in this instance, and should not hesitate to use it based on the trumped-up concerns of the broadcast industry.

*Second*, the Commission should determine how to best account for the effects of ghosting, which, as the Commission recognizes, are not captured by measurements of intensity. The Commission did not address ghosting in its *Order*, but did acknowledge that the question of whether the signal is acceptable should be part of the Grade B definition.<sup>6</sup> EchoStar believes that the Commission should institute further proceedings in this rulemaking with the goal of determining how to best account for the effects of ghosting in the context of SHVA's "unserved household" restriction.

*Third*, the Commission should reconsider and/or clarify its measurement methodology in order to reduce its complexity and expense. EchoStar has considered carefully the logistical implications of the measurement rules and concluded that they will likely prove to be burdensome and expensive, hampering the broad use of tests. Therefore, the Commission should: (1) allow voltage measurements at the television; (2) in the case of ambient air intensity measurements, eliminate the requirement to separately orient the testing antenna for maximum gain of each signal to be measured (as this requirement effectively translates into an

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*Satellite Services*, Third Order on Reconsideration, 13 FCC Rcd. 4856, 4884 (1998) ("Commission rules impose a variety of ownership attribution levels for different services and Congress did not attempt to dictate one attribution level for all radio services or all purposes."); *Implementation of Sections 3(n) and 332 of the Communications Act*, Third Report and Order, 9 FCC Rcd. 7988, 8095 n.434 (citing different standards for determining "control" of an entity depending on the service concerned).

<sup>6</sup> *Order* at ¶ 44.

unconventional, rotor-equipped consumer antenna); (3) reduce the number of locations and measurements to be taken.

*Fourth*, the Commission should give parties the flexibility to use either a gain antenna or a half-wave dipole to take measurements of multiple signals (allowing for appropriate adjustments to discount the gain when a gain antenna is used); and clarify that testers can also use a half-wave dipole of fixed length with a calibration curve.

*Fifth*, the Commission should reconsider its decision to adopt a 50% confidence factor as part of its model for predicting the presence of a Grade B signal at an individual household. To be true to the goal of ensuring network service for every American, any model designed to predict Grade B intensity for SHVA purposes must give an answer to the question whether a household receives an *adequate* signal with a high degree of confidence, *i.e.*, at least 90%. If the household cannot be predicted with a high degree of confidence as receiving an adequate signal, the goal of nationwide network service militates for counting this household as presumptively unserved. This presumption can, of course, be rebutted by an appropriately conducted measurement.

While the consumer's reliable reception of service must thus be the cornerstone of a predictive model, the Commission's fear of aberrant results (*i.e.*, its postulated household that cannot be confidently predicted as receiving an adequate signal yet in fact receives very adequate service) is also misplaced. In any event, to cut off any outlying, aberrant results, the Commission could impose a cap as a prophylactic matter. The high end of the range of values proposed by SBCA's expert engineer Mr. Benjamin Dawson as appropriate for the new

definition of Grade B intensity can at least appropriately serve as just such a cap.<sup>7</sup> The SBCA proposed these values as a cap, and the Commission should consider them.

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<sup>7</sup> See Engineering Statement of Hatfield & Dawson Consulting Electrical Engineers at Appendix 2, attached to SBCA Comments (filed Dec. 11, 1998).

TABLE OF CONTENTS

	<u>PAGE</u>
<b>SUMMARY .....</b>	<b>i</b>
<b>ARGUMENT .....</b>	<b>2</b>
<b>A.    The Commission Failed to Recognize its Authority to Adopt           SHVA-Specific Regulations.....</b>	<b>2</b>
<b>B.    The Commission Should Conduct a Further Rulemaking In Order           To Address the Problem of “Ghosting” .....</b>	<b>6</b>
<b>C.    The Commission Should Reduce the Complexity and Cost of its           Signal Measurement Procedures .....</b>	<b>8</b>
<b>D.    The Commission Should Adjust the “Confidence Factor” Associated           With Its Predictive Model .....</b>	<b>14</b>
<b>CONCLUSION .....</b>	<b>18</b>

