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November 8, 1999

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Magalie Roman Salas, Secretary  
Federal Communications Commission  
445 Twelfth Street, S.W.  
Washington, D.C. 20554

Re: Ex Parte Presentation in File No. 0094-EX-ST-1999  
ET Docket No. 98-206; RM-9147; RM-9245

Dear Ms. Salas:

On behalf of Northpoint Technology Ltd. ("Northpoint"), submitted herewith is Northpoint's response to the ex parte submission of Echostar Satellite Corporation ("Echostar") dated October 29, 1999. Echostar offered its ex parte submission in response to the recent technical demonstration of the Northpoint system in the Washington, D.C. region.

Prior to testing of Northpoint's system, the DBS industry inundated the Commission with a total of fourteen filings and communications protesting Northpoint's planned tests and predicting that there would be interference to thousands of Washington, D.C. area customers. Yet none of this interference materialized and not a single customer complaint has been documented.

Absent any showing of actual harmful interference to its customers, Echostar attempts in the October 29 ex parte filing to build a case of hypothetical harmful interference by relying on a single dubious reading obtained during its limited monitoring of the Northpoint tests. The Commission should dismiss Echostar's analysis contained in the October 29 ex parte – and the purported "demonstration" of harmful interference from Northpoint – both because of the questionable nature of Echostar's data and because the FCC's field office investigated this very location and, to Northpoint's knowledge, made no findings of harmful interference.

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As part of its ex parte filing, Echostar's engineering consultant, Telecomm Strategies, submitted a technical analysis of Northpoint's very successful tests entitled "Preliminary Report on the Impact of Northpoint on the Direct Broadcast Satellite Service Based Upon Testing Performed to Date" (hereinafter, the "Echostar Report"). Northpoint has reviewed the Echostar Report very carefully and offers its responses in the enclosed "Northpoint Rebuttal to the Echostar Report of October 29, 1999" (hereinafter, the "Northpoint Rebuttal").

The analysis in the Northpoint Rebuttal demonstrates that the Echostar Report raises no serious issues for Commission consideration concerning Northpoint's ability to use the 12.2-12.7 GHz band without causing harmful interference to DBS users. Accordingly, the Commission should promptly license the Northpoint system so that consumers can enjoy the benefits of the enhanced competition which will flow therefrom. In addition, Northpoint offers the following observations on the Echostar Report:

### **Echostar Cried Wolf On Northpoint's Testing**

The Commission should take careful note that Echostar vehemently opposed Northpoint's testing, claiming that Northpoint was certain to cause harmful interference to "tens of thousands of DBS customers" in the Washington, D.C. area. Throughout the summer, Echostar and DirecTV made no fewer than fourteen filings and other formal communications with the FCC protesting Northpoint's testing. These submissions contained numerous predictions of great harm to DBS customers as a result of Northpoint's proposed testing. **Yet, not a single Echostar customer complained of harmful interference during the Northpoint testing in the Washington, D.C. area.**

Given the results of the Northpoint testing, the Echostar Report is -- not surprisingly -- structured as an attack on the legitimacy of the Northpoint testing *conditions*. The Commission should not be misled by these attempts to disguise Echostar's concern over the Northpoint testing *results*. First, it is a little late for Echostar to be attacking the Northpoint testing conditions in light of Echostar's refusal to accept Northpoint's offer to conduct the tests in accordance with any plan submitted by Echostar. Second, Echostar can hardly claim to be surprised by the

Magalie Roman Salas  
November 8, 1999  
Page 3

testing conditions given that the Northpoint tests were conducted in the exact manner described in materials provided to the DBS industry on July 6, 1999 before the testing ever began. Moreover, the test plan was also reviewed in a three-hour meeting involving the Commission, representatives of the DBS industry (including Echostar) and Northpoint on July 21, 1999. In light of the foregoing, the Commission should flatly reject Echostar's calls for more testing of the Northpoint technology.

### **FCC Field Office Investigated Echostar's Sole Claim of Harmful Interference**

In a letter to the FCC dated September 22, 1999, Echostar and DirecTV asserted that a DBS test site at a West Potomac location showed harmful interference. This is the same location where the reading was taken that forms the basis of the analysis in the Echostar Report. As a result of the September 22 letter, the FCC field office visited the West Potomac location and performed its own readings for DBS satellites located at 61.5, 101 and 119. Since Northpoint's testing was not required to cease operations after the visit from the FCC field office (as would have been mandated if there had been a finding of harmful interference), Northpoint assumes that the FCC field office found no harmful interference at this location. In this regard, Northpoint stipulates that it will accept the FCC field office's findings of the signal strength readings at this location.

