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Before the
Federal Communications Commission **APR 14 1999**
Washington, D.C. 20554

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
)
Amendment of Parts 2 and 25 of the)
Commission's Rules to Permit Operation)
of NGSO FSS Systems Co-Frequency with)
GSO and Terrestrial Systems in the Ku-)
Band Frequency Range)
and)
Amendment of the Commission's Rules)
to Authorize Subsidiary Terrestrial Use)
of the 12.2-12.7 GHz Band by Direct)
Broadcast Satellite Licensees and Their)
Affiliates)

ET Docket No. 98-206
RM-9147
RM-9245

REPLY COMMENTS OF NORTHPOINT TECHNOLOGY, LTD.

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SUMMARY

In its comments on the NPRM, Northpoint submitted a comprehensive technical report demonstrating that the Northpoint technology can retransmit local television broadcast signals on a terrestrial basis through the 12.2-12.7 GHz band without causing harmful interference to other services in that band.

Most of the comments submitted in this proceeding criticize the Northpoint technology as being incapable of operating in the 12.2-12.7 GHz band without causing harmful interference to DBS and the proposed NGSO FSS services. Interestingly, the vast majority of comments opposing Northpoint's plan contain no technical support whatsoever. Northpoint, on the other hand, has provided the Commission with extensive technical submissions demonstrating its technology's ability to share the 12.2-12.7 GHz band without causing harmful interference to other services. The few technical submissions offered to oppose Northpoint contain serious flaws. Specifically, the DirecTV technical report contains the following major errors:

- DirecTV erroneously treats Northpoint as a single NGSO FSS system which is completely unrealistic;
 - DirecTV actually confuses Northpoint's "Link Budget" with its "Interference Budget";
 - DirecTV totally ignores polarization isolation of 3 dB in its analysis;
 - DirecTV uses inaccurate numbers in its analysis;
-

- DirecTV fails to analyze the impact of natural shielding in protecting against harmful interference; and
- DirecTV makes numerous misleading and inaccurate claims about Northpoint's testing.

Importantly, even using DirecTV's erroneous numbers and unrealistic and unsubstantiated protection criteria, Northpoint can still meet the DirecTV protection criteria in 95 percent of its service area. The DirecTV errors, however, along with similar mistakes in EchoStar's technical submission are examined to demonstrate why they are unworthy of consideration.

Certain NGSO FSS applicants raise unsubstantiated concerns about their ability to share with Northpoint. Northpoint's patented and proven technology can coexist on a co-primary basis with certain proposed NGSO FSS systems. Specifically, Northpoint demonstrated in its comments that terrestrial arc avoidance, satellite diversity and alternate beam assignment are techniques that would permit sharing between Northpoint and the NGSO FSS applicants. In addition, Northpoint supports the NGSO FSS applicants that propose highly elliptical orbit ("HEO") configurations. These HEO configurations essentially replicate the effects of Northpoint's terrestrial arc avoidance sharing proposal. The NGSO FSS proposals contemplating HEO systems would not need to modify their systems to coexist with Northpoint. Not a single NGSO FSS applicant submitted technical support on

sharing issues with Northpoint. In light of the complex technical issues involved here, the Commissions should disregard those comments without any technical support.

The arguments that the Commission has shifted other terrestrial services out of the 12.2-12.7 GHz band are inapplicable here because the Northpoint technology is fundamentally different. The Northpoint technology is a uni-directional, point-to-multipoint system whereas those services are point-to-multipoint, multi-directional systems or point-to-point systems. Moreover, those systems are primarily analog and the Northpoint technology is digital. Those systems also operate at a much higher power level (some at power levels one million times higher) than the Northpoint technology. Therefore, outmoded concepts, such as no sharing between terrestrial and satellite, have no relevance to Northpoint's cutting-edge technology.

The Northpoint technology requires deployment in the 12.2-12.7 GHz band because it was designed specifically to use existing commercially available consumer and transmission equipment in that band. Other efforts to compete with cable have failed because of the unavailability of low cost equipment.

In light of the lack of technical support for claims of harmful interference, many commenters resort to anticompetitive rhetoric in attacking Northpoint. These comments claim that Northpoint has shifted its focus from being supplementary to DBS to being a stand-alone provider. Northpoint's ability to offer stand-alone service is not the issue here. Northpoint has developed a technology that promotes

spectrum efficiency (*i.e.*, this technology creates over 100 GHz of spectrum nationwide), solves the DBS provider's most vexing problem, and can deliver other services to the public such as high-speed Internet access and multichannel video programming. Consumers should not be denied these benefits because of fear of competition by incumbents. The Commission is charged with promoting competition not stifling it at the urging of competitors.

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<u>Affiliates</u>)	

REPLY COMMENTS OF NORTHPOINT TECHNOLOGY, LTD.

Northpoint Technology, Ltd. ("Northpoint"), by its attorneys, hereby submits these reply comments to the comments submitted on March 2, 1999 in the above-captioned proceeding.¹ Northpoint has developed a sophisticated and innovative technology that will solve Direct Broadcast Satellite ("DBS") service providers'

¹ In the Matter of Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-band Frequency Range and Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licensees and Their Affiliates, ET Docket No. 98-206; RM-9147; RM-9245, FCC 98-310 (rel. Nov. 24, 1998) (the "NPRM").

inability to deliver local programming, present true competition to cable, promote spectrum efficiency, and serve the public interest.

In this proceeding, several parties have submitted comments attacking Northpoint's proposed service offering claiming that it would cause harmful interference to other services in the 12.2-12.7 GHz band. Notably, the vast majority of the comments submitted contain no technical support whatsoever. The few comments that attempt to offer any technical support contain serious flaws. As fully explained below, the criticisms of Northpoint's proposed service offering stem primarily from fear of competition and a failure to understand Northpoint's technical submissions.

I. THE NORTHPOINT TECHNOLOGY CAN SHARE THE 12.2-12.7 GHz BAND WITHOUT CAUSING HARMFUL INTERFERENCE AS DEMONSTRATED THROUGH EXPERIMENTAL TESTS

As set forth in Northpoint's comments, the patented Northpoint technology is fully capable of reusing spectrum in the 12.2-12.7 GHz band on a terrestrial basis to deliver local television programming to DBS consumers, as well as provide multi-channel video programming and high-speed Internet access without causing harmful interference to other services in the band. This technology holds the first real promise of presenting true competition to cable's near monopoly on the delivery of multichannel video programming distribution ("MVPD").² To demonstrate that its technology works,

² Recently, the Commission reported that locally franchised cable operators
(continued...)

Northpoint has submitted experimental test reports, engineering statements and technical annexes to the Commission. Some of these submissions have been on file with the Commission for over a year.