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**PETITION FOR RECONSIDERATION AND/OR CLARIFICATION**

EchoStar Communications Corporation (“EchoStar”) hereby files its petition for reconsideration and/or clarification in the above-captioned proceeding.<sup>1</sup> Specifically, EchoStar requests that the Commission:

- Reconsider its decision not to adopt new, SHVA-specific values for “Grade B intensity”;
- Determine how to best account for the effects of “ghosting,” which, as the Commission recognizes, are not captured by measurements of intensity;

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<sup>1</sup> *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, FCC 99-14 (rel. Feb. 2, 1999) (“*Order*”); *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, FCC 98-302 (rel. Nov. 17, 1998) (“*NPRM*”).

- Reconsider and/or clarify its measurement methodology in order to reduce its complexity and expense. Specifically, the Commission should: (1) allow voltage measurements at the television; (2) in the case of ambient air intensity measurements, eliminate the requirement to separately orient the testing antenna for maximum gain of each signal to be measured (as this requirement effectively translates into an unconventional, rotor-equipped consumer antenna); (3) reduce the number of locations and measurements to be taken;
- Give parties the flexibility to use either a gain antenna or a half-wave dipole antenna to take measurements of multiple signals (allowing for appropriate adjustments to discount the gain when a gain antenna is used); and clarify that testers can also use a half-wave dipole of fixed length with a calibration curve;
- Reconsider its decision to adopt a 50% confidence factor as part of its model for predicting the presence of a Grade B signal at an individual household.

## ARGUMENT

### A. **The Commission Failed to Recognize its Authority to Adopt SHVA-Specific Regulations**

Recognizing that “Congress did not freeze the Grade B rules in place when it enacted the SHVA,” the Commission affirmed its authority to “modify Grade B intensity values for all purposes.”<sup>2</sup> However, the Commission failed to recognize its authority to change Grade B intensity values specifically for SHVA purposes.<sup>3</sup>

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<sup>2</sup> *Order* at ¶¶ 30-31.

<sup>3</sup> *Order* at ¶ 31 (“Although we conclude that the Commission has the authority to modify Grade B intensity values for all purposes, we believe that it is significant that Congress tied the SHVA compulsory license to the Commission’s Grade B standard, which was and is used for a multiplicity of purposes. We think Congress’ use of the widely used Grade B standard in SHVA indicates that we should not adopt a separate Grade B intensity standard for purposes

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EchoStar has previously pointed out that the Commission’s authority to change its rules for specific purposes flows from its broad discretion to employ different policy-making tools. Agencies can decide, for example, to make policy either through rulemaking or adjudication.<sup>4</sup> Thus, if it wished, the Commission could define, and redefine, Grade B intensity on a case-by-case basis. If, for example, on a motion to refer a Grade B matter to the Commission’s primary jurisdiction, a court asked the Commission to certify the status of Grade B intensity in connection with a particular factual situation, the Commission could redefine Grade B intensity in connection with those facts, and could choose whether or not to “globalize” such a redefinition in future case-by-case adjudications.<sup>5</sup> If the Commission has authority to change Grade B intensity in certain factual situations, it *a fortiori* has authority to do the same thing as part of a SHVA-specific rulemaking.

Courts,<sup>6</sup> and indeed the Commission itself,<sup>7</sup> have consistently recognized agencies’ authority to employ the same terms differently for different purposes. Even with

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of SHVA alone.”); *id* at ¶ 43 (“[W]e do believe that we have the authority to create a special Grade B solely for the purpose of the SHVA, nor do we believe that this is an advisable approach to take.”).

<sup>4</sup> *E.g.*, *NLRB v. Bell Aerospace Co.*, 416 U.S. 267, 291-94 (1974); *Shalala v. Guernsey Memorial Hospital*, 115 S.Ct. 1232, 1233 (1995); *SEC v. Chenery Corp.*, 332 U.S. 194, 203-204 (1947).

<sup>5</sup> *C.f.* *Bell Aerospace*, 416 U.S. at 294 (NLRB has authority to define “managerial employees” in different factual situations through a series of adjudications).