### **The Echostar Report Is Based on Doubtful Data**

As set forth in the attached Northpoint Rebuttal, the Echostar Report is largely based on a single, isolated reading of questionable quality. Specifically, Annex 1 of the report (pages 21-25) describes a single session of data taking for the Echostar satellite located at 61.5 at a West Potomac location during the week of September 6, 1999. During this session, Echostar's testing produced two data points. The first data point shows a decline of three "counts" from 93/94 in the DBS antenna pointing aid (also called the signal strength indicator) when the Northpoint transmitter was turned on. The second data point shows a decline of eight "counts." Notwithstanding the fact that Echostar's own data from the same location obtained on August 11<sup>th</sup> and 12<sup>th</sup> show only a three "count" change (and thus contradict the eight count reading from September 8<sup>th</sup>), Echostar uses the lower data point as the basis for the analysis in the Echostar Report. This is particularly striking in light of the acknowledgment by Echostar's outside contractor that it is "not exactly clear why the

Magalie Roman Salas  
November 8, 1999  
Page 4

signal strength meter readings differed.”<sup>1</sup> Perhaps taking and reporting additional data at other locations might have shed some light on the subject. Given the questionable quality of Echostar's data in the Echostar Report, the FCC should conclude that Echostar's assertions of harmful interference from Northpoint remain unsupported.

In sum, the fact that not a single Echostar customer reported harmful interference during the testing of the Northpoint technology in the Washington, D.C. area speaks for itself: Northpoint technology does not cause harmful interference to DBS. In addition, the Commission should conclude that Echostar has failed to substantiate its claims of harmful interference because the Echostar Report is based on doubtful data. Finally, in light of the foregoing -- and given Echostar's refusal either to accompany Northpoint during its testing or to provide Northpoint with a test plan of Echostar's design -- the Commission should reject Echostar's calls for additional testing of the Northpoint technology.

In accordance with Section 1.1206 of the Commission's rules (47 CFR § 1.1206), an original and one copy of this presentation are submitted for inclusion in the public record for the above-captioned proceedings. Please direct any questions concerning this submission to the undersigned.

Sincerely,



Antoinette Cook Bush  
Counsel for Northpoint Technology,  
Ltd.

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<sup>1</sup> Echostar Report at 24.

Magalie Roman Salas  
November 8, 1999  
Page 5

cc: Chairman William Kennard  
Commissioner Harold Furchtgott-Roth  
Commissioner Susan Ness  
Commissioner Michael K. Powell  
Commissioner Gloria Tristani  
Donald Abelson (IB)  
Kim Baum (IB)  
Jim Burtle (OET)  
Tom Derenge (OET)  
Richard Engelman (IB)  
Ari Fitzgerald  
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Dale Hatfield (OET)  
Charles Iseman (OET)  
Julius Knapp (OET)  
Harry Ng (IB)  
Kathleen O'Brien Ham (WTB)  
Bruno Pattan (OET)  
Michael Pollak (WTB)  
Tom Stanley (WTB)  
Thomas Sugrue (WTB)  
Thomas Tycz (IB)  
Pantelis Michalopoulos (Echostar)

## **NORTHPOINT REBUTTAL TO ECHOSTAR REPORT OF OCTOBER 29, 1999**

### **Introduction**

Northpoint Technology, Ltd. ("Northpoint") has prepared the following report to correct certain mistaken assertions and assumptions made by Echostar Satellite Corporation ("Echostar") in its "Preliminary Report on the Impact of Northpoint on the Direct Broadcast Satellite Service Based Upon Testing Performed to Date", submitted to the Commission on October 29, 1999 (the "Echostar Report"). The analysis herein demonstrates that the Echostar Report raises no serious issues for Commission consideration concerning Northpoint's ability to use the 12.2-12.7 GHz band without causing harmful interference to DBS users. Accordingly, the Commission should promptly license the Northpoint system so that consumers can enjoy the benefits of the enhanced competition which will flow therefrom.

