ORAL ARGUMENT SCHEDULED FOR DEC. 3, 2021

No. 21-1123 (and consolidated cases)

IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

VIASAT, et al.,

Appellants,

v.

FEDERAL COMMUNICATIONS COMMISSION

Appellee/Respondent,

UNITED STATES OF AMERICA,

Respondent,

SPACE EXPLORATION HOLDINGS, LLC,

Intervenor.

On Appeal of an Order of the
Federal Communications Commission

FINAL OPENING BRIEF FOR APPELLANT DISH NETWORK CORPORATION

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October 26, 2021

CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

Pursuant to D.C. Circuit Rule 28(a)(1), Appellant DISH Network Corp. certifies as follows:

A. Parties

Appellants

The Appellants in this matter are (1) DISH Network Corporation (Case No. 21-1127), (2) Viasat, Inc. (Case Nos. 21-1123 and 21-1125), and (3) The Balance Group (Case No. 21-1128).

Appellee / Respondents

The Federal Communications Commission is an Appellee and Respondent in this case and the United States of America is a Respondent.

Intervenor

Space Exploration Holdings, LLC ("SpaceX") is an intervenor in the consolidated case.

B. Rulings Under Review

DISH, Viasat, and the Balance Group have sought judicial review of the final Commission order captioned *Space Exploration Holdings, LLC; Request for Modification of the Authorization for the SpaceX NGSO Satellite System*, 36 FCC Rcd. 7995 (2021).

C. Related Cases

1. Viasat, Inc. v. FCC, Case Nos. 21-1123, 21-1125
2. DISH Network Corp. v. FCC, Case No. 21-1127
3. The Balance Group v. FCC, Case No. 21-1128

CORPORATE DISCLOSURE STATEMENT

DISH Network Corporation is a publicly traded corporation on the NASDAQ Global Select Market under the symbol "DISH." It has no publicly held subsidiaries. Its subsidiaries operate pay-TV and wireless businesses. No publicly held corporation owns 10% or more of its stock except for Dodge & Cox.

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GLOSSARY

12 GHz band	The portion of the electromagnetic spectrum ranging from 12.2-12.7 GHz
Communications Act	Communications Act of 1934, as amended, 47 U.S.C. §§ 151, *et seq.*
The Commission	Federal Communications Commission
First Study	DISH Feb. 15, 2021 Letter (attaching *EPFD Assessment of SpaceX into DISH Ku-band GSO Networks*) (JA0111-68)
GHz	Gigahertz
Order	*Space Exploration Holdings, LLC Request for Modification of the Authorization for the SpaceX NGSO Satellite System*, 36 FCC Rcd. 7995 (2021) (JA0014-70)
Second Study	DISH Mar. 25, 2021 Letter (attaching *EPFD Assessment of SpaceX into DISH Ku-band GSO networks located in the United States*) (JA0172-99)
Third Study	DISH Apr. 23, 2021 Letter (attaching *EPFD Assessment of SpaceX with multiple frequency reuse into DISH Ku-band GSO receivers located in the United States*) (JA0217-46)

STATEMENT OF JURISDICTION

This Court has jurisdiction under 47 U.S.C. § 402(b)(6). The Order was released on April 27, 2021, and DISH timely filed its notice of appeal on May 27, 2021. *See* 47 U.S.C. § 402(c); 47 C.F.R. § 1.4(b)(2).

STATEMENT OF THE ISSUES

1. Whether the Commission's failure to consider unrebutted studies demonstrating that SpaceX's modification would cause impermissible interference to DISH's operations was arbitrary and capricious or otherwise contrary to law.
2. Whether the Commission's grant of a waiver of its own rules was arbitrary and capricious or otherwise contrary to law.
3. Whether the Commission violated the subdelegation doctrine.
4. Whether the Commission deprived DISH of its right to judicial review and due process.

STATUTES AND REGULATIONS

The relevant statutes and regulations are reproduced in the Statutes and Regulations Addendum.

STATEMENT OF THE CASE

This case involves objects in space, but directly affects tens of millions of people on the ground. It is about interference into the satellite-television service received by about 22 million U.S. families. These families get their television service by means of pizza-sized satellite dishes installed at their home. To reach them, the television