<sup>6</sup> *See, e.g.*, *Aquarius Marine Co. v. Pena*, 64 F.3d 82, 88 (1<sup>st</sup> Cir. 1995) (“As MarAd and the Coast Guard have been delegated authority over laws governing different aspects of the maritime trade, they have discretion to undertake independent interpretations of the same term in different statutes.”).

<sup>7</sup> For example, the Commission defined the terms “attributable interest” and “control” differently with respect to different services. *See, e.g.*, *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission’s Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to*

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respect to the same word used by two different sections of a statute, the D.C. Circuit has stated that “it is not impermissible under *Chevron* for an agency to interpret [the same] imprecise term differently in two separate sections of a statute which have different purposes.”<sup>8</sup> In another case, the First Circuit was asked to rule on whether the Environmental Protection Agency (“EPA”) could define the term “domestic sewage” differently in regulations interpreting two different sections of the Resource Conservation and Recovery Act (“RCRA”).<sup>9</sup> Speaking for the court, then-Judge Breyer upheld the agency’s discretion even where Congress had chosen to use the same word in two provisions of a statute:

In any event, why, given the general broad language of the entire definitional section, could not EPA define the [“domestic sewage”] exception’s scope somewhat differently for purposes of different parts of the RCRA statute? We concede that a court might find it difficult to uphold even minor variations in an agency’s interpretation and application of the same statutory words if the reason for the court’s ‘deference to administrative interpretations,’ were the court’s belief that historical or administrative circumstances mean that the agency likely knew better what Congress had in mind. The court might ask how Congress, using a single set of words in a single statutory sentence, could have meant several different things. *However, where the reason for the court’s “deference” reflects its belief the Congress, in effect, delegated to the agency a degree of interpretative power, it does not seem odd to find the agency interpreting the same words somewhat*

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*Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, Third Order on Reconsideration, 13 FCC Rcd. 4856, 4884 (1998) (“Commission rules impose a variety of ownership attribution levels for different services and Congress did not attempt to dictate one attribution level for all radio services or all purposes.”); *Implementation of Sections 3(n) and 332 of the Communications Act*, Third Report and Order, 9 FCC Rcd. 7988, 8095 n.434 (citing different standards for determining “control” of an entity depending on the service concerned).

<sup>8</sup> *Abbott Labs v. Young*, 920 F.2d 984, 987 (D.C. Cir. 1990).

<sup>9</sup> *Comite Pro Rescate de la Salud v. Puerto Rico Aqueduct and Sewer Auth.*, 888 F.2d 180 (1<sup>st</sup> Cir. 1989).

*differently as they apply to different parts of the statute in order better to permit that statute to fulfill its basic congressionally determined purposes. Had the statute expressly delegated the authority to the EPA to decide the precise scope of the various parts of the statutory definition, under different parts of the statute, it would not seem at all odd to find the EPA tailoring its scope to fit the needs and objectives of the statute's different parts. Why should the EPA not have somewhat similar authority, at least to create minor differences where the delegation is implicit, where the courts infer a congressional delegatory intent from the nature of the overall regulatory scheme, its heavy dependence on sensible administration for its success, and the rather interstitial nature of the particular legal question – where such are the reasons for what the Supreme Court in *Chevron* calls “deference?”*<sup>10</sup>

Judge Breyer’s analysis applies with even greater force here. The Commission has recognized that Congress *explicitly* delegated to it “authority to decide the precise scope” of Grade B intensity, and, in contrast with *Salud*, there is no constraint on the agency’s flexibility from the use of the same term in another statutory provision.<sup>11</sup> Thus, in Judge Breyer’s words, it would be “not at all odd” for the Commission to make such decisions on a SHVA-specific basis, in order “better to permit [the statute, here the SHVA] to fulfill its basic congressionally determined purpose” of ensuring that those Americans unable to receive an acceptable over-the-air signal can receive network service by satellite.

Once it recognizes its SHVA-specific authority, the Commission should not hesitate to exercise that authority for fear of “creat[ing] confusion for the broadcast industry.”<sup>12</sup> There is absolutely no support in the record for the proposition that a SHVA-specific Grade B

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<sup>10</sup> *Comite Pro Rescate de la Salud*, 888 F.2d at 187 (emphasis added) (citations omitted).