In this proceeding, a number of parties submitted comments challenging the viability of the Northpoint technology. Specifically, they allege that the Northpoint technology will cause harmful interference to DBS and proposed NGSO FSS services if licensed in the 12.2-12.7 GHz band.³ Moreover, several parties state that Northpoint's testing methodology was flawed and insufficient.⁴ For the most part, the comments submitted attack Northpoint's proposed service as unworkable without submitting any technical support whatsoever. In fact, to the extent parties submitted any technical analysis, the analysis was either very misleading or simply inaccurate. As fully explained below, the Northpoint system can be implemented in the 12.2 - 12.7 GHz band without

² (...continued)
have a virtual monopoly in the MVPD market by controlling 85 percent of that market. See In the Matter of Annual Assessment of the Status of Competition in Market for the Delivery of Video programming, Fifth Annual Report, CS Docket No. 98-102, FCC 98-335 (rel. Dec. 23, 1998)("1998 MVPD Report").

³ See DirecTV Comments at 24; EchoStar Comments at 13; USSB Comments at 9-10; SkyBridge Comments at 115; Sullivan Telecommunications Associates Comments at 10.

⁴ See, e.g., DirecTV Comments at 25-26; EchoStar Comments at 8-9; USSB Comments at 4, 9-10; SBICA Comments at 5-7; SkyBridge Comments at 111.

causing harmful interference to DBS and can coexist with the proposed NGSO FSS systems.

A. Northpoint Can Share with DBS Service Without Causing Harmful Interference

As Northpoint detailed in its comments, the Northpoint technology was designed specifically to operate in the 12.2-12.7 GHz band without causing harmful interference to DBS service.⁵ No DBS service provider has shown -- nor can show -- that Northpoint's proposed service would cause harmful interference.⁶

The first experimental test of the Northpoint technology to demonstrate its ability to share the 12.2-12.7 GHz band without causing harmful interference was conducted in October 1997 on the King Ranch property in Kingsville, Texas.⁷ The second test, which is still ongoing, is taking place in downtown Austin, Texas, and is designed to assess the viability of the Northpoint technology in an urban environment.

⁵ See Northpoint Comments filed on March 2, 1999 ("Northpoint Comments") at 17-19.

⁶ The Commission defines harmful interference as "*[i]nterference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service. . . .*" Because DBS is defined as a radiocommunication service, there must be serious degradation, obstruction or repeated interruptions to its service before DBS providers can claim that harmful interference has occurred. See 47 C.F.R. § 2.1.

⁷ The King Ranch is a large, privately-owned ranch which is larger than the state of Rhode Island. See Alan Peppard, *Day Calls for Fancy Dressing*, The Dallas Morning News, No. 25, 1998 at 33A.

Both experimental tests provide compelling evidence that the Northpoint technology works and does not cause harmful interference to DBS services.⁸

In its comments, DirecTV attacks Northpoint's test results as being "suspect" and "insufficient to warrant extrapolation."⁹ Specifically, DirecTV claims that Northpoint collected insufficient data, used multiple uncontrolled variables and used bandwidth test signals that did not replicate real world or worst-case scenarios.¹⁰ Although DirecTV, unlike most of the other commenters, submitted a technical annex, the technical annex contains numerous inaccuracies and uses a definition of harmful interference that is unsupported by Commission precedent and is entirely unrealistic.

(1) Co-frequency Sharing Among Northpoint, DBS and NGSO FSS Systems

DirecTV's technical annex to its comments treats the Northpoint system as one of five NGSO FSS systems for purposes of determining whether Northpoint will cause harmful interference into DBS. Apparently, DirecTV chooses this approach because of the current JTG 4-9-11 and WP 10-11S processes (under the auspices of the ITU-R), that have attempted to determine the feasibility of co-frequency sharing between DBS and NGSO FSS systems in the Ku-band.

⁸ See King Ranch Test Report, attached as Exhibit 4 to Northpoint Comments; See also Austin Test Report, attached as Exhibit 6 to Northpoint Comments.

⁹ DirecTV Comments at 25.

¹⁰ DirecTV Comments at 25.

All radio communication services raise the noise floor in the channel in which they operate. In the era of digital communications, a small increase in noise does not necessarily cause harmful interference, as defined by the FCC, because error correction and other techniques only available to digital services can mitigate the problem. Accordingly, with proper engineering techniques, significant increases in spectrum capacity can be achieved with little or no reduction in the level of availability for existing services. In any frequency sharing analysis the following questions need to be addressed: (1) how much noise is introduced by each system; (2) what is the impact of this additional noise on the availability of each service operating in the band; and (3) is this increased unavailability sufficiently small that it is worth the increase in spectrum capacity from co-channel operations. For example, Northpoint will increase the national spectrum capacity of the 12.2 – 12.7 GHz band by over 100 GHz of low cost, terrestrial bandwidth.

The current approach of JTG 4-9-11 and WP 10-11S assumes that the Commission will license between three and five NGSO FSS systems in the Ku-band. Based upon this assumption, interested parties have attempted to determine whether NGSO FSS and DBS can coexist by ascertaining the aggregate interference that all licensed NGSO FSS systems will cause into DBS. DirecTV assumes in its technical annex that Northpoint should be treated as one of these five hypothetical NGSO FSS

systems that will eventually be licensed.¹¹ Based upon this assumption, DirecTV then attempts to demonstrate that Northpoint does not meet the standards that may eventually be established for the NGSO FSS systems. Beyond the obvious fact that a terrestrial system, such as Northpoint transmitting from towers or buildings on earth, has very different characteristics from an orbiting satellite system, DirecTV's approach is flawed in many other respects.

DirecTV assumes an increased unavailability of 10 percent and arbitrarily assigns 2 percent (or 1/5) of this increased unavailability to Northpoint.¹² DirecTV provides no justification for this unavailability standard, and indeed, it is not based upon any legal definition of harmful interference. Moreover, the amount of increased unavailability (0.14 hours per year, or 42 seconds per month) that DirecTV now suggests is harmful, is 35 times more stringent than what DirecTV proposed to the Commission in 1994 (5.25 hours per year).¹³ DirecTV is asking the Commission to find that while a 10 percent increase (from NGSO FSS systems) is acceptable, a 2 percent increase (from terrestrial systems) would, somehow, be harmful. While it is clear that a 10 percent increase in unavailability is *not* harmful, it does not follow that this is an

¹¹ See Technical Annex to DirecTV Comments at 1.

¹² Id. at 3.

¹³ See DirecTV 1994 Report attached as Exhibit 3 at 15.

upper bound. Indeed, there is no relationship between the latest DirecTV proposed criteria, and any FCC definition of "harmful interference".¹⁴

Notwithstanding Northpoint's objections to this approach, the Northpoint system will actually on average cause significantly less reduction in availability than the proposed NGSO FSS systems. As demonstrated in the technical annex attached, even using the DirecTV proposed criteria, the *average* increase in unavailability from Northpoint is less than 0.5 percent.¹⁵ Compare this with the unavailability increase deemed acceptable from NGSO FSS: a uniform 10 percent throughout the DBS customer base.¹⁶ Therefore, an increase of 100 GHz in spectrum capacity created by Northpoint comes at a significantly lower price in unavailability than NGSO FSS. Yet, DirecTV is prepared to accept higher unavailability from NGSO FSS applicants, such as Hughes, while rejecting it from Northpoint.¹⁷

A better approach to determining the feasibility of co-frequency sharing among Northpoint, NGSO FSS and DBS is to use the results of the negotiations between DBS and NGSO FSS interests in the ITU-R process for their intended purpose: solely to determine the interference into DBS from NGSO FSS. After analyzing this

¹⁴ See 47 C.F.R. § 2.1.