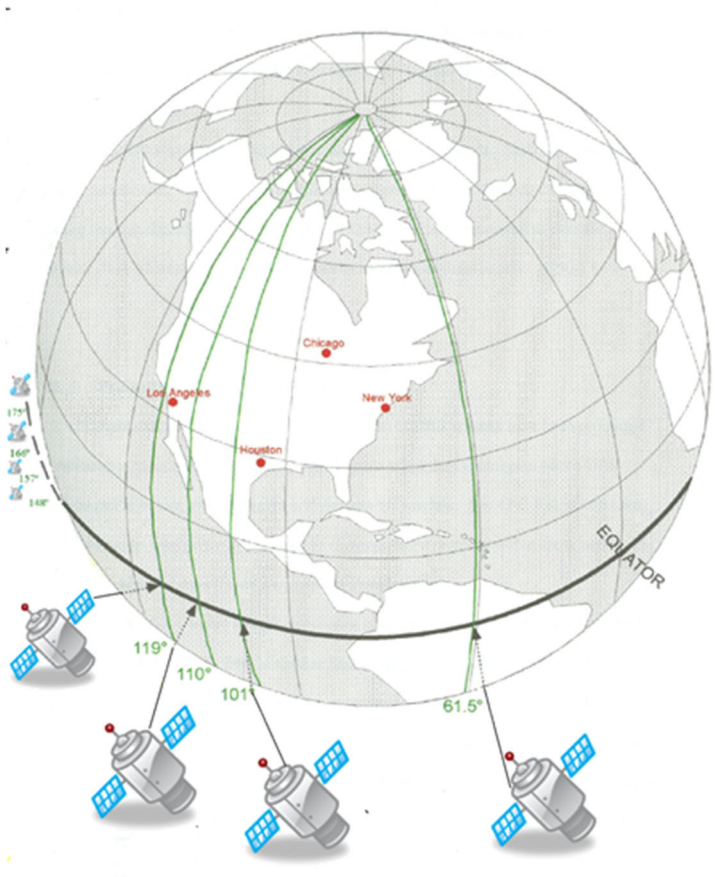
signals travel from geostationary satellites stationed more than 22,000 miles above the Earth's equator, using a part of the radio frequency spectrum called the 12 GHz band. DISH is one of two companies offering this satellite-television service. The Commission is required by the Communications Act to prevent signal interference to this service, enjoyed by these millions of families.

To that end, the Commission has established power limits on non-geostationary satellite systems, which also use the band. Here, however, the Commission did not implement these limits for SpaceX's non-geostationary system, and therefore failed to discharge its duty. The Commission refused to consider DISH's showing that SpaceX's system would exceed the power limits, and did not engage in any technical analysis of the question whatsoever. Jamming and loss of satellite television service will likely be the result. This Court should thus vacate the Order with respect to SpaceX's authorization to use the 12 GHz band.

A. DISH's Service and the Threat of Interference

This is a satellite-television dish.

Most of us have seen or used one at a neighbor's house or our own. With 13 satellites, DISH provides hundreds of television channels to millions of families using the 12 GHz band. This graphic illustrates the trip news, movies, sports broadcasts, and other content make from some of the satellites of the two satellite-television providers, DISH and DIRECTV, to these homes.



But a customer's signal can be corrupted and lost during this journey, or at the destination. This happens rarely, for example during a severe thunderstorm. It can also happen when a customer's satellite dish receives a competing signal from a different satellite in the same frequency. Harmful interference typically results in no picture at all for customers.

B. The Commission

One of the Commission's main duties is to manage the electromagnetic frequencies. *See* 47 U.S.C. § 303(c). The Commission

allocates each frequency band to one or more services. As discussed in greater detail below, the 12 GHz band was allocated to the satellite-television service in the 1980s. It was also allocated to non-geostationary satellite services in the 2000s, but with a crucially important proviso: any non-geostationary system was prohibited from causing interference into satellite television.

After allocating a frequency band to services, the Commission issues licenses allowing individual companies to use the spectrum consistent with these allocations. To issue and modify licenses, the Commission must find that the proposed service will serve the public interest, including that it will not cause interference into other spectrum users. *See* 47 U.S.C. §§ 307(a), 309(a), 316(a)(1). The Communications Act also explicitly requires the Commission "to prevent interference between stations." 47 U.S.C. § 303(f).

The Commission has amply equipped itself to handle this obligation. It employs some of the world's best telecommunications engineers. Its Office of Engineering and Technology, staffed with some 74 employees, is required to "manage the spectrum," *see Engineering & Technology*, FCC, https://www.fcc.gov/engineering-technology, and

"evaluate evolving technology for interference potential," 47 C.F.R. § 0.31(a). Its International Bureau, the Bureau mainly responsible for handling satellite applications, is endowed with its own Engineering Branch. *See* Organizational Chart, FCC (Apr. 2021), https://transition.fcc.gov/ib/ib_org_chart.pdf. Armed with these resources, the Commission routinely analyzes engineering showings about interference, submitted by parties that support or oppose certain uses of the spectrum.

In a recent license modification proceeding, for example, the Commission analyzed studies conducted by other government agencies and the applicant to determine whether a proposed system would interfere with GPS services. *See Lightsquared Technical Working Group Report*, 35 FCC Rcd. 3772 ¶¶ 47-59 (2020). In another recent proceeding involving another frequency band, the agency compared six interference studies submitted by various parties to determine whether unlicensed devices would interfere with fixed microwave service, and discussed in depth the methodology and results of each. *See Unlicensed Use of the 6 GHz Band,* 35 FCC Rcd. 3852 ¶¶ 112-140 (2020). In yet another spectrum proceeding, the Commission analyzed countervailing

technical studies regarding interference from the so-called C-band into aeronautical services. *Expanding Flexible Use of the 3.7-4.2 GHz Band*, 35 FCC Rcd. 2343 ¶¶ 392-95 (2020); *see also Avista Corp., Applications to Modify Licenses*, 31 FCC Rcd. 9420 ¶ 17 (2016) (reviewing an engineering study, requesting a second study, and conducting its own technical analysis regarding interference to nearby television stations); *Samuel Moses Order*, 24 FCC Rcd. 8857 ¶ 22 n.75 (2009) ("It is common practice for Commission staff to conduct an independent analysis to resolve interference issues."); *Application of Nw. Utils. Serv. Co.*, 30 FCC Rcd. 6373 ¶ 6 (2015) (analyzing discrepancies between the parties' interference analyses for a television license modification); *State of New York, Request for Waiver*, 22 FCC Rcd. 22195 ¶¶ 20-23 (2007) (discussing sufficiency of engineering study regarding interference from public safety operations to television stations).