By way of introduction, Northpoint notes that there has been no evidence presented by any party of any harmful interference to any member of the public as a result of Northpoint testing. The only suggestion of harmful interference was contained in a letter to the FCC from Echostar and DirecTV dated September 22, 1999 and repeated in the Echostar Report, wherein Echostar and DirecTV claim they simulated harmful interference at a location in West Potomac Park. This same report of "harmful interference" is the sole basis of all the analysis in the Echostar Report. As a result of the September 22 letter, the FCC field office visited the West Potomac location and performed its own readings for DBS satellites located at 61.5, 101 and 119. Since Northpoint was not required to cease operations after the visit from the FCC field office (as would have been mandated if there had been a finding of harmful interference), Northpoint assumes that the FCC field office found no harmful interference at this location. In this regard, Northpoint stipulates that it will accept the FCC field office's findings of the signal strength readings at this location.

### **Echostar's Technical Analysis is Flawed**

The Echostar Report contains seven sections. Section 1 is an introduction and summary. In Section 2, Echostar makes frivolous claims of flaws in Northpoint's testing. Echostar then provides in Section 3 a summary of their field measurements; a single, dubious reading that they claim represents harmful interference at a West Potomac location. Echostar's claims are clearly inaccurate. Not only does Echostar's claim of harmful interference defy free-space propagation theory, the West Potomac site was determined to be absent of harmful interference by FCC field office action. Echostar then extrapolates in Sections 4, 6 and 7 from this single nebulous data point and attempts to build a model of the Northpoint system predicting zero DBS availability at all locations within 0.7 miles of a Northpoint transmitter. However, Echostar cannot present any empirical evidence of such link failure because there was none. Echostar's model

inaccurately describes the Northpoint system. Section 5 is an attempt to delay competition from Northpoint with calls for additional testing, when such testing has already been successfully completed.

**Echostar's Pre-Testing Claims of Harmful Interference Have Now Been Proven False**

Prior to and during the Northpoint Washington D.C. testing, Echostar and DirecTV claimed:

There are tens of thousands of DBS subscribers located within the Washington D.C. area that will be affected by interference generated at the proposed Diversified test sites.<sup>1</sup>

With tens of thousands of subscribers in the vicinity of the proposed test sites, *interference is unavoidable* - it is only a question of how much.<sup>2</sup>

The Commission's recent grant of an STA ... in the Washington, DC area threatens DC-area DBS subscribers with both a complete loss of picture, and longer and more frequent loss of picture during rain.<sup>3</sup>

DirecTV continues to question the policy justification for permitting additional sites to test a technology that poses a tremendous interference threat to DBS...<sup>4</sup>

... [T]here is a countervailing severe interference threat to tens of thousands of D.C.-area subscribers.<sup>5</sup>

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<sup>1</sup> Application of DirecTV, Inc. for Expedited Review and Request for Immediate Suspension of Testing, June 25, 1999, at 9 (the "Request for Expedited Review").

<sup>2</sup> Ex Parte Filing of DirecTV, June 23, 1999.

<sup>3</sup> Id.

<sup>4</sup> Request for Expedited Review at 1.

<sup>5</sup> Id. at 2.

Echostar has thousands of subscribers in the Washington D.C. area.<sup>6</sup> There are far too many DBS subscribers in this area that would be placed at risk of receiving harmful interference from Northpoint's operations.<sup>7</sup>

Clearly, the DBS industry portrayed to the Commission that the planned Northpoint testing would cause massive harmful interference to its customers. Yet by Echostar's own admission, none of this massive interference materialized. Echostar now makes the extraordinary claim that lack of customer interference was "predictable."

In Section 2 of the Echostar Report, Echostar asserts that Northpoint's Washington D.C. testing had "fundamental flaws," and that Echostar was not provided "crucial information" about Northpoint testing, that the Northpoint test sites were "special case" locations selected to hide interference, and that Northpoint does not consider "individual link availability." These points are addressed in the following sections.

### **Echostar Blames Northpoint For its Own Failure to Monitor Northpoint Testing**

Section 2.1 of the Echostar Report claims that Echostar was not provided "crucial information"<sup>8</sup> about the test parameters before or during the test, specifically stating that it did not know the power level, beam tilt or other parameters used by Northpoint. While Echostar does not state what it would have done with such information, it is significant that Echostar did not contact Northpoint while the testing was ongoing to ascertain these values. Presumably, they would have been used to determine Northpoint signal levels.

Echostar then continues to say that it believed that Northpoint's transmit EIRP "was planned to be varied between +12.5 dBm and +37.5 dBm."<sup>9</sup> It is unclear what the basis of this assertion is because no such statement is made in the Northpoint test plan. As reported in the Northpoint test plan, the Northpoint transmitter was to be set to a nominal +12.5 dBm throughout the test period. Northpoint's Progress Report on WA2XMY, Northpoint-DBS Compatibility Tests, filed with the Commission on

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<sup>6</sup> Emergency Petition for a Cease and Desist Order of Echostar, July 26, 1999, at 1.