¹⁵ See Technical Annex attached as Exhibit 1 at 15, Figure 3.

¹⁶ See Technical Annex of DirecTV at 6-17.

¹⁷ It is worth noting that Hughes is DirecTV's parent corporation.

interference, the Northpoint system should then be introduced to examine the following simple question: will the Northpoint system cause serious degradation or harmful interference? The answer to that question, as demonstrated in the technical annex attached hereto, is a resounding no.

Northpoint proposes the following criteria to be used to determine if there is harmful interference into DBS:

- Whether the average availability is degraded more than 0.006% (0.5 hours per year);
- Whether a peak degradation in availability more than 0.06% (5 hours per year) is caused; and
- Whether DBS availability drops below 99.7%.

These criteria provide more protection for DBS than those proposed by DirecTV to the Commission in 1994.¹⁸ Northpoint not only satisfies, but far exceeds all of these criteria.

The Northpoint approach is superior to the DirecTV approach for at least three reasons. First, it properly treats the Northpoint system as being fundamentally different than an NGSO FSS system. One crucial distinction between NGSO FSS systems and Northpoint is that the availability degradation from an NGSO FSS system into DBS is about the same for all DBS customers; whereas, the interference from Northpoint into DBS varies with location (because Northpoint's signal is more powerful

¹⁸ See DirecTV 1994 Report attached as Exhibit 3.

near the transmitter).¹⁹ As described in detail below, this distinction between temporal variation and geographic variation in interference requires a different standard for what constitutes harmful interference from Northpoint's system as compared to an NGSO FSS system.

Second, the Northpoint approach permits a separate analysis of the effects of introducing the Northpoint system into a dynamic environment where both DBS and NGSO FSS will also be operating, which makes the analysis much more reliable. In this regard, it is important to note that the ten percent increase in unavailability that DBS has accepted from NGSO FSS systems is not a threshold beyond which harmful interference necessarily will occur. Rather, it is a level of accepted interference agreed upon in the context of ITU-R negotiations for a variety of reasons. In fact, DBS can accept a much greater increase in unavailability before harmful interference will occur. Northpoint's approach to determining harmful interference allows interested parties to ascertain the appropriate level of interference that Northpoint's system may introduce into the dynamic DBS/NGSO FSS environment while being fully operational and not causing an increase in the unavailability of DBS sufficient to rise to the level of "harmful interference."²⁰

¹⁹ See Technical Annex attached as Exhibit 1 at page 19.

²⁰ For example, DirecTV's 1994 Report on Terrestrial Interference in the DBS Downlink Band in Section 4.2 describes a 20 percent increase in unavailability
(continued...)

Third, the DirecTV computation of "increase in unavailability" is based upon a moving target, a self-serving and self-assigned availability objective that varies throughout the country. The problem with this assumption is clear. For example, the DirecTV standard provides that 0.25 hours of outage in Seattle is more important than 2.5 hours of outage in Miami.²¹

DirecTV's technical annex claims an "availability objective" that imposes an unnecessary interference protection standard on Northpoint.²² DirecTV claims that its system needs an availability objective of 99.99 percent. Not only is DirecTV's system designed to achieve only a 99.7 percent availability objective, the Commission has proposed the same availability standard (*i.e.*, 99.7 percent) in this proceeding.²³ More importantly, DirecTV has represented to its own customers that they should expect no

²⁰ (...continued)
due to terrestrial sources as harmful interference. The technical annex hereto demonstrates that regardless of whether a 20 percent increase in unavailability is indeed the threshold, Northpoint's system--even after introducing five NGSO FSS systems into the analysis--will not cause sufficient interference to DBS to rise to the level of harmful interference. See Technical Annex attached as Exhibit 1 at 20-21.

²¹ See Technical Annex attached as Exhibit 1 at 13-14.

²² See Technical Annex attached as Exhibit 1 at Section 3.2.

²³ See NPRM at Table YY at 61.

more than a 99.7 percent availability.²⁴ DirecTV has no basis for claiming a required availability of 99.99 percent, and the Commission should reject all technical conclusions of DirecTV that rely in any way on a higher availability objective.

(2) DirecTV's Flawed Technical Annex Does Not Disprove Northpoint's Ability to Share without Causing Harmful Interference

In DirecTV's technical annex, DirecTV creates a hypothetical model of Northpoint's operations using numbers that in no way reflect the actual empirical data that Northpoint made available to both DirecTV and the Commission.²⁵ Not surprisingly, using DirecTV's hypothetical and self-serving assumptions, the DirecTV technical annex shows theoretically that Northpoint would cause harmful interference to DBS services. Consistent with its other erroneous submissions to the Commission, one section of DirecTV's analysis confuses the Northpoint "link budget" with the Northpoint "interference budget" to perform its analysis.²⁶ Again, this mistake results in inaccurate predictions about Northpoint's ability to share the Ku-band with DBS.²⁷ The DirecTV technical annex is riddled with many similar egregious mistakes.

²⁴ See DirecTV Manual Attachment attached as Exhibit 4.

²⁵ See Technical Annex attached as Exhibit 1 at 7-13.

²⁶ See Technical Annex attached as Exhibit 1 at 8-9.

²⁷ See Technical Annex attached as Exhibit 1 at 8-9.

For example, a key aspect of any interference analysis is the gain of the victim antenna towards the interfering source. Instead of using the actual gain, which DirecTV states varies -2 to -16 dB, DirecTV uses a gain of 0 dBi in all cases, causing an average error of 8 dB.²⁸ Furthermore, DirecTV completely ignores polarization isolation of 3 dB in its analysis.²⁹ These two errors alone are responsible for an average 11 dB overestimation in carrier-to-interference ("C/I ratio"). Instead of using the transmission power from Northpoint's actual operations, DirecTV's analysis assumes an altogether different, and much higher power for Northpoint's operations which results in predictions that Northpoint would cause unacceptable interference where it would not.³⁰ In its analysis, DirecTV also totally ignores the effect that natural shielding will have in helping to prevent harmful interference.³¹ Interestingly, DirecTV has never refuted the proposition that natural shielding will prevent interference from affecting a high percentage of DBS consumers.³² DirecTV also bases its interference analysis on DirecTV

²⁸ See DirecTV Technical Annex at 10.

²⁹ See Technical Annex attached as Exhibit 1 at 8.

³⁰ See Technical Annex attached as Exhibit 1 at Section 3.1.2.

³¹ See Technical Annex attached as Exhibit 1 at Section 3.1.1.