On the face of the Order, it appears that none of the Commission's engineering expertise was marshalled to analyze the interference concerns raised by DISH. Either that, or the Commission's engineering review found no ground for questioning DISH's showing.

C. The International Telecommunication Union and Norway

The International Telecommunication Union ("ITU") is the United Nations agency that, among other things, administers the international allocation of frequencies, registers satellites internationally, and resolves interference disputes between countries. Critically, the ITU *never* handles disputes between individual companies. As an independent federal agency created by the Communications Act, the Commission does not report to the ITU and is not subject to ITU oversight or review of its decisions. Conversely, ITU findings are not subject to review by this Court, or indeed by any United States court.

U.S. satellite companies sometimes request a license from a country other than the United States to operate their satellites. This is sometimes opportunistic—the satellite company does not necessarily have a connection to the licensing country, but a license from that country is easier to obtain or requires a less rigorous review. That country then represents the satellite company at the ITU. Nearly all of DISH's licensed satellites are licensed by the United States through the Commission. By contrast, the initial SpaceX filings were made by

Norway, a country with which SpaceX has had no known previous connection.[1] But SpaceX still needs an authorization from the Commission to provide service in this country. Before granting that authority, the Commission must still find that the system will serve the public interest, convenience, and necessity, 47 U.S.C. §§ 307(a), 309(a), 316(a)(1), including finding that the system would not cause harmful interference into other spectrum users.

D. Geostationary Satellites, Non-Geostationary Satellites, and the Measures Taken by the Commission to Protect Satellite-TV Service

The Commission allocated the 12 GHz band to satellite-television service, also called Direct Broadcast Satellite, in the early 1980s. *See Inquiry into the Development of Regulatory Policy,* 90 F.C.C.2d 676 (1982), *vacated in part on other grounds*, *Nat'l Ass'n of Broads. v. FCC*, 740 F.2d 1190 (1984). Indeed, the service has become so closely identified with the 12 GHz band that the Commission has defined it as provided "in the 12.2–12.7 GHz band[.]" 47 C.F.R. § 25.103. DISH launched its first satellite in 1995 and began providing service in 1996.

[1] The United States has also submitted ITU filings for SpaceX.

By 2000, satellite-television service reached some 13 million households nationwide.

A geostationary satellite moves at the same speed as the Earth, which means that it remains stationary relative to the Earth, at a fixed longitude high above the equator. Non-geostationary satellites, by contrast, move across the sky relative to any given point on the surface of the Earth, orbiting the Earth at lower heights than geostationary satellites. To achieve broad coverage, non-geostationary systems are often designed as a "constellation" of hundreds or thousands of satellites. Moreover, some non-geostationary satellites have steerable beams that can be directed from one area to another.

The Commission granted non-geostationary systems access to the 12 GHz band two decades after satellite television was authorized. But protecting the preexisting service was the Commission's guiding principle: "Throughout this proceeding, we have focused on the ability of [non-geostationary] operations to coexist with existing operations in several spectrum bands without causing unacceptable interference to those services." *2000 Non-Geostationary Order*, 16 FCC Rcd. 4096 ¶ 170 (2000). The Commission specifically adopted an ITU provision

stating: "Non-geostationary-satellite systems in the fixed-satellite service . . . shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated." 47 C.F.R. § 2.106 n.5.487A; ITU RR 5.487A. It is this prohibition that would be vitiated by the Order below.

To effectuate this requirement, the Commission adopted power limits on non-geostationary systems. *See 2000 Non-Geostationary Order* ¶¶ 170-198; 47 C.F.R. § 25.146(a). Only by operating in compliance with these limits is a non-geostationary system "considered as having fulfilled its obligation . . . not to cause unacceptable interference to any [geostationary] network." *2017 Non-Geostationary Order*, 32 FCC Rcd. 7809 ¶ 32 (2017).

Among other things, the Commission's rules also require a non-geostationary applicant that wishes to operate in the 12 GHz band to: (1) certify that it will comply with the power limits; and (2) receive a "favorable" or "qualified favorable" finding by the ITU that the system's power levels, calculated by use of ITU-approved software, do not exceed the limits. 47 C.F.R. § 25.146(a), (c).

While an applicant's certification and an ITU finding are required, nowhere does the rule say they are *sufficient* for the Commission to determine compliance with the power limits. And fulfillment of that requirement by an applicant does not absolve the Commission of its *independent* statutory duty to find that an application for a station license will serve the public interest before granting it.