<sup>7</sup> Id. at 3.

<sup>8</sup> Echostar Report at 2.

<sup>9</sup> Id.

October 13, 1999 (the "Northpoint Progress Report"), confirms that this was the case. However, Echostar did not need to guess at the operating power of the Northpoint transmitter, as its "special Northpoint monitoring antenna" was set up and "clearly showed the Northpoint signal spectrum on a spectrum analyzer."<sup>10</sup>

As to the matter of beam tilt, the experimental authorization required disclosure of beam tilt only if it was used. None was used during the testing. Northpoint is pleased to see that Echostar now acknowledges that beam tilt is a viable method of interference mitigation that can effectively "tune out" interference.<sup>11</sup> While no beam tilt was employed in the Washington, D.C area experiment, beam tilt may be used in other areas where the Northpoint system is deployed.

Echostar also lists among missing items it calls "crucial information" details about "the building blockage and foliage effects that could have been artificially shielding the DBS receivers in certain directions."<sup>12</sup> If Echostar believed this information to be crucial during the testing period, Echostar was free to acquire it through a survey of the Northpoint service area. Northpoint did provide Echostar and DirecTV with the results of its national survey on natural shielding wherein it was documented that 86% of DBS customers have natural shielding from the Northpoint signal.<sup>13</sup> It goes without saying that it is not the role of Northpoint to provide information to DBS operators about their own customer locations.

The final statement in Section 2.1 of the Echostar Report - "Northpoint also deprived DBS operators of the ability to monitor its testing"<sup>14</sup> - is simply inaccurate. Both Echostar and DirecTV had significant advance notice of the fact that Northpoint would be testing in the Washington area. Northpoint provided both DBS operators a detailed testing schedule and testing plan. Further, Northpoint designated a specific technical contact with a phone number and other contact information to assist DBS operators with any inquiries

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<sup>10</sup> Id. at 15

<sup>11</sup> Id. at 3.

<sup>12</sup> Id.

<sup>13</sup> See National Survey of DBS Satellite Dish Owners (prepared by Bennett, Petts & Blumenthal), July 20, 1999.

<sup>14</sup> Echostar Report at 3.

they might have about Northpoint testing. Northpoint also offered to let DBS operators turn the Northpoint transmitter on and off as required. Neither DirecTV nor Echostar initiated a single contact with Northpoint's technical representative. Nor did either DBS operator take advantage of Northpoint's offer to have control of the transmitter and/or accompany Northpoint during its testing.<sup>15</sup> In light of these facts, if Echostar is now dissatisfied with its monitoring program it cannot blame Northpoint.

**Neither Northpoint Sites Were "Special Case" Locations Selected to Hide Interference - Both Are Actual Sites That Northpoint Would Use Once Deployed in Washington, D.C.**

In Section 2.2 of the Echostar Report, Echostar suggests that the USA Today Building is not representative of locations where Northpoint would actually be deployed. In fact, the USA Today Building is representative of a typical Northpoint system location. The owners of the 1000 Wilson Blvd. location actively promote their rooftop as a wireless antenna location for the Washington, D.C. area. Installations are in place on the roof at 1000 Wilson Blvd. for Teligent, Motorola, Gannett and many others, in addition to Northpoint. There is no reason at all why Northpoint would not use this very location as a transmitter site once Northpoint is licensed.

Significantly, in its attempt to characterize the location of Northpoint testing sites as unrepresentative, Echostar does not discuss the Northpoint repeater location or any readings taken around this site. No parks or river surrounded the repeater, which was deployed on an average apartment building in the middle of a Washington neighborhood.

While each of these sites was different from the other, both employed mitigation techniques to reduce the potential interference near the transmitter. Certainly, it is unreasonable to expect that a satellite company would be familiar with the wide range of techniques routinely used by terrestrial engineers to direct their signals into areas they seek to cover. However, it is erroneous for Echostar to suggest that these techniques - only a few of which were demonstrated in Northpoint's Washington, D.C. program - do not exist. Even Echostar now acknowledges that Northpoint's use of beam tilt can "tune-out" interference.

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<sup>15</sup> See Letter from Sophia Collier, President of BroadwaveUSA, to Pantelis Michalopoulos, counsel to Echostar, dated August 12, 1999.