³² See Technical Annex attached as Exhibit 1 at 7.

reference system parameters that are completely different from its actual operating parameters.³³

Therefore, even without considering the benefits of natural shielding, the DirecTV analysis is in error by an average of at least 11 dB.³⁴ Not surprisingly, this same analysis shows the C/I ratio as approximately 28.6 dB in more than 50 percent of the Northpoint service area. However, the average DBS-Northpoint C/I ratio is over 40 dB, not 28.6 dB, as suggested by DirecTV. Although the DirecTV criterion is unreasonable, Northpoint meets it in 95 percent of its service area, not the 50 percent that DirecTV claims.³⁵ As shown in the technical annex (in the worst-case scenario of the Pacific Northwest), at an average C/I ratio of over 40 dB, *the average increase in outage due to Northpoint* is only 0.025 hours per year, *or 1.5 minutes per year*. The increase in outage-hours in 99 percent of the Northpoint service area is less than 0.35 hours per year, and the peak degradation will be about 2.5 hours per year.³⁶

DirecTV claims that even if Northpoint's testing was not flawed, the Northpoint test results showed that DirecTV's "service link availability was seriously

³³ See Technical Annex attached as Exhibit 1 at 9-12.

³⁴ See Technical Annex attached as Exhibit 1 at 10.

³⁵ See Technical Annex attached as Exhibit 1 at 15.

³⁶ Id. at 17-19.

degraded at all but one of Northpoint's test sites...."³⁷ DirecTV bases this conclusion on its review of part of Northpoint's Austin test results that measured Northpoint signals' impact on DBS signals through examining the signal power and signal strength pointer ("ssp") index. As fully explained in the technical annex, Northpoint relied on the ssp measure as a surrogate measure for the actual signal error rate based upon a recommendation from USSB.³⁸ DirecTV claims that in 29 out of 30 test sites the Northpoint signal caused serious degradation to the DBS signal based on the reduced ssp reference number.³⁹ This is simply not true. As detailed on Figure IV-6 of the Austin Test Report, the Northpoint signals never seriously degraded a DirecTV signal.⁴⁰ DirecTV apparently is relying on its colloquial definition of serious degradation. At best, the most that can be said of the ssp index is that the Northpoint signals were "detected," but the ssp index did not even come close to showing any signal degradation.⁴¹

³⁷ See DirecTV Comments at 26.

³⁸ Northpoint could not test the actual signal error rate because DBS providers have not made certain proprietary information and special hardware available to Northpoint. See Austin Test Report at 7.

³⁹ DirecTV Comments at 26.

⁴⁰ See Austin Test Report at Figure IV-6. See also Declaration of Carmen Tawil attached as Exhibit 2 ("C. Tawil Decl."); Declaration of Saleem Tawil attached as Exhibit 2 ("S. Tawil Decl.").

⁴¹ Id.

DirecTV also makes the assertion that "Northpoint's experimental reports make no mention or measurement of the DBS antenna sidelobe patterns...."⁴² This statement is not true. In the first Northpoint field test at the King Ranch, the subject receive antenna was tested and the results were published in the Experimental Testing Report 1997 Kingsville Tests.⁴³ In addition, all other contours which have been provided on numerous occasions to the Commission, have taken into account the receive antenna pattern, including of course, its sidelobes.

DirecTV also states that "field signal meter data were collected by one person reading the signal level meter, performing a mental average of a number of samples...." At no time did any Northpoint personnel perform mental averaging.⁴⁴ Readings were simply read from the meter and recorded for later analysis. Ironically, this method was suggested by the DirecTV personnel. Also, DirecTV suggests that Northpoint finds it acceptable to have a signal reading on the signal strength meter of 10.⁴⁵ This assertion is absolutely unsupported by any documents ever submitted by

⁴² See Technical Annex to DirecTV Comments at 19.

⁴³ See King Ranch Test Report at 46-59, attached as Exhibit 4 to Northpoint Comments.

⁴⁴ See C. Tawil Decl. attached as Exhibit 2 at ¶ 9; See also S.Tawil Decl. Attached as Exhibit 2 at ¶ 7.

⁴⁵ DirecTV Technical Annex at 21.

Northpoint to the Commission or anywhere else.⁴⁶ Northpoint has simply pointed out that the DBS signal was lost once the reading fell below 10.

In keeping with its theme, DirecTV twice makes the completely erroneous statement that "regardless of whether Northpoint interference *completely eliminates a subscriber's picture*, its consequences are no less severe for DBS subscribers...."⁴⁷ It is a basic principle of digital technology that digital reception is either present or not.⁴⁸ Therefore, for the DBS subscriber the consequences (regardless of available error correction or coding gain) are that either they have reception or they do not. This lack of understanding or omission on DirecTV's part is a major blunder which undermines all of its other analysis. DirecTV also insinuates that Northpoint was being dishonest when it disregarded certain data due to testing equipment failure. In its technical annex DirecTV states that "Cases A and B represent data taken with DirecTV present but not reported by Northpoint due to an alleged calibration problem. However, DirecTV could not support such a finding and believes the data to be worthy of consideration."⁴⁹ DirecTV is referring to an incident which occurred during testing where a rented

⁴⁶ See C. Tawil Decl. attached as Exhibit 2 at ¶ 10.

⁴⁷ See DirecTV Comments at 27 (emphasis added); DirecTV Technical Annex at 27.

⁴⁸ See C. Tawil Decl. attached as Exhibit 2 at ¶ 6; S. Tawil Decl. attached as Exhibit 2 at ¶ 4.

⁴⁹ See Technical Annex to DirecTV Comments at 25.

spectrum analyzer malfunctioned. Upon discovering a defect in the equipment, Northpoint informed DirecTV that some of the readings taken while DirecTV was present must be repeated with a properly functioning spectrum analyzer.⁵⁰ To attest to the fact that the original spectrum analyzer was indeed faulty, please see the attached statement from Metric Equipment and repair verification from Hewlett Packard.⁵¹

(3) Other Specious and Unsubstantiated Criticisms of Northpoint's Testing Are Not Worthy of Consideration

EchoStar makes numerous unsubstantiated claims in its comments. For example, EchoStar claims that Northpoint's testing was incomplete because it only examined DBS satellite reception from 101° W.L. and 119° W.L. and not at 61.5° W.L. or 148° W.L.⁵² EchoStar's argument overlooks important facts. First, Northpoint conducted its testing based upon the only commercially available DBS signals in Austin, Texas--101° W.L. and 119° W.L. Second, the analysis and calculations that Northpoint performed and submitted to the Commission took into account all orbital positions. As can be clearly seen from these submissions, and specifically the C/I contours that were provided, the orbital positions (as seen from Austin) that are the most sensitive to potential interference are 101 and 119, the field tested orbital positions. Furthermore, if

⁵⁰ See C. Tawil Decl. attached as Exhibit 2 at ¶ 7; S. Tawil Decl. attached as Exhibit 2 at ¶ 5.

⁵¹ See Metric Letter attached as Exhibit 5.

⁵² USSB Comments at 11; EchoStar Comments at 9.

EchoStar will authorize reception in Austin for its orbital slots, Northpoint will gladly perform testing to prove that the Northpoint technology works just as well at these orbital positions as with those orbital positions already tested.