E. SpaceX's Application and Modifications

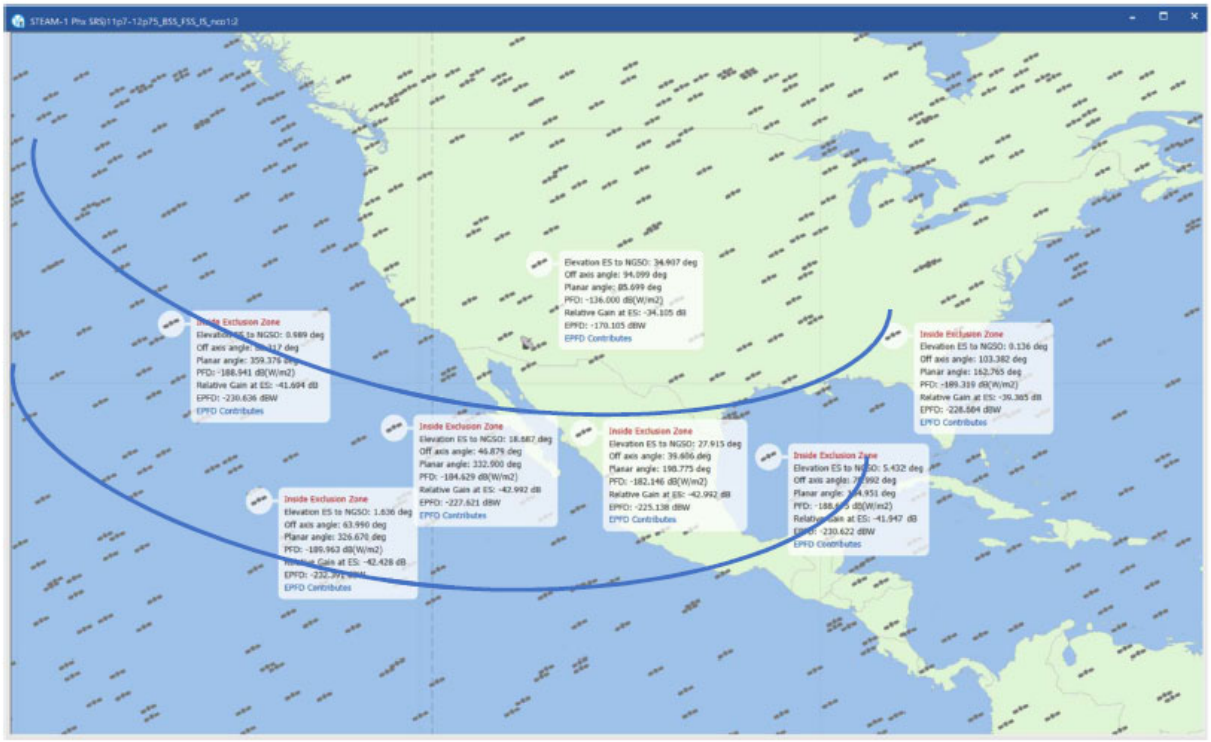
In 2018, the Commission granted SpaceX's initial application to operate a system of 4,425 satellites in many frequencies, including the 12 GHz band. *SpaceX Authorization Order*, 33 FCC Rcd. 3391 ¶ 2 (2018). The 12 GHz band, however, represents only three percent of the total spectrum licensed to SpaceX. DISH July 14, 2020 Letter at 7 (JA0101). To protect satellite television from interference, the Commission specifically required that, "[p]rior to initiation of service," SpaceX must receive an ITU finding that it complies with the power limits. *SpaceX Authorization Order* ¶ 40(n); *see* 47 C.F.R. § 25.146(c). That requirement has never been satisfied and was soon to be waived.

SpaceX has subsequently sought several modifications to its authorization. In its first modification request, SpaceX sought to reduce the number of satellites and relocate many to a lower altitude. *First Modification Order*, 34 FCC Rcd. 2526 ¶ 2 (2019). The International Bureau, under authority delegated by the full Commission, approved. The Bureau also waived the requirement for SpaceX to receive a finding from the ITU before commencing operations, so as to accommodate SpaceX's accelerated launch schedule, given the potentially slow timing of the ITU's determination. *Id.* ¶ 28. But the Bureau warned SpaceX that it proceeded at its own risk if the eventual ITU determination was not favorable. *Id.* SpaceX then made a second request with similar changes, which the Bureau also granted. *See Second Modification Order*, 34 FCC Rcd. 12307 ¶ 3 (2019). Noting that SpaceX continued to operate at its own risk, the Bureau adhered to the waiver of the ITU determination requirement. *Id.* ¶ 10.