Echostar says that in order to monitor the USA Today transmitter location it “had to” perform tests at a distance of 1.2 miles away.<sup>16</sup> This is simply not true. The USA Today Building is surrounded by streets, parking lots and many other locations where Echostar could have established monitoring sites if it had wished to do so. Echostar’s statement that it could not perform monitoring because it “did not have time” to receive permits speaks for itself.<sup>17</sup>

### **Readings from a Low Fidelity Set Top Box Do Not Replace Readings From Laboratory Grade Test Instruments**

Section 2.3 of the Echostar Report begins by attempting to minimize the importance of bit error rate (BER). That BER is important should be beyond challenge. If a digital receiver’s BER exceeds its maximum value, the receiver will not function. By using a professional, laboratory-grade demodulator provided by Lucent Technologies, Northpoint was able to monitor BER,  $E_b/N_0$  and other relevant values and learn precise relationships between these values. This provided valuable data and a much more precise indication of the interaction between Northpoint and DBS than the sole test instrument used by Echostar - a lower fidelity antenna pointing aid built into the set top box with implementations varying from manufacturer to manufacturer.

### **Echostar Relies on Hypothetical Examples Rather than Actual Data**

In Section 2.3 of the Echostar Report, Echostar erroneously states that “Northpoint repeatedly refuses to consider the availability of the individual DBS links in its assessment of interference.”<sup>18</sup> Pages 18 to 22 of the Northpoint Progress Report provides a detailed assessment of DBS availability based on the findings in the Northpoint Washington, D.C. testing. Lucent Technologies also made an independent assessment of Northpoint's impact on DBS link availability, and concluded that the link degradation is “negligible in all weather conditions.”<sup>19</sup> These works add to significant analysis of robust

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<sup>16</sup> Echostar Report at 4-5.

<sup>17</sup> Id. at 5.

<sup>18</sup> Id. 5-6.

<sup>19</sup> See On Northpoint Field Trial in Washington DC Sept-Oct 1999, Habib Riazi, Lucent Technologies Bell Labs, October 22, 1999, p.1.

DBS availability in the presence of Northpoint.<sup>20</sup> Northpoint's technical showings in this regard are substantially more detailed than any made by Echostar, either in this proceeding or in comments filed in the 12 GHz Rulemaking (ET Docket 98-206).<sup>21</sup>

### **Echostar Bases its Entire Technical Case on a Single, Nebulous Datum**

In Section 3 of the Echostar Report (beginning on page 6) Echostar provides a summary description of its field measurements. The only empirical information in the twenty-five page Echostar Report is contained in an annex from an Echostar contractor, Telecomm Strategies. As noted above, the annex describes a single session of data taking at a West Potomac Park location during the week of September 6, 1999. Here, one procedure was followed that produced a decline of three "counts" from 93/94 in the DBS antenna pointing aid (also called the signal strength indicator) when Northpoint was turned on. Another procedure produced a decline of eight "counts."

Even without FCC confirmation that there is no harmful interference,<sup>22</sup> there is sufficient reason to doubt the scientific validity of the Echostar datum. Consider the following:

1. Echostar's own data from 11 and 12 August contradict its September 8<sup>th</sup> data. Echostar's readings on August 11th and 12th show a change in the signal strength pointer (SSP) of three "counts". However, Echostar ignores these readings and makes its entire presentation based upon its final "reading" taken September 8<sup>th</sup>.

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<sup>20</sup> See Comments of Northpoint Technology in ET Docket No. 98-206, March 2, 1999, and Reply Comments of Northpoint Technology in ET Docket No. 98-206, April 14, 1999.

<sup>21</sup> In contrast to the fact-based analysis of DBS robust availability (in the presence of Northpoint) that has been made in this proceeding, Echostar provides only one greatly exaggerated hypothetical example of what might happen if the clear sky link margin was reduced by approximately 5.5 dB. See Echostar Report at 5.

<sup>22</sup> As discussed above, the FCC field office visited this site and did not instruct Northpoint to cease operations, apparently concluding that no harmful interference was being produced by the Northpoint system.

2. Echostar asserts that the change of eight "counts" of the SSP "can be equated to a C/I in clear-sky conditions of approximately 16 dB."<sup>23</sup> This claim of a C/I of 16 dB contradicts free-space propagation theory, as demonstrated in the following table which shows the predicted C/I level at this location would be 21 dB.