USSB and EchoStar also contend that Northpoint did not adequately analyze multipathing (*i.e.*, interference exacerbated by reflections off nearby buildings or other reflective surfaces).⁵³ Northpoint performed substantial work and actual readings were provided on test sites that were specifically identified to reveal the impact of multipathing on both DBS service and Northpoint's service. Northpoint's test results revealed that Northpoint's technology operated effectively without causing harmful interference to any DBS service even with multipathing. EchoStar and USSB also suggest that Northpoint used an unacceptable standard for measuring harmful interference (*i.e.*, user detectable standard).⁵⁴ As a preliminary matter, no commenter claims that any of its customers experienced serious degradation to their signal or a repeated interruption that could be attributed to Northpoint's operations.⁵⁵

⁵³ See EchoStar Comments at 10; USSB Comments at 11. Some NGSO FSS commenters made the same argument. See Virtual Geo Comments at 26; SkyBridge Comments at 113.

⁵⁴ EchoStar Comments at 11; USSB Comments at 6-9.

⁵⁵ The Commission's standard for determining whether harmful interference has occurred is (1) serious degradation or obstruction or (2) repeated interruptions. See 47 C.F.R. § 2.1.

As Northpoint has previously set out in its comments, DBS service needs a clear sky C/I ratio of 5 dB from Northpoint to avoid experiencing harmful interference.⁵⁶ Even with rain and making worst-case assumptions about other sources of noise, DBS providers only need a C/I ratio of 9 dB to avoid harmful interference.⁵⁷ The Northpoint technology achieves a C/I ratio of 20 dB or greater in 99.8 percent of its reliable service area as a matter of course.⁵⁸ In fact, Northpoint achieves a C/I ratio of 17 dB in 100 percent of its reliable service area.⁵⁹ This level of protection is more than enough to prevent any harmful interference from occurring. Northpoint's transmissions will not cause a loss of DBS signals in clear air.⁶⁰ More importantly, this reveals why no DBS provider has claimed that any actual interference occurred during Northpoint's experimental testing. DirecTV's contention that Northpoint's own test results showed serious degradation to DBS signals is simply wrong.⁶¹

Additionally, we note that Northpoint invited the DBS providers to participate in its planned testing. Therefore, the critics of Northpoint's testing methods

⁵⁶ See Northpoint Comments at 18; See also Technical Annex to Northpoint Comments at 12-16.

⁵⁷ See Technical Annex of Northpoint Comments at 14.

⁵⁸ Id. at 12-16.

⁵⁹ Id.

⁶⁰ See Technical Annex attached as Exhibit 1 at 22.

⁶¹ DirecTV Comments at 26.

had ample opportunity to advise Northpoint in its testing. Only DirecTV and USSB agreed to participate, but they chose to have only minor involvement. It stands to reason that if there were true concerns with Northpoint causing interference, then DBS providers would have been more fully involved in planning the experimental testing. In the absence of actual interference, however, these same parties now deride Northpoint's testing as highly suspect, insufficient, and flawed.⁶²

During the Austin testing, Northpoint had prepared a detailed test program and provided it in draft form to both DirecTV and USSB. Northpoint incorporated all suggestions offered by either party into the test program. As a part of the program, Northpoint established a hotline between DirecTV's national call center and the Northpoint transmitter. The rationale for this hotline was that if any of DirecTV's customers lost their service they would likely call DirecTV's 800 number to inquire or complain about the service. Upon receiving such a call, the procedure called for DirecTV to contact the Northpoint hotline and for Northpoint to turn off the transmitter. If the customer's signal was corrected, one could conclude that the outage was due to Northpoint's operations.⁶³ During the month of December when testing was con-

⁶² See DirecTV Comments at 25; EchoStar Comments at 9; and USSB Comments at 6.

⁶³ Northpoint offered to mail every DirecTV customer a postcard informing them of the hotline number should they experience any interference during the test period. DirecTV refused to allow Northpoint to send the mailing.

ducted during all weather conditions, including heavy rain, there was not a single call to this hotline that was attributable to interference by the Northpoint system. DirecTV does not dispute this fact. DirecTV's claim that Northpoint cannot take any comfort in the fact that not a single call came into the Northpoint hotline because Northpoint did not provide adequate notice is a red herring. As required by its experimental license, Northpoint published a notice in the local paper giving the dates of operations and the hotline number for DBS subscribers to call. At DirecTV's request, Northpoint placed the information in the legal notices section of the newspaper, rather than as a display ad as Northpoint had planned. Now DirecTV derides the size and placement of the newspaper notice while conveniently ignoring the fact that Northpoint placed the ad in the manner that DirecTV requested.⁶⁴ Moreover, DirecTV customers would not have needed to rely on Northpoint to apprise them of DirecTV's 800 number even if DirecTV believed that Northpoint's notice of its own hotline number was insufficient.

In fact, no DBS operator has offered any evidence whatsoever that Northpoint's operations in Austin disrupted any customer's reception. Since it cannot offer any direct evidence of actual interference, DirecTV now suggest that its subscribers, despite paying a substantial monthly fee for service, would not call DirecTV to

⁶⁴ In fact, Northpoint also offered to provide, at Northpoint's expense, a mailout notification for all of DirecTV's subscribers in the test area. DirecTV declined the offer.

report an outage. The more likely explanation for the lack of customer complaints is that Northpoint's service did not cause any interference.

Northpoint respectfully disagrees with the DirecTV suggestion that they made a good faith effort to cooperate in Northpoint's testing.⁶⁵ DirecTV offered the use of equipment to allow for a 24MHz test when Northpoint had stated plans to modify its own transmitter. As the test date neared for the 24 MHz test, DirecTV informed Northpoint that the promised equipment was not available, and requested that Northpoint delay testing. Northpoint chose to test as scheduled using its own transmitter operating at 8 MHz. Northpoint has since modified its transmitter and successfully conducted the 24 MHz test, the results of which will be submitted to the Commission shortly.

DirecTV also promised to provide a variety of test equipment, including equipment necessary to perform Bit Error Rate (BER) testing. DirecTV did not provide a single piece of the promised equipment. In fact, when Northpoint independently located equipment to perform the BER test, DirecTV informed Northpoint that the equipment was not "certified by DirecTV" and, thus, the results would not be considered valid by DirecTV. Finally, DirecTV contends that there is nothing new or novel about

⁶⁵ DirecTV Technical Annex at 1.

the Northpoint technology. The United States Patent and Trademark Office obviously disagrees with DirecTV; the Northpoint technology has two U.S. patents.⁶⁶

B. Given the Numerous Methods for Sharing Ku-band Spectrum Proposed by Northpoint and Others, the FCC Can Easily Accommodate All NGSO FSS Applicants As Well As Northpoint in the Ku-band

As described in its comments, Northpoint can share the Ku-band with FSS systems -- without causing or receiving harmful interference -- if some simple techniques are employed.⁶⁷ These techniques include terrestrial arc avoidance, satellite diversity, and alternate beam assignment.⁶⁸

(1) The HEO Applicants Propose An Acceptable Method to Facilitate Sharing

In addition to the sharing techniques proposed by Northpoint, two applicants recommended that the Commission grant special regulatory treatment for NGSO FSS systems employing highly elliptical orbit ("HEO") configurations. The HEO configuration -- which, as discussed below, has essentially the same effect as Northpoint's terrestrial arc avoidance proposal -- represents another method by which

⁶⁶ See U.S. Patents No. 5,483,663 (January 9, 1996) by – Saleem Tawil of DCE and No. 5,761,605 (June 2, 1998) – by Saleem Tawil and Carmen Tawil of DCE, Austin, TX.