This appeal concerns the Commission's grant of SpaceX's third modification request. There, SpaceX sought authorization to move all its satellites to lower altitudes, a "massive reconfiguration" that raised

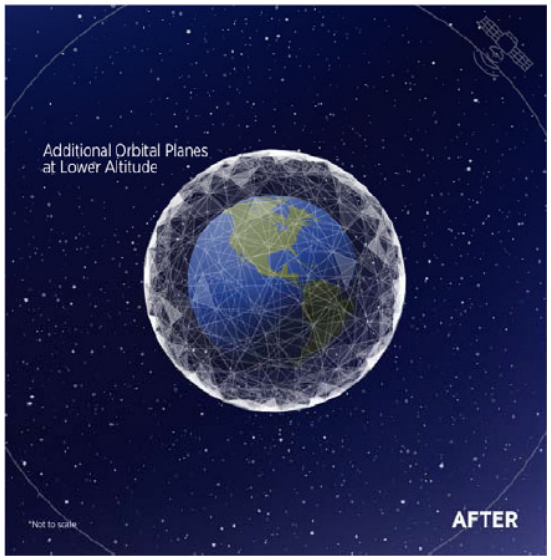
concerns for DISH about interference with DISH's service. DISH June 16, 2020 Letter at 2 (JA0076).

Below is a map illustrating what the proposed SpaceX system may look like as its satellites orbit over the United States.



See First Study at 14 (JA0133).

And below are illustrations of SpaceX's myriad satellites orbiting between the Earth and DISH's geostationary satellites, before and after SpaceX's proposed modification.



F. The Three DISH Engineering Studies

In opposition to SpaceX's third modification request, DISH submitted three technical studies undertaken by expert engineer Marc Dupuis, analyzing the effect of SpaceX's modified system on DISH's satellite-television service. These studies, based on SpaceX's own technical data, concluded that the system would violate applicable power limits and harm the millions of American households receiving satellite television.

The First Study concluded that SpaceX realistically needs to use more than one beam from one satellite (as many as ten or more) at the same time in the same area to meet customer demand. First Study at 22 (JA0141). In technical jargon, the use of one, two, or more satellite beams to serve the same area at the same time is known as an "Nco" of

1, 2, etc. SpaceX's own power level calculations were based on a single beam, which led to unrealistically low values. *Id.* at 48 (JA0167). The convergence of multiple beams from as many satellites compounds the power that "rains" down in the area, and causes SpaceX's system to exceed the power limits for many satellite-television dishes. In calculating the power levels resulting from the proposed system, the First Study used the ITU-sponsored software, which picks a theoretical location for satellite-television users.

The need for SpaceX to meet demand is especially important because of a federal program, the Rural Digital Opportunity Fund. SpaceX won the right to receive almost $1 billion in subsidies from that fund in a Commission auction. In exchange for this huge subsidy, SpaceX has agreed to service-level commitments that would be violated if it cannot meet demand. *See* DISH Apr. 6, 2021 Letter at 2 (JA0201).

This chart from the First Study shows the frequency of "fails"—instances where the power limits are exceeded—for various types of satellite-television dishes, using the ITU-sponsored software and assuming more than one satellite beam in an area at a time.

Run/Status:	SpaceX	Baseline	Nco = 2	Nco = 4	Nco =10
EFPDup	PASS	PASS	FAIL	FAIL	FAIL
EPFDdn FSS 0.6m	PASS	PASS	FAIL	FAIL	FAIL
EPFDdn FSS 1.2m	PASS	PASS	FAIL	FAIL	FAIL
EPFDdn FSS 3m	PASS	PASS	PASS	FAIL	FAIL
EPFDdn FSS 10m	PASS	PASS	PASS	PASS	PASS
EPFDdn BSS 0.3m	PASS	PASS	PASS	PASS	FAIL
EPFDdn BSS 0.45m	PASS	PASS	FAIL	FAIL	FAIL
EPFDdn BSS 0.6m	PASS	PASS	FAIL	FAIL	FAIL
EPFDdn BSS 0.9m	PASS	PASS	PASS	FAIL	FAIL
EPFDdn BSS 1.2m	PASS	PASS	FAIL	FAIL	FAIL
EPFDdn BSS 1.8m	PASS	PASS	PASS	FAIL	FAIL
EPFDdn BSS 2.4m	PASS	PASS	PASS	FAIL	FAIL
EPFDdn BSS 3m	PASS	PASS	PASS	PASS	FAIL
EPFDis	PASS	PASS	PASS	PASS	PASS

First Study at 22 (JA0141).

The Second Study demonstrated that, even if SpaceX focused one satellite beam on an area at a time, it would still exceed the power limits at five *actual* satellite-television user locations in five states—Arizona, New York, Washington, Florida, and Kansas. Second Study at 22 (JA0197).

Specifically, as Mr. Dupuis explained, the software used by the ITU "picks the *theoretical* worst-case [satellite-television] earth station location." *Id.* at 1 (JA0176) (emphasis added). For SpaceX's proposed system, however, the ITU software implausibly placed one of these locations on the Arctic Ocean north of Greenland, where DISH does not

operate. *See* First Study at 14 (JA0133). As Mr. Dupuis explained, the ITU software "does not work well for complex constellations," such as the SpaceX system. Second Study at 1 (JA0176).

The ITU, too, has identified flaws in its own software. A 2016 ITU Circular recognizes that there are cases "where the software cannot adequately model certain non-geostationary satellite [ ] systems[.]" Circular at 2 (JA0250). In such a case, the Circular directs that the matter be referred to an ITU working group "for consideration as to whether further improvements . . . are required in order to model the system adequately." *Id.* at 3 (JA0251).