**Table 1. Predicted C/I value at West Potomac Test Site**

Northpoint EIRP	dBW	-17.5
Transmit antenna discrimination	dB	-0.3
Free space loss	dB	-120.1
Polarization loss	dB	-3
Isotropic signal level	dBW	-140.9
Echostar gain in direction of Northpoint	dB <sub>i</sub>	0
Interference level	dBW	-140.9
Echostar RSL	dBW	-119.9
C/I	dB	21

It is impossible, from the information presented by Echostar, to know on which day the procedure used by Echostar to obtain an 8 point decline in the signal strength indicator was performed because it is reported as September 8<sup>th</sup> in one place (see Echostar Report at 6) and September 9<sup>th</sup> in another (see Echostar Report at 23). However, we do know that the Northpoint transmitter was set at a nominal value of +12.5 dBm throughout the test period. Based on free space loss factors, a spectrum analyzer would have indicated an isotropic signal level of -140.9 dBW (24 MHz) at the West Potomac location, which leads to a C/I no lower than 21 dB. From this, Echostar would have known that their reading was faulty, and that the date should have been discarded. The empirical measurements made by Northpoint's independent test demonstrate that the Northpoint signal agrees well with predictions outside of about 0.25 miles from the transmitter. The receive antenna pattern is a well documented and agreed upon parameter. Had Echostar followed these procedures it would have clearly seen that the 16 dB C/I ratio was incorrect.

3. Echostar states that they have observed the Northpoint signal on a spectrum analyzer, yet do not provide their reading of the Northpoint signal level to corroborate their findings.

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<sup>23</sup> Echostar Report at 6.

4. Echostar asserts that there was approximately 2.1 dB of link degradation at the site 1.2 miles from the Northpoint transmitter. However, readings taken with a professional demodulator at seven other sites closer to the transmitter (and at locations where the predicted C/I is greater than the West Potomac site) show the actual clear-sky link degradation is less than 0.4 dB in all cases.<sup>24</sup>
5. Finally, Echostar decides to use this questionable data point, even though their own outside contractor warned them: *“It is not exactly clear why the signal strength meter readings differed for the cases when the Northpoint transmitter was turned on.”*<sup>25</sup>

This was a clearly dubious reading that should not have been the basis of the Echostar Report. The only possible conclusion for this questionable reading is that it should be discarded.

### **Forming Averages is a Sound Scientific Approach**

It is interesting that Echostar chooses to criticize Northpoint for averaging values together in its test program. Although they compared peak to average values, both values reported by Echostar were in turn an average of numerous samples taken by the set top box.

Averaging data within groups representing the distance from the Northpoint transmitter is a valid way of assessing the conditions that are likely to be found in the area the data represents. Sampling and statistical analysis of this nature is far from “unscientific” as Echostar says. It is in fact the essence of scientific inquiry where a hypothesis is challenged through experiments and then general conclusions are drawn from the experimental results. By contrast, Echostar's approach of taking a single reading and extrapolating from it should be considered unscientific. It is axiomatic in scientific research that one can not extrapolate to universal principles from a single data point.

### **Echostar Calibration Suggests a Malfunctioning Meter or Other Anomaly**

Another question is raised by the assertion in Section 3 of the Echostar Report that the signal strength meter was “carefully calibrated.” A review of Annex I

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<sup>24</sup> Northpoint Progress Report at 16.

<sup>25</sup> Echostar Report at 24.

shows that the minimum value of the signal meter during “calibration” was 40 counts, a level where the Annex claims that “no satellite signal was present.”<sup>26</sup> Northpoint’s experience is that the signal meter reads “zero” when no satellite signal is present. If a meter is reading other than zero, a signal is either present or the meter is malfunctioning. The Echostar Report contains no explanation of this anomaly. The existence of these discrepancies should raise serious concerns about Echostar’s calibration and the resulting table of C/N values in the Echostar Report.

### **Echostar Claims of Northpoint Induced Signal Failure Are Undocumented and Simply False**

Section 4 of the Echostar Report attempts to use a C/I value at the West Potomac site to build an entire model of the Northpoint system. Echostar asserts that at the actual Northpoint power levels in use during the experimental testing, Echostar’s signal would fail in clear air (i.e., the availability would be zero) at all points within 0.7 miles of a Northpoint transmitter.<sup>27</sup>

Yet, there is no evidence of such failure and Echostar made no effort to document it, neither at the USA Today transmit site, nor at the Ft. Lincoln repeater site. Had Echostar been able to support such a dramatic conclusion with empirical data from the region where failure was claimed (or by contacting its own customers within this area to confirm that their service was impaired), it would have succeeded in gathering compelling evidence indeed of harmful interference. Significantly, Echostar, did not do this.