⁶⁷ Northpoint Comments at 26.

⁶⁸ Hughes also supports the technique of satellite diversity as a means of promoting sharing in the Ku-band. See Hughes Comments at 4.

the Commission could promote spectrum sharing in the Ku-band and expeditiously license all applicants in this proceeding. Accordingly, Northpoint generally supports Virtual Geo's proposal that the Commission grant preferential regulatory treatment to NGSO systems in the Ku-band that employ a highly elliptical orbit configuration.⁶⁹ Northpoint likewise commends Denali for urging the Commission to acknowledge the great variety of NGSO system configurations (LEO, MEO and HEO) and the inherent inefficiencies of the LEO and MEO systems proposed by, among others, SkyBridge and Hughes.⁷⁰

As described in detail in the Virtual Geo Comments, HEO configurations are characterized by highly elliptical orbits where the apogee of the satellite's orbit lies over a populated region such as North America.⁷¹ HEO satellites appear (almost) stationary from the terrestrial viewer's perspective and, therefore, possess many of the characteristics of a traditional GEO system, primarily because the arcs of HEO satellites

⁶⁹ Virtual Geo Comments at 3. Virtual Geo endorses the virtual geostationary orbit, or VGSO, configuration employed by its VIRGO system. VGSO is one type of highly elliptical orbit configuration. Another type of highly elliptical orbit configuration is the quasi-geostationary orbit proposed by Denali Telecom, L.L.C. ("Denali").

⁷⁰ Denali Comments at 3-4.

⁷¹ Virtual Geo Comments at 4-6.

are only "active" when the satellites are at high latitudes and high elevation angles.⁷²

While Virtual Geo relies on this technical aspect of HEO systems to argue that "[i]t is as if the GSO arc . . . did not exist, and the [HEO]-type NGSO FSS system were being established in unused spectrum"⁷³, the same principle of reharvesting unused spectrum through the use of narrow "look angles" and proper elevation angles applies equally as well to the Northpoint system.⁷⁴

As noted above, Northpoint endorses the technique of terrestrial arc avoidance as perhaps the best means of accommodating the NGSO systems in the Ku-band in a manner that will not interfere with the Northpoint system.⁷⁵ While the LEO-type NGSO FSS systems such as SkyBridge would need to alter their systems as presently designed in order to practice terrestrial arc avoidance, the HEO systems always operate at elevation angles greater than 20 degrees--an elevation angle sufficient to protect the Northpoint system.⁷⁶ Therefore, these applicants would not need to alter their systems to accommodate Northpoint. Accordingly, preferential regulatory

⁷² As noted by Denali, "earth stations tracking such satellites essentially point in a fixed direction similar to the GSO systems." Denali Comments at 3.

⁷³ Virtual Geo Comments at 7.

⁷⁴ See Technical Annex to Northpoint Comments of 2 March 1999.

⁷⁵ See Technical Annex attached as Exhibit 1 at 28.

⁷⁶ Technical Annex to Comments of 2 March 1999.

treatment of HEO systems may present the Commission with an additional means of promoting sharing in the Ku-band, and allow the Commission to expeditiously license all of the pending Ku-band applications.

(2) The Commission Should Confirm that the Proposed NGSO FSS Systems and the Proposed Northpoint System Are Co-Primary

As the Commission develops a regime to permit sharing in the Ku-band, it should correct the mistaken claims of certain NGSO FSS commenters that their systems would not be required to protect Northpoint from harmful interference. For example, Virtual Geo claims that it would not be required to protect the Northpoint system because Northpoint would be operating on a secondary basis to NGSO FSS systems.⁷⁷ As noted in its comments, Northpoint has proposed that its system should be *co-primary* with NGSO FSS systems.⁷⁸ Accordingly, NGSO FSS systems and Northpoint would be required to coordinate with each other, and Northpoint would not be required to accept harmful interference from Virtual Geo or any other NGSO FSS system.⁷⁹ The Commission has recognized Northpoint's position in the NPRM.⁸⁰

⁷⁷ Virtual Geo Comments at 27.

⁷⁸ Northpoint Comments at 26.

⁷⁹ Northpoint Comments at 26.

⁸⁰ NPRM at ¶ 91, fn. 157.

SkyBridge likewise claims that the Commission should not permit Northpoint's system to be co-primary with NGSO FSS.⁸¹ SkyBridge notes in its comments--as Northpoint did in its comments--that BSS and NGSO FSS are co-primary internationally.⁸² SkyBridge fails to mention, however, that the NGSO FSS and the fixed service (FS) are co-primary under the ITU Radio Regulations.

C. The Commission Should Dismiss Claims by the NGSO FSS Applicants That Northpoint Cannot Share the Ku-band with NGSO FSS Systems Because They Provide No Technical Support Whatever for Their Assertions

Given the highly technical nature of the debate surrounding the ability of Northpoint's system to share the Ku-band with NGSO FSS users, it is surprising that not a single NGSO FSS applicant supplied a technical study of sharing issues between the Northpoint system and its own. In this regard, the assertions of these commenters amount to little more than rhetoric. For example, despite the claims of both Virtual Geo and Denali that the Northpoint system will cause unacceptable interference *into* NGSO FSS systems,⁸³ Northpoint has demonstrated that its system can share the Ku-band with NGSO FSS users without causing them harmful interference.⁸⁴ Boeing and SkyBridge

⁸¹ SkyBridge Comments at 111.

⁸² Id.

⁸³ Neither claim is supported by any technical analysis.

⁸⁴ Technical Annex to Northpoint Comments at 20-36.

also assert--without any technical support whatsoever--that Northpoint's system cannot coexist with NGSO FSS users in the Ku-band. Until these NGSO FSS applicants produce technical studies to refute the findings of Northpoint in the record, the Commission should simply dismiss their claims that Northpoint cannot share spectrum with them in the Ku-band.

Moreover, the few specific technical statements made in the NGSO FSS comments are erroneous. For example, SkyBridge attempts to argue that Northpoint's technical parameters are not credible, claiming that the "system noise floor proffered by Northpoint bore no relationship to the requirements of any viable FS system . . . [and] the stated performance objectives had no demonstrable justification."⁸⁵ Northpoint directs the Commission's attention to page 4 of the Annex attached hereto for complete support regarding Northpoint's system noise floor and pages 7-10 of the Technical Annex to Northpoint's Comments for the justification for Northpoint's performance objective.⁸⁶

⁸⁵ SkyBridge Comments at 112.