The Second Study found that the "theoretical worst-case" ITU software locations were not nearly as bad as reality. Second Study at 1 (JA0176). Use of actual locations in the Second Study proved that the power levels for SpaceX's system significantly exceeded the limits, even as the power levels estimated based on theoretical locations were supposedly within the limits. Because the five actual locations were chosen for their geographic diversity, the results are representative of sites throughout the continental United States. The Second Study also found that the exceedance over the power limits is even greater than

the numbers computed in the Second Study because the effect of SpaceX satellites serving neighboring areas still remained unquantified.

This chart from the Second Study demonstrates that, even assuming one satellite beam in an area at a time, the power limits were exceeded for all types of satellite-television dishes in Issaquah, Washington:

	Result	Figure	Excess (positive numbers) EPFD (dB)		
Run GSO Rx ES	Nco = 1		P=100%	P=10%	P=0.001%
EPFDdn BSS 0.45m	FAIL	7d	5.0	2.0	-8.5
EPFDdn BSS 0.6m	FAIL	8d	3.5	2.8	-10.5
EPFDdn BSS 1.2m	FAIL	9d	1.0	-0.7	-16.0
EPFDdn FSS 1.2m	FAIL	10d	1.0	-0.4	-15.8

Second Study at 13 (JA0188).

The Third Study quantified the effect of neighboring SpaceX satellites. It showed that, even if SpaceX focuses one satellite beam on an area at a time, the effect of neighboring SpaceX satellites will be such that the satellite-television dishes in the area will be inflicted with the equivalent of three or more satellite beams—yet another exceedance over the power limits, on top of that resulting from the use of actual locations. Third Study at 1 (JA0220).

G. SpaceX's (Absent) Engineering Studies

SpaceX did not submit any engineering studies to the Commission. In fact, SpaceX did not dispute either the Second or the Third Studies. With respect to the First Study, SpaceX initially made a number of evasive statements spanning three filings and almost two months. These statements left it up to the reader to make inferences about SpaceX's plans, and stopped short of a commitment on SpaceX's part to use one beam in an area at a time. Finally, on April 15, 2021, SpaceX agreed to a condition to "not use more than one satellite beam from any of its satellites in the same frequency in the same or overlapping areas at a time." SpaceX Apr. 15, 2021 Response at 4 (JA0211).

Even with respect to the First Study, SpaceX never responded to the showing that it would need to focus multiple beams on the same area to satisfy customer demand for its internet broadband service.

H. The Order

In the Order on review, the Commission granted SpaceX's third modification application. Order ¶ 97 (JA0066). The Commission did not dispute any of the three DISH studies. The Commission simply pointed to SpaceX's self-certification that it will comply with power

limits using ITU software and methodologies, and to a future finding by the ITU that it will comply. *Id.* ¶¶ 39-40 (JA0039-40).

With respect to the First Study, the Commission imposed the one-beam condition agreed to by SpaceX. *Id.* ¶ 39 (JA0039). The Commission mentioned DISH's showing that the condition would not permit SpaceX to satisfy customer demand, but, like SpaceX, made no comment on that showing. *Id.*

With respect to the Second and Third Studies, the Commission merely stated:

> Contrary to DISH's assertion, we will not depart from the Commission's determination as a general matter in the *NGSO FSS Report and Order* that applicants may certify their compliance with ITU [power] limits. The Commission concluded that it could rely on ITU . . . review as a technical matter, including requiring applicants to use the ITU-approved validation software . . . Although DISH alleges that SpaceX cannot meet the [power] limits even using the input of an Nco of one based on its own analysis, the relevant analysis under the Commission's rules is analysis using ITU-approved software.

Id. ¶ 40 (JA0040).

In other words, the Commission did not rule that DISH was wrong that the use of real-life locations was more accurate than the use of a theoretical worst-case location. Nor did the agency rule that, if actual

locations are used, SpaceX's power levels would comply with the applicable power limits. The Commission dismissed DISH's analysis on a technicality—the agency had already decided to rely on the ITU, and the Commission's rules had already ordained the "ITU-approved software" as "the relevant analysis." *Id.* ¶ 40 (JA0040). Stated simply: this is how we have decided to do it, no matter that your undisputed evidence shows it's wrong; we have incorporated that decision in the rules, and we will not change our ways.

The ITU itself appears to believe this is not always the right course. For cases where its software cannot "adequately model" the non-geostationary system, the ITU believes the licensing country, and not the ITU, should be ascertaining compliance. For these cases, the ITU expects an "indication" of the difficulty from the licensing country, and a "commitment" from that country that the system will comply with the limits. *See* Circular at 2-3 (JA0250-51); ITU Resolution 85 (WRC-03) ¶ 1 (JA0247).

The ITU has also recognized that the original ITU Recommendation on which the software was based was not developed for steerable beams. *See* First Study at 49 n.14 (JA0168). While an

ITU study group has approved a revised Recommendation, no software implementing it has been developed. *Id.* SpaceX's proposed system features steerable beams. In this case, the Commission has not made any determination as to whether or not the ITU-sponsored software can adequately model SpaceX's system.