<sup>11</sup> *Order* at ¶ 30.

<sup>12</sup> *Order* at ¶ 43.

value would cause confusion.<sup>13</sup> Nor should the Commission fear “creating an implication that another, different Grade B definition might be more suitable for other situations that are not contemplated in this proceeding.”<sup>14</sup> Both the Satellite Broadcasting and Communications Association (“SBCA”) and EchoStar have submitted evidence that the definition no longer bears any relation to the concept of an “acceptable” signal.<sup>15</sup> This disconnect is a much more serious matter for the purpose of ensuring acceptable network service for all Americans than when it comes to ensuring that adjacent broadcasters do not interfere with one another. The Commission should not allow the problems associated with *this* proceeding to fester because some unidentified party may at some unidentified point in the future decide to use this case as precedent in some unidentified manner.

**B. The Commission Should Conduct a Further Rulemaking In Order To Address the Problem of “Ghosting”**

As the Commission recognizes, measurements of intensity cannot capture the effect of “ghosting” on consumer reception. Ghosting refers to the problem caused when broadcast signals reflect off of buildings and other objects. As a result, conventional rooftop antennas often receive more than one signal at any given time – one signal directly from a broadcast tower; others that have “bounced” off of buildings, etc. This “multipath” phenomenon

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<sup>13</sup> Of course, adopting a new SHVA-specific definition of Grade B intensity would eliminate the concern raised by NAB of “massive ripple effects throughout the Commission’s entire regulatory scheme.” NAB Comments at 26 (filed Dec. 11, 1998).

<sup>14</sup> *Order* at ¶ 43.

<sup>15</sup> *See* EchoStar Comments at 6-7 (filed Dec. 11, 1998); Engineering Statement of Hatfield & Dawson Consulting Electrical Engineers at Appendix 2, Attached to SBCA Comments (filed Dec. 11, 1998).

causes a fainter “ghost” picture to be superimposed upon a television screen’s “main” picture – a clearly unacceptable reception for today’s consumer.

The Commission did not address ghosting in its *Order*, but did acknowledge that the question of whether the signal is acceptable should be part of the Grade B definition: “as a matter of general policy we agree that the Grade B standard incorporated by Congress into the SHVA implicitly includes within the definition a signal that is, in fact, viewable and not one so impaired by interference as to be degraded below the ‘acceptable to the median’ observer level.”<sup>16</sup> Of course, a consumer suffering a “ghosted” picture does not receive an “acceptable” picture regardless of the nominal value in dBu of the signal. Ironically, consumers *closest* to a broadcast tower, who ordinarily receive the strongest over-the-air signal, are often those most susceptible to ghosting because of the greater number of buildings and other objects in urban areas. This means that many households deemed “served” in light of the intensity of the signal (and therefore ineligible for satellite network service) receive in fact an unacceptable signal.

In its comments, EchoStar pointed out that the range of Grade B levels proposed by the SBCA did not quantify the effects of ghosting, and suggested that the Commission compensate by adopting values at the upper end of that range.<sup>17</sup> However, even such an adjustment might not be an optimal solution to the ghosting problem, because it compensates for a problem unrelated to signal strength by adjusting signal strength levels. EchoStar believes that a more comprehensive solution will ultimately be necessary to deal with the ghosting problem. Accordingly, EchoStar believes that the Commission should institute further proceedings in this

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<sup>16</sup> *Order* at ¶ 44.

<sup>17</sup> EchoStar Comments at 8.

rulemaking with the goal of determining how to best account for the effects of ghosting in the context of SHVA’s “unserved household” restriction.

**C. The Commission Should Reduce the Complexity and Cost of its Signal Measurement Procedures**

EchoStar appreciates the Commission’s effort and diligence in revising its measurement procedures in order to test signal strength at individual households.<sup>18</sup> However, as one of the parties that will have to live with this new methodology, EchoStar has carefully evaluated the feasibility of broadly applying this measurement method, and in the end disagrees with its characterization as “a relatively low cost, accurate, and reproducible methodology for measuring the presence of a Grade B intensity signal at an individual household.”<sup>19</sup> EchoStar has considered carefully the logistical implications of the measurement rules and concluded that they will likely prove to be burdensome and expensive, hampering the broad use of tests.