⁸⁶ SkyBridge claims that there is an "astonishing discrepancy" between Northpoint's maximum transmit EIRP values described before the ITU and the Commission. See SkyBridge Comments at 112. Northpoint's proffered EIRP values have been appropriate in each forum where they have been presented. While the number submitted to the ITU represents a range of average values, the other numbers represent the maximum value for which a license authorizes operation. See also Technical Annex attached as Exhibit 1 at 6; Technical Annex to Northpoint Comments at 2, fn.2.

SkyBridge also argues that Northpoint's system must be "tested using universally accepted methodologies."⁸⁷ As SkyBridge is well aware, however, there are no universally accepted criteria by which to measure interference between a point-to-multipoint directional FS system and an NGSO FSS system. Until such a methodology is developed, Northpoint, SkyBridge and others must base their assertions on their own technical studies, which Northpoint has continued to do throughout this proceeding. If SkyBridge wishes to challenge these technical studies of Northpoint, it should do so in this proceeding.

Finally, Northpoint notes that Virtual Geo argues that the Commission should exclude Northpoint from the Ku-band because, "[a]s the Commission is well aware, sharing between point-to-multipoint fixed services . . . and NGSO FSS ubiquitous user terminals is not feasible."⁸⁸ SkyBridge makes essentially the same argument.⁸⁹ The proceedings to which Virtual Geo and SkyBridge cite as support for this argument, however, involve sharing between NGSO FSS and point-to-multipoint, *multi-directional* systems.⁹⁰ The Northpoint system is *uni-directional*. This fundamental distinction

⁸⁷ SkyBridge Comments at 113, fn. 236.

⁸⁸ Virtual Geo Comments at 26.

⁸⁹ SkyBridge Comments at 115.

⁹⁰ Virtual Geo Comments at 27 (citing DEMS proceeding); SkyBridge Comments at 115 (citing LMDS and DEMS proceedings). In addition to the fact
(continued...)

makes the Commission's prior conclusions with respect to sharing between NGSO FSS systems and point-to-multipoint systems inapplicable to the Northpoint system. As Northpoint has reiterated throughout this proceeding, the directional nature of its system makes sharing possible where it otherwise would not be. Accordingly, the Commission should dismiss the argument that Northpoint cannot share the Ku-band with NGSO FSS systems simply because the Commission -- *in wholly different proceedings dealing with entirely different types of point-to-multipoint systems* -- concluded that terrestrial/NGSO FSS sharing was not feasible.

⁹⁰ (...continued)
that these proceedings both involved multi-directional point-to-multipoint systems, the Commission determined that DEMS could not share the spectrum with certain satellite services for national security reasons. Amendment of the Commission's Rules to Relocate the Digital Electronic Message Service from the 18 GHz Band to the 24 GHz Band and to Allocate the 24 GHz Band for Fixed Service, 12 FCC Rcd 3471, ¶ 6 (1997). Given the lack of technical detail surrounding these classified government satellite systems, the DEMS proceeding provides no support whatsoever for these assertions regarding the feasibility of sharing between satellite and terrestrial systems.

II. NORTHPOINT REQUIRES DEPLOYMENT IN THE 12.2-12.7 GHz BAND

A. Deployment in the 12.2-12.7 GHz Band Will Enable Rapid and Economical Deployment

DirecTV, EchoStar, USSB, SkyBridge and Boeing all claim that Northpoint's service is no different from other wireless services, such as LMDS or MMDS, and should be shifted to another band.⁹¹

As noted in its comments, however, Northpoint cannot deploy its technology in another band without incurring substantial costs and time delays associated with developing different equipment to operate in those bands, a problem which has contributed to the failure of LMDS and MMDS to stimulate cable competition.⁹² The success of DBS and other satellite systems has resulted in dramatic reductions in the price of receiving equipment which could not be achieved for many years, if ever, were Northpoint required to operate in a different band (as were MMDS and LMDS). Set top boxes from multiple manufacturers are available within this band for \$99 - \$249. This is the result of the "experience curve" where consumer equipment drops greatly in price as more units are sold. Since Northpoint will operate in the same band using the same digital processing as standard DBS, Northpoint's end-user antenna can be con-

⁹¹ See DirecTV Comments at 28; EchoStar Comments at 13-14; USSB Comments at 4; SkyBridge Comments at 116; and Boeing Comments at 88-89.

⁹² 1998 MVPD Report at ¶¶ 81-87.

nected to existing commercially available receivers and the local programming can be decoded.⁹³ Northpoint's innovative reuse of the 12.2-12.7 GHz band essentially creates 105 GHz of total spectrum throughout the 211 DMAs in the U.S. and thus promotes an important Commission objective of efficient spectrum use.⁹⁴

The cost of transmission equipment available in the 12.2-12.7 GHz band has also been greatly reduced. This will result in low cost deployments in the 211 television markets where the BroadwaveUSA affiliate network intends to operate. These cost savings will be passed on to consumers and, consequently, increase competition to cable. DirecTV cannot currently provide effective competition to cable because of its high monthly subscription rate.⁹⁵ The arguments to shift Northpoint's proposed service to another band, if followed, would lead to repeating the same mistakes made in

⁹³ SkyBridge also claims that Northpoint's system should not be licensed by the Commission because DBS providers will refuse to grant Northpoint access to the DBS hardware in order for Northpoint to install its system. SkyBridge Comments at 110. Cable Operators Plan Rate Hikes. Media Daily (Cowles-SIMBA Information), Dec. 9, 1997 (reporting that DirecTV faced "pricing blues" as it increased rates).

⁹⁴ 47 USC §§ 151, 303(f), (g).

⁹⁵ *Cable Operators Plan Rate Hikes*, Media Daily, Dec. 9, 1997 (reporting that DirecTV faced "pricing blues" as it increased rates).

other efforts to compete with cable. This low cost approach to competing with cable is also timely given the Commission's recognition of the steep rise in cable rates.⁹⁶

In reviewing other efforts at establishing wireless competitors to cable, the lack of existing low cost off-the-shelf consumer equipment proved to be a limiting factor.⁹⁷ For example, wireless cable providers do not have equipment that is available at attractive price levels for consumer electronics retailers.⁹⁸ This has forced many wireless cable providers to lease equipment to consumers. The high capital cost of this leased equipment, which is borne by the provider, is recognized as one of the factors that has undermined the financial viability of a number of the wireless cable operators.⁹⁹ Recently, the largest wireless cable operator in the U.S. ceased trying to compete with cable and dropped its standalone MVPD service because of the high capital cost of building out its system.¹⁰⁰ The low cost of readily available consumer and transmission equipment will be a key factor in the successful launch of Northpoint and its

⁹⁶ 1998 MVPD Report at ¶¶ 8-9.

⁹⁷ Monica Hogan, *CS Wireless Tries to Avoid CAI Bankruptcy Shadow*, MULTICHANNEL NEWS, Jul. 13, 1998, at 54.

⁹⁸ Id.

⁹⁹ *S&P Says Analog Wireless Cable Isn't Viable, Downgrades Industry*, COMM DAILY, Apr. 17, 1998, at 2.

¹⁰⁰ *Heartland Wireless And Wireless One Dropping Video Focus*, COMM DAILY, Mar. 22, 1999, at 1-2.