Echostar's entire discussion of Northpoint's impact on its availability is based on the erroneous 16 dB C/I value. Since this C/I value is incorrect, this entire section of the Echostar Report should be disregarded.

After creating its flawed model of the Northpoint system, Echostar then presents what it claims are the parameters of the Echostar system in the form of two "link budgets" shown on pages 8 and 10 of the Echostar Report. These link budgets use different values than those provided for the same Echostar system in the ITU.<sup>28</sup> Both

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<sup>26</sup> Id. at 22.

<sup>27</sup> Id. at 11.

<sup>28</sup> The Echostar satellite system at 61.5 W.L. is commonly described in the ITU as  
(continued...)

values cannot be right because the Echostar system has fixed characteristics. For example, Echostar lists the C/I due to other BSS systems as 30 dB in the Echostar Report. In its submissions to the ITU, however, Echostar claims the same parameter has a value of 20 dB. Likewise, the uplink C/N is given in the Echostar Report as 30 dB but as 26.1 dB in the ITU submission. The claim of required C/N is stated as 7.5 dB in the Echostar Report and 5.1 dB to the ITU.

Finally, Echostar combines its flawed model of the Northpoint system with its misrepresented Echostar system. Echostar's resulting calculations of the interactions between the two erroneously stated systems are, as one might predict, also wrong.

### **All Tests Suggested by Echostar Have Already Been Completed Successfully by Northpoint**

Echostar argues that additional testing of the Northpoint system is needed because "DBS operators should be in control of the transmitter."<sup>29</sup> As Echostar knows, Northpoint offered the DBS operators the opportunity to have control of the Northpoint transmitter in the Washington testing program.<sup>30</sup> In light of the fact that neither Echostar nor DirecTV took advantage of this offer, it would be pointless for the Commission to require additional testing on this ground.

Echostar's second argument in favor of additional testing is that the "test transmitter should use the actual Northpoint transmit antenna."<sup>31</sup> It is unclear which antenna Echostar believes Northpoint used in the Washington test program, but Northpoint hereby confirms that all Northpoint transmissions were made with an actual Northpoint transmit antenna.

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<sup>28</sup>(...continued)

US-GSO 4D2 through US-GSO 4d10. See, e.g., Protection of the BSS in the 12 GHz Band and Associated Feeder Links in the 17 GHz Band from Interference Caused by Non-GSO FSS systems, ITU Doc. 11/138-E, May 31, 1999.

<sup>29</sup> Echostar Report at 13.

<sup>30</sup> See Letter from Sophia Collier to Pantelis Michalopoulos, dated August 12, 1999, supra note 15.

<sup>31</sup> Echostar Report at 13.

On a related note, Echostar claims that Northpoint should “define” the “possible pointing directions” and “beam tilt.”<sup>32</sup> Northpoint refers Echostar to the technical record in the 12 GHz Rulemaking (ET Docket 98-206). Northpoint’s comments in this proceeding contain a complete discussion of possible pointing directions and beam tilt. Moreover, these filings are in the public record and have been fully available to Echostar for over six months.

Echostar's third argument in support of additional testing is that the DBS operators should be permitted “close range” access to the transmitter. As fully described in the Northpoint Progress Report, the Washington test program provided exactly this. Echostar either chose not to monitor the closer sites or did not report the results of that monitoring.

Echostar’s fourth and final point in support of additional testing is that the test transmit antenna should be installed such that buildings in any direction do not surround the antenna, and in such a manner that the antenna can be viewed at very high elevation angles. This appears to be a description of an installation on a high tower similar to a television tower. It is curious that Echostar proposes this type of transmit test site because such a location is much more favorable to Northpoint than the more difficult lower elevation urban sites chosen for Northpoint’s Washington, D.C. demonstrations. A high tower provides significant free space signal attenuation “in the air” ensuring that the highest signal levels are never present on the ground. With respect to Echostar’s interest in very high elevation look angles, the USA Today Building provided excellent opportunities to collect such data. Echostar, however, chose not to make any measurement of the USA Today Building location from readily accessible sites that would have afforded Echostar this viewing angle.

In sum, Echostar has not provided a single valid basis for additional testing of the Northpoint system. Of course, Northpoint would not object to any further testing required by the Commission.