To illustrate, if the measurement method is not reconsidered and/or clarified as indicated below, a measurement of four broadcast signals (ABC, NBC, CBS and Fox) at a single family two-story house could include the following steps:

- Calibrate the measurement equipment.<sup>20</sup>
- Choose five pre-determined spots<sup>21</sup> thirty feet above the ground<sup>22</sup> as close to “a reasonable and likely spot for the receiving antenna” as possible<sup>23</sup>

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<sup>18</sup> *Order* at ¶¶ 45-60.

<sup>19</sup> *Order* at ¶ 45.

<sup>20</sup> *Order* at ¶ 55.

(considering potential interference, if procedures to address interference are eventually developed by the parties<sup>24</sup>).

- Raise a half-wave dipole antenna to the first pre-determined spot and orient it towards the closest ABC broadcast tower.<sup>25</sup>
- Conduct a measurement at that spot.<sup>26</sup>
- Lower the dipole antenna, and change its length to suit the frequency of the NBC signal.<sup>27</sup>
- Repeat the previous step two more times (corresponding to the CBS and Fox signals).
- Move the testing truck to the second spot (at least three meters away), raise the dipole, and measure the ABC signal.<sup>28</sup> Lower, change the length, and re-raise the dipole three more times to measure the NBC, CBS and Fox signals.
- Repeat the previous step three more times (corresponding to the three remaining spots – *each* of which requires four separate measurements with a dipole of four separate lengths).

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<sup>21</sup> *Order* at ¶ 53. Such spots must “be chosen before measurements are taken to prevent gaming of the results,” must “be a minimum of three meters from each other,” and the first spot should, if possible “be chosen as the center point of an imaginary square whose corners are the four other spots.” *Id.*

<sup>22</sup> *Order* at ¶ 58.

<sup>23</sup> *Order* at ¶ 50.

<sup>24</sup> *Order* at ¶ 57.

<sup>25</sup> *Order* at ¶ 59.

<sup>26</sup> *Order* at ¶ 54.

<sup>27</sup> *See Order* at ¶ 51 n.137 (“A ‘half-wave’ dipole has an overall electrical length equal to half the wavelength of the frequency of interest.”).

<sup>28</sup> *Order* at ¶ 53.

- Prepare a written record including:
  1. A list of calibrated equipment used in the field strength survey, which for each instrument, specifies the manufacturer, type, serial number and rated accuracy, and that date of the most recent calibration by the manufacturer or by a laboratory;
  2. A detailed description of the calibration of the measurement equipment, including field strength meters, measuring antenna, and connecting cable;
  3. For *each spot* at the measuring site, *all* factors which may affect the recorded field, such as topography, height and types of vegetation, buildings, obstacles, weather, and other local features;
  4. A description of where the cluster measurements were made;
  5. Time and date of the measurements and signature of the person making the measurements;
  6. For each channel being measured, a list of the measured value of field strength (in units of dBu and after adjustment for line loss and antenna factor) of the five readings made during the cluster measurement process, with the median value highlighted.<sup>29</sup>

Mere recitation of this process demonstrates its complexity and expense.

EchoStar estimates that this process would take almost an hour (without including travel to and from the home or the preparation of the written record) and could cost over \$100 per household.<sup>30</sup> This means that the method would not be broadly used, thus frustrating the very purpose that the Commission sought to achieve in promulgating it and not being of practical help for “unserved” consumers.

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<sup>29</sup> *Order at 60.*

<sup>30</sup> Specifically, EchoStar’s engineers estimate that the test would take almost one hour (15 minutes to set up and tear down; 10 minutes to test for each of four broadcast stations) and would cost between \$99 and \$119 per household.