BroadwaveUSA affiliates, and is in stark contrast to the high equipment costs that have crippled the wireless cable industry. The Commission's recent report on the status of competition in the MVPD market fully supports the foregoing assertions.¹⁰¹

As Northpoint stated in its comments, by deploying the Northpoint technology in the 12.2-12.7 GHz band, the Commission can leverage the experience curve for the benefit of consumers and can solve the DBS local signal problem while at the same time maximizing spectrum efficiency. No other band provides such an opportunity. Denying Northpoint authorization in this band will only serve to further delay any real competition to cable. DirecTV claims that Northpoint can provide its service from any other band by simply using a downconverter and separate antenna which its service contemplates using anyway.¹⁰² The very purpose of the Northpoint technology is to reuse spectrum and use existing equipment to provide its service. Northpoint would not be able to take advantage of the "experience curve" that already exists with respect to both consumer and transmission equipment in this band. Besides, providing service from another frequency is not the seamless solution contemplated by the Northpoint technology.

¹⁰¹ See 1998 MVPD Report at ¶¶ 81-87.

¹⁰² See DirecTV Comments at 29; HBO/Turner Comments at 6; and Denali Comments at 14.

B. The Commission Has Only Shifted Terrestrial Services Out of the 12.2-12.7 GHz Band That Could Not Share With DBS

DirecTV, Denali and HBO/Turner¹⁰³ argued that licensing Northpoint's service in the 12.2-12.7 GHz band would run counter to a long standing Commission policy of moving wireless terrestrial services out of the 12.2-12.7 GHz band.¹⁰⁴ Again, these comments manifest a complete lack of understanding of the Northpoint technology. First, the Commission has only shifted certain terrestrial services out of the 12.2-12.7 GHz band that could not share with DBS without causing harmful interference.¹⁰⁵ Second, the terrestrial systems that the Commission moved out of the band were point-to-point multidirectional systems.¹⁰⁶ Most, if not all of which, were analog systems. The Northpoint technology is an innovative use of a point-to-multipoint directional system that allows for digital sharing. Point-to-point systems differ from Northpoint's system in many respects. Point-to-point systems typically have EIRP levels of at least

¹⁰³ HBO and Turner filed joint comments.

¹⁰⁴ See DirecTV Comments at 30; HBO and Turner Comments at 6.

¹⁰⁵ See In re Inquiry into the Development of Regulatory Policy in Regard to Direct Broadcast Satellites for the Period Following the 1983 Regional Administrative Radio Conference, Report and Order ¶ 67 (1982).

¹⁰⁶ See Initiation of Direct Broadcast Satellite Service -- Effect on 13 GHz Terrestrial Point-to-Point Licensees in the Private Operational Fixed Radio Service, Public Notice 10 FCC Rcd 1211 (1994) (noting the Commission's concern that terrestrial point-to-point licensees might cause interference with DBS).

60 dB (*i.e.*, 1,000,000 times) greater than Northpoint.¹⁰⁷ Moreover, point-to-point systems are randomly oriented and transmit along any azimuth.¹⁰⁸ Northpoint, on the other hand, is oriented in a generally southern direction and not randomly.¹⁰⁹ In addition, Northpoint's point-to-multipoint system will have a lower noise floor, lower transmit power and lower required availability as compared to point-to-point technology.¹¹⁰ Accordingly, as noted above, the directional nature of Northpoint's system is fundamentally different than any other point-to-point FS system and, therefore, simplified maxims such as no sharing between ubiquitously deployed terrestrial and satellite services do not apply.

III. NORTHPOINT REMAINS WILLING TO SUPPLEMENT DBS AND OFFER ITS OTHER VALUABLE SERVICES TO THE PUBLIC

In light of the lack of technical support offered to support contentions that Northpoint would cause interference in the 12.2-12.7 GHz band, it appears that the true underlying problem for many commenters lies with the potential competition that Northpoint may introduce to the market. Thus, a number of commenters have given an inordinate amount of attention to Northpoint's business plan. EchoStar claims that

¹⁰⁷ See Technical Annex attached as Exhibit 1 at 4.

¹⁰⁸ Id.

¹⁰⁹ Id.

¹¹⁰ Id.

Northpoint has "changed its emphasis" to compete with DBS.¹¹¹ DirecTV states that Northpoint "now pitches its concept as a full-blown competitive MVPD service...."¹¹² SkyBridge contends that Northpoint has abandoned its plan to supplement DBS.¹¹³ The questions surrounding Northpoint's business plan simply evidence the objectors' anticompetitive focus and are no basis for further delay in the authorization of Northpoint's service.¹¹⁴ Some of the same parties that are questioning Northpoint's business plan are the companies who have rejected Northpoint's initiatives to solve the local signal problem. When Northpoint first approached DBS service providers about supplying local signals, they gave Northpoint, at best, a lukewarm reception. As explained above, DirecTV has even hindered, not helped Northpoint's experimental testing activities.

Northpoint, of course, does not need a relationship with DBS service providers to solve their biggest problem for them as it could deliver local signals directly

¹¹¹ EchoStar Comments at 14.

¹¹² DirecTV Comments at 4.

¹¹³ SkyBridge Comments at 109.

¹¹⁴ See e.g., DirecTV Comments at 29; EchoStar Comments at 14; and SkyBridge Comments at 109.

to subscribers.¹¹⁵ Although Northpoint remains ready to work with DBS, it can offer local signals and much more directly to the public, competing with both DBS and cable.

IV. CONCLUSION

As fully explained above and in the attached exhibits, the Northpoint technology fosters efficient spectrum use and can be easily deployed at a low cost to consumers. The Northpoint technology can be implemented in the 12.2-12.7 GHz band on a non-interference basis. Accordingly, Northpoint should be licensed as co-primary with NGSO FSS and secondary to DBS. No commenter has presented credible evidence to refute Northpoint's test results. Instead, commenters have dwelled on Northpoint's business plans. This signals that the true motive behind their attacks is fear that the Northpoint system will promote true competition to cable, advance the goals of spectrum efficiency and provide consumer benefits.

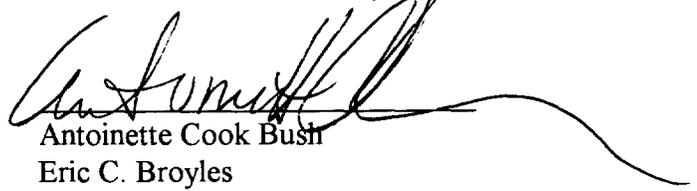
¹¹⁵ DBS service providers have consistently complained that they lack the capacity to provide local programming. *See Echostar Plans Launch of Spot Beam Birds to Offer Local Signals*, SATELLITE NEWS, April 12, 1999; *Satellite Battle Rages over Network Programs*, San Jose Mercury News, Feb. 25, 1999.

In light of the substantial public interest benefits of Northpoint's proposed service, the Commission should promptly adopt rules to allow Northpoint and its affiliates to commence service in the 12.2-12.7 GHz band.

Respectfully submitted,

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