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Id.

### **Echostar Presents No Evidence of Harmful Interference**

In Section 6 of the Echostar Report, Echostar says that Northpoint "refuses" to consider significant loss of link margin as harmful interference.<sup>33</sup> A more accurate characterization would be to say that Northpoint did not and does not accept Echostar's assertion of harmful interference at the West Potomac Park location. Northpoint has provided detailed analyses of Northpoint's effects on DBS links and it does not believe these effects are harmful.<sup>34</sup>

### **Echostar Fails to Acknowledge Inherent Variance in DBS Set Top Box Indicator**

In its response to Northpoint's October 7 letter, Echostar unequivocally states that DBS "peak" values as shown on the signal strength meter are representative of the average performance of the DBS set top box.<sup>35</sup> As support for this claim, Echostar uses a convoluted application of the average rain rates. Using Echostar's rain model one would conclude a tiny 14 minute rain shower occurs every day. This is contrary to experience.

The September 22 submission by Echostar reported primarily on the DBS signal strength values at the West Potomac location. As is well known to all subscribers of DBS, the values displayed by the antenna pointing aid, also known as the signal meter, changes from moment to moment with a peak indication higher than the average value.

This behavior was also well documented in the Northpoint Progress Report and demonstrated to all parties who witnessed Northpoint's technical demonstrations. In fact, Northpoint's independent test team observed an *increase* in the SSP 40% of the time with the Northpoint transmitter ON. This increase would "prove" that Northpoint improves the DBS signal strength 40% of the time, which we do not believe is the case. We believe the normal variation in the signal meter caused the increase in the SSP during the transmitter ON condition. Furthermore, Echostar's implementation of this signal meter also displays values that vary in time (although less so than the DirecTV implementation). This variance between Echostar and DirecTV was also documented in the Northpoint

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<sup>33</sup> Id. at 14.

<sup>34</sup> See supra note 20.

<sup>35</sup> Echostar Report at 14.

Progress Report. The truth is that the signal meter can vary at any time and location, and, therefore, cannot be used to make measurements in the manner that Echostar asserts.

Thus, Northpoint's assertion about DBS using peak signal readings is correct, not incorrect as claimed by Echostar.<sup>36</sup> For proof that Echostar uses "peak" values rather than representative average values in its anti-Northpoint advocacy, one need look no further than the current Echostar Report. In the text of the Echostar Report, presumably written by an author other than the author of Annex I, the Echostar receiver at the Independence Avenue location is stated to be operating at a signal value of 94 without the presence of the Northpoint signal. In Annex I, this value is reported as "93/94," meaning that the signal meter read both 93 and 94. While a difference of one count may seem trivial, and indeed it is trivial, Echostar's omission of the lower value is significant. Contrary to Echostar's claim, peak values are not average values and it is clear that Echostar has used "peak" values rather than properly representative "average" values in its own Report. This raises questions about Echostar's technical case.

Echostar asserts that "*Northpoint makes an argument in its letter that suggests that harmful interference should be considered to be acceptable if it only occurs in a small part of the service area.*"<sup>37</sup> A casual reading of the reference shows that Northpoint makes no such argument. Northpoint will not cause harmful interference to Echostar in any part of the Echostar service area.

In summary, now that Echostar's pre-testing claims of harmful interference have been proven false, Echostar reverses its position and says that lack of customer interference was predictable. Their claims of flaws with Northpoint testing are frivolous. First, the testing was conducted in the exact manner described in the test plan. Second, the test sites are actual sites that Northpoint would use once deployed in Washington. Echostar's analysis of their test results is based upon a single, nebulous datum that should have been discarded. Echostar presents no credible evidence of harmful interference, and the FCC field office investigated their only claim of interference (at the West Potomac location) and took no action. Likewise their extrapolated claims of Northpoint induced signal failure are undocumented and simply false.

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<sup>36</sup> Id.

<sup>37</sup> Id. at 15.

CERTIFICATION

I, Robert A. Combs, am Director, System Development for Broadwave USA, Inc. I have an ME in Communication Systems Engineering from the University of Virginia, and a BS in Aerospace Engineering from the University of Texas (Austin). I am familiar with the technical and operational characteristics of the Northpoint system.

I certify that I am the technically qualified person responsible for the preparation of the technical material in this filing. The contents are complete and accurate to the best of my knowledge.



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Robert A. Combs  
Director, System Development  
Broadwave USA, Inc.

Dated: November 4, 1999

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