Finally, the Commission declined to require SpaceX to submit information that would allow verification of its compliance with the condition. Order ¶ 40 (JA0040). Without information about the areas to which SpaceX has steered its beams, DISH has no accurate way of knowing whether a customer's complaint that her reception has been lost is due to interference from SpaceX or some other factor.

Having chosen to defer to the ITU, the Commission then inexplicably excused SpaceX from obtaining a favorable ITU finding until after SpaceX commences its service. The Commission extended the waiver previously granted by the Bureau because it saw "no reason" not to do so. *Id.* ¶ 41 (JA0040). The Commission imposed no deadline on SpaceX for requesting or receiving the ITU finding. For the indeterminate period until the ITU finding is obtained, the Commission

relied on SpaceX's "certification" that it will not violate the limits. *Id.* ¶ 39 (JA0039).

The Commission also refused to demote SpaceX's application to a later processing round with inferior rights to other non-geostationary systems, on the ground that the proposal would not have "significant interference" effects under the standard applied in a 1999 International Bureau decision. *Id.* ¶ 16 (JA0025).

With the publication of the Order on April 27, 2021, SpaceX is now authorized to operate its proposed system as described in the Order. As of July 27, 2021, SpaceX had launched at least 1,740 satellites.[2] SpaceX has begun providing a "beta" service, and it has started pre-selling subscriptions to its regular service. And, as SpaceX continues to launch more satellites over the coming months and years, the interference into DISH's television service will just worsen, as demonstrated by DISH's three studies.

[2] Stephen Clark, *SpaceX Is About to Begin Launching the Next Series of Starlink Satellites*, Spaceflight Now (July 27, 2021), https://spaceflightnow.com/2021/07/27/spacex-to-begin-launching-new-generation-of-starlink-satellites-next-month.

SUMMARY OF ARGUMENT

Unreasoned Decisionmaking. SpaceX's many-thousand satellite system will exceed, or is already exceeding, the power limits the Commission has imposed to protect satellite television. DISH showed this by calculating the power SpaceX's system will produce at actual locations of satellite-television customers across America's heartland. SpaceX argued it would comply with the power limits based on a theoretical worst-case location assumed in software sponsored by the ITU. That software predicts the interference received by *hypothetical* satellite-television dishes, which may be located "above the Arctic Ocean near Greenland." DISH Apr. 14, 2021 Ex Parte Letter at 3 (JA0206); *see* First Study at 14 (JA0133). But the Commission simply invoked its prior decision to defer to the ITU's method, and to a possible future ITU finding based on that method. Order ¶ 40 (JA0040). Armed with the best telecommunications engineering expertise in the world, the Commission did not reject DISH's showing on any technical grounds, and did not dispute that DISH's evidence is more accurate than the ITU's method; instead, it simply refused to consider DISH's evidence altogether.

What happened here is worse than customary forms of unreasoned decisionmaking proscribed by the Administrative Procedure Act ("APA"). Here, the Commission did not rely on mistaken technical grounds for disregarding the evidence—had it done so, its expert judgment would still have been entitled to a measure of respect. Nor did the Commission simply ignore the showing—it affirmatively refused to consider that showing because it had already decided to defer to the ITU's method, inferior though it was.

Impermissible Waiver. The Commission made things worse still by waiving SpaceX's obligation to obtain the ITU approval to which the Commission deferred until after SpaceX's service has commenced, and by not even imposing a deadline on SpaceX for doing so. The waiver was not even requested by SpaceX, and the Order did not apply the Commission's own good cause standard to evaluate it. Instead, the Order applied a rationale that runs contrary to reasoned rulemaking. The waiver was granted not because there were good reasons to do so, but because the Commission saw *no* reason *not* to do so. Grant of the waiver thus violates both the APA and the Commission's own rules.

Misapplication of Precedent. In deciding to preserve the senior status of SpaceX as an earlier round licensee, the Commission stated that it would apply a standard that, by the terms of the decision announcing it, looks to all interference effects, including those on geostationary satellites. Instead, the Commission limited the inquiry to the effects on other non-geostationary satellites exclusively. The Commission omitted the effects on DISH's satellites not because it believed they do not exist, but because it erroneously believed examination is not required by the standard it professed to follow.

Abdication of Responsibilities. The Order also violates the Commission's duty "to prevent interference between stations." 47 U.S.C. § 303(f). Imagine the police subcontracting the job of responding to 911 calls to a private security company, releasing that company from the requirement of responding within a certain period of time, and explaining all of this to a frantic citizen faced with a home invasion. Just like that police department, the Commission has fallen short of its duty to keep the peace among spectrum users by preventing interference.

By the same token, the Order violates the agency's duty to find that SpaceX's proposed modification serves the public interest. 47 U.S.C. §§ 307(a), 309(a), 316(a)(1). That finding must include a technical analysis of interference risks and a conclusion that such risks do not disserve the public interest. No such analysis was undertaken.

Finally, this is a case of abdication of the responsibilities given the Commission by Congress, in violation of the subdelegation doctrine, which sharply limits the ability of agencies to farm out their statutory duties to a third party. The Commission delegated its responsibility to prevent interference to another party without disputing evidence that the delegate's method is flawed. The Commission did not even determine whether the ITU software can do the job, notwithstanding the ITU's recognition that sometimes it cannot. *See* Circular at 2 (JA0250); ITU Resolution 85 (WRC-03) (JA0247-48). Then the agency excused performance even of this deficient work until too late.