EchoStar believes that these problems could be eliminated, *and* more realistic measurements would be ensured, simply by measuring signal strength at the television set.<sup>31</sup> Indeed, the Commission recognized “that measurements taken at the television receiver would most accurately reflect the picture that a consumer watches,” but concluded that “such an approach would be inconsistent with the intent of the SHVA, which requires the use of an *outdoor rooftop* antenna.”<sup>32</sup> This conclusion is the result of a legal fallacy, propagated by the broadcasters, that the SHVA requires measurements of signal intensity “at a household’s roof.”<sup>33</sup> The SHVA requires nothing of the sort – it merely identifies unserved households as those who “cannot receive *through the use of a conventional outdoor rooftop receiving antenna*, an over the air signal of Grade B intensity. . . .”<sup>34</sup> The “outdoor rooftop” in the SHVA simply describes where the *antenna* must be, not where the signal must be measured. It is possible – and, EchoStar believes, much more efficient – to measure *at the television set* whether a consumer can or cannot receive a Grade B signal *through the use of a conventional outdoor rooftop receiving antenna*.

Alternatively, the Commission should at least take steps to minimize the cost and complexity associated with such measurements. *First*, the Commission should eliminate the requirement that the testing antenna be oriented separately for each station being measured.<sup>35</sup>

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<sup>31</sup> EchoStar Comments at 12.

<sup>32</sup> *Order* at ¶ 52.

<sup>33</sup> *Order* at ¶ 52.

<sup>34</sup> 17 U.S.C. § 119(d)(10).

<sup>35</sup> *Order* at ¶ 59.

Apart from providing a more realistic measurement of the signal *actually received* by any given customer,<sup>36</sup> eliminating this requirement would allow multiple measurements without having to re-orient the antenna for each signal being measured. While, as the Commission points out, “Section 119(d)(1) defines unserved household ‘with respect to a particular television network,’”<sup>37</sup> this does not mean that a testing antenna must be *oriented* toward each network tested. Indeed, this “separate-orienting” requirement actually reduces the accuracy of measurements for those consumers who attempt to receive signals from multiple locations using a non-rotating antenna. Since separate-orienting increases the complexity and cost of measurement *and* reduces the accuracy of the results, it should be abandoned.

**Second**, the Commission should reduce the number of locations and the number of measurements required. Currently, each signal needs to be measured five times, each measurement at a separate spot.<sup>38</sup> Measuring the broadcast signals from four networks thus requires *twenty* separate measurements in five separate spots. Determining the five pre-selected spots and moving the antenna to these spots for each station tested will take up much of the time (and correspondingly cause much of the expense) involved in the test.

Instead, EchoStar proposes that three measurements be taken – all in the same spot, with two additional measurements in certain cases to reduce the possibility of less accurate results.<sup>39</sup> If the household is predicted as “served” and any one of the three measurements shows

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<sup>36</sup> See, e.g., EchoStar Reply at 14-15.

<sup>37</sup> Order at ¶ 59.

<sup>38</sup> Order at ¶ 53.

<sup>39</sup> EchoStar had initially recommended as an alternative a method involving 10 measurements. See NPRM at ¶ 39 n.76. These measurements, however, would be conducted at  
(Continued ...)

inadequate intensity, the tester must conduct two additional measurements. If one of those two additional measurements shows inadequate intensity, the household will qualify as “unserved.” If two of the initial three measurements show inadequate Grade B intensity, the house will qualify as “unserved” without need for additional measurements. Conversely, if the household is predicted as “unserved” and one of the three measurements shows adequate Grade B intensity, two more measurements will be conducted and, if a total of 2 out of 5 measurements show adequate intensity, the household will not qualify as unserved; if two of the initial three measurements show adequate intensity, the household will not qualify as unserved, and there will be no need for two more measurements.

EchoStar recognizes that reducing the number of measurements and the number of locations for these measurements may reduce the test’s accuracy. Any loss of accuracy, however, will likely be in both directions, so that in the end the practicality of the test should be the prevalent consideration.

*Third*, the Commission should allow parties flexibility concerning the type of testing antenna to be used. As the list above shows, much of the time and effort associated with the new methodology will involve lowering, replacing, and re-raising the dipole antenna for each station to be measured. EchoStar suggests that parties be allowed, at their option, to use a gain antenna as an alternative to the half-wave dipole antenna.

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the same location, without need to reorient the antenna, and would be completed in 5 minutes. Furthermore, upon further evaluation of the cost aspects of the measurement method and the need for broad implementation, EchoStar has concluded that practicality is a decisive criterion with respect to the number of measurements, especially since any loss of accuracy is not likely to be in a particular direction (*see* below), and therefore fewer measurements are preferable.

Use of a gain antenna would allow the measurement of multiple signals without having to lower and re-adjust the antenna for each station. Of course, the gain would have to be subtracted from such a measurement in order to make the results correlate with those from a half-wave dipole measurement.

*Fourth*, the Commission should clarify that testers can use a half-wave dipole of fixed length and adjust the results to the appropriate signal through the use of a calibration curve. The rules promulgated by the Commission’s *Order* do not specify the type of dipole antenna that can be used for signal measurements, only that “[t]he test antenna shall be a standard half-wave dipole . . . .”<sup>40</sup> On the other hand, a footnote in the *Order* seems to indicate that the dipole’s length should vary depending on the frequency.<sup>41</sup> EchoStar understands that it may be possible to use a fixed-length dipole and adjust measurements on that instrument for each signal by means of a calibration curve. The Commission should clarify that the phrase “standard half-wave dipole” includes a *fixed-length* dipole, and that calibration curves can be used to correlate fixed-length measurements with those from an adjustable dipole.

**D. The Commission Should Adjust the “Confidence Factor” Associated With Its Predictive Model**

In promulgating its model for predicting whether a household can receive an over-the-air signal of Grade B intensity, the Commission chose to set the “confidence” factor at 50%.<sup>42</sup> EchoStar requests that the Commission reconsider its decision.

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<sup>40</sup> *Order* at Appendix B.

<sup>41</sup> *Order* at ¶ 51, n.137.

<sup>42</sup> *Order* at ¶¶ 72-78.

The Commission described the confidence factor as “a way of expressing how certain the model is that the predicted signal value is *at least* that high.”<sup>43</sup> It then stated that increasing the confidence factor above 50% would decrease errors of one type and increase errors of another type:

For example, if we use a confidence factor of 90%, the model will “search” for a predicted value at a particular location in which it has 90% confidence that the value would, in reality, be that value or higher. The model could predict a particular signal value, say 47 dBu, and be 85% confident that the signal would be 47 dBu or higher in reality. Such a high level of confidence means it would be very likely that the location would get a 47 dBu signal. However, because it is searching for a value in which it has 90% confidence, the model would not predict 47 dBu and would continue searching. Eventually, the model would find a signal value in which it has 90% confidence, say 45 dBu, and deliver that as the result. . . . If the model predicts with 90% confidence that a signal of *at least* 45 dBu exists, the 45 dBu household would be classified as “unserved,” even though it is very likely (85% confidence) that it receives a signal of at least 47 dBu. We believe it would be inconsistent with the SHVA to classify a household as *unserved* when a model could predict it to be *served* with such a high degree of confidence.<sup>44</sup>

Thus, according to the Commission, a confidence factor above 50% would lead to overprediction of unserved households, which in turn will cause a number of problems for consumers, satellite operators, and broadcasters alike.

The use of a 50% confidence factor penalizes the consumer and errs in favor of some policy of “belt-and-suspenders” over-protection for the broadcaster’s local franchise.<sup>45</sup> To

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<sup>43</sup> *Order* at ¶ 76.

<sup>44</sup> *Order* at 76.

<sup>45</sup> While EchoStar recognizes that protection of the network-affiliate relationship was also one of the purposes behind the “unserved household” restriction, that protection should  
(Continued ...)

be true to the goal of ensuring network service for every American, any model designed to predict Grade B intensity for SHVA purposes must give an answer to the question whether a household receives an *adequate* signal with a high degree of confidence. If the household cannot be predicted with a high degree of confidence as receiving an adequate signal, the goal of nationwide network service militates for counting this household as presumptively unserved. This presumption can, of course, be rebutted by an appropriately conducted measurement.

All propagation models concern themselves with predicting the incidence of a signal of at least certain intensity with a sufficiently high degree of confidence. This would be an especially inappropriate instance for inaugurating a “reverse” propagation model that confidently predicts the *non*-incidence of an adequate signal – *i.e.*, predicts with high confidence that a signal is inadequate. When providers of a video service build a reliability rate into their offering of a digital service – typically 99% or more – they aim at confidently predicting the reception of an adequate signal because of the quality demands of present-day consumers. Such a provider would be irrational to content itself with a quality of service that would satisfy the reverse standard – a standard where the product is satisfactory so long as the consumer is less than 99% confident that he/she receives an *inadequate* signal. Such a provider would soon go out of business, and there is no reason why consumers of network services should be expecting anything less than very high reliability of receiving an adequate signal. The model endorsed by the Commission, however, implies that 50% reliable reception should be “good enough” for a household and disqualify it from distant network service. Under that model, if, out of 10

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be extended only to those households that can be confidently predicted as receiving an adequate signal.

measurements at a particular time and place, “only” 2 or “only” 3, or even “only” 5, fall short of Grade B intensity, that household should be ineligible for distant network service.

While the consumer’s reliable reception of service must thus be the cornerstone of a predictive model, the Commission’s fear of aberrant results (*i.e.*, its postulated household that cannot be confidently predicted as receiving 47 dBu or more yet in fact receives very adequate service) is also misplaced. This is so for the following reasons: **First**, the model accurately predicts that a household cannot confidently receive an adequate signal, and that should be the end of the inquiry. **Second**, when a household cannot be confidently predicted as receiving 47 dBu or more, and is instead predicted as receiving, say, 45 dBu or more, most of the measurements are likely to be in the immediately adjacent area (*i.e.*, not much greater than 45 dBu).<sup>46</sup> **Third**, even if there were a need to cut off any outlying, aberrant results, the Commission could impose a cap as a prophylactic matter.

As SBCA has noted, it has recommended (and EchoStar has supported) the immediate adoption of new values for Grade B signal strength that correspond to modern consumer acceptance standards as well as to the standards that the Commission requires with respect to reception of cable telephone service.<sup>47</sup> Each of the components of these recommended values has been thoroughly substantiated by SBCA’s expert engineers, with reference to previous Commission staff reports, Commission findings, and other official sources. If the

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<sup>46</sup> See “Appropriate Statistical Factors for Using in Predicting Signal Strength For Purposes of the Satellite Home Viewer Act,” attached to January 26, 1999 letter from Margaret Tobey, counsel for SBCA, to Mr. Donnie Fowler and Ms. Eloise Gore of the Cable Services Bureau.

<sup>47</sup> See *id.* See also Engineering Statement of Hatfield & Dawson Consulting Electrical Engineers at Appendix 2, attached to SBCA Comments.

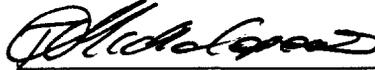
Commission were not to adopt SBCA's proposed signal strength values immediately, it could, at a minimum, use them as exactly such preventive caps. The SBCA proposed these values as a cap, and the Commission should consider them.

Under this approach, a household would not qualify as unserved unless it satisfied two conditions: (1) it *cannot* be predicted with 90% confidence as receiving 47 dBu *or more*; (2) it *can* be predicted with 90% confidence as receiving 70.75 dBu (for low-band VHF) or *less*. This second condition would cut off households that cannot be confidently predicted as receiving 70.75 dBu or less from eligibility for satellite service.

### **CONCLUSION**

For the foregoing reasons, EchoStar respectfully requests that the Commission clarify and/or reconsider its *Order* and conduct a further rulemaking consistent with this petition.

Respectfully submitted,



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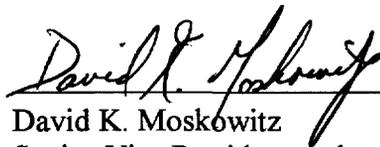
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***DECLARATION***

I, David K. Moskowitz, hereby declare under penalty of perjury that the foregoing  
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A handwritten signature in black ink, appearing to read "David K. Moskowitz", is written over a horizontal line.

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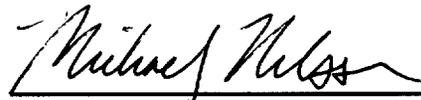
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