Infringement of Judicial Review and Due Process Rights. The Order moreover violates the Communications Act's judicial review provision, 47 U.S.C. 402(b), which gives parties aggrieved by

Commission licensing orders the "right to appeal" to this Court. No such appeal will be possible from a favorable ITU finding.

The Order likewise violates the constitutional requirement that DISH be afforded an opportunity to be heard. DISH does not have standing in the forum to which the Commission deferred, where only countries (not private companies) may complain of interference problems. The Commission sent DISH to a tribunal whose doors are closed both to DISH and to this Court.

STANDING

DISH has constitutional standing. *See Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560 (1992). The SpaceX operations authorized by the Order will likely cause interference with DISH's transmissions to its customers, thereby injuring DISH's business. The Order is causally responsible for the harm because it allows SpaceX to operate in a manner that will exceed the applicable power limits. And successful review would prevent SpaceX from violating the applicable power limits.

As for prudential standing, DISH is a "person who is aggrieved or whose interests are adversely affected" by the Order, 47 U.S.C.

§ 402(b)(6), and participated in the proceeding below to avert these effects. *See, e.g.*, DISH Feb. 15, 2021 Letter (JA0111-68); *see also Clarke v. Sec. Indus. Ass'n*, 479 U.S. 388, 396 (1987); *FCC v. Sanders Bros. Radio Station*, 309 U.S. 470, 477 (1940).

ARGUMENT

I. The Order Is Arbitrary and Capricious

The fundamental obligation of a federal agency is to act only on the basis of reason, with due consideration for all of the facts relevant to the matter before it. The Commission defaulted on that obligation here. Like SpaceX, the Commission did not dispute the technical evidence showing that SpaceX's proposed operations would exceed the power limits applicable to them, threatening unlawful interference into DISH's customers' reception of television service. The agency refused to consider that evidence, and instead adhered to a rule requiring certification by the applicant itself and a favorable finding by the ITU, even though DISH's evidence showed the inaccuracy of the ITU's methodology. The Commission then proceeded to waive the sole remaining safeguard that might have provided a check on SpaceX's compliance with the limits. In light of the Commission's dereliction of

its duties, this Court should vacate the Order with respect to the 12 GHz band.

A. The Arbitrary-and-Capricious Standard of Review

In a 47 U.S.C. § 402(b) appeal from an order of the Commission, this Court considers, under the familiar standards of the APA, "whether the Order is 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.'" *PSSI Global Servs., LLC v. FCC*, 983 F.3d 1, 7 (D.C. Cir. 2020) (quoting 5 U.S.C. § 706(2)(A)).

The "APA's arbitrary-and-capricious standard requires that agency action be reasonable and reasonably explained." *FCC v. Prometheus Radio Project*, 141 S. Ct. 1150, 1158 (2021). A court applying that standard must "ensure[] that the agency has acted within a zone of reasonableness and, in particular, has reasonably considered the relevant issues and reasonably explained the decision." *Id.*; *see also FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 513-14 (2009). In particular, "the agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *Motor Vehicle Mfrs.*

Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)).

A court conducting arbitrary-and-capricious review must "consider whether the decision was based on a consideration of the relevant factors." *State Farm*, 463 U.S. at 43. "Normally, an agency rule would be arbitrary and capricious if the agency . . . entirely failed to consider an important aspect of the problem [or] offered an explanation for its decision that runs counter to the evidence before the agency." *Id.*

B. The Commission Disregarded Undisputed Evidence That SpaceX's Operations Will Cause Unlawful Interference

The Commission granted SpaceX's application without reasonably considering—indeed, without considering at all—any of DISH's expert evidence. That was a textbook example of arbitrary agency action.

The First Study showed that, while SpaceX's technical submission was premised on the assumption that it would focus only one satellite's beam on an area at a time, in reality SpaceX's operations would often require the use of more beams to meet customer demand. This would exceed the power limits and cause unlawful interference to DISH's satellite-television customers. First Study at 1-2 (JA0120-21). After a long period of resistance, SpaceX ultimately promised that it will

restrict its operations to one beam in an area at a time. Order ¶ 39 (JA0039). The Commission conditioned SpaceX's authorization on this promise. *Id.* ¶ 97(e) (JA0066).

Yet the Commission failed to consider whether SpaceX would comply with that condition *and* meet its projected demand. Among other things, the Commission failed to address the fact that SpaceX cannot meet its service-level obligations in connection with its Rural Digital Opportunity Fund subsidies unless SpaceX exceeds one beam in an area at a time. The Commission acknowledged that DISH "is concerned, along with Viasat, that when SpaceX is forced to choose between complying with the [power] limits and meeting demand under its obligations as a winner in the . . . auction, SpaceX will choose to violate the [power] limits." *Id.* ¶ 38 (JA0039). But the Commission failed to explain why it was apparently unfazed by this conspicuous difficulty. This failure to reasonably engage with DISH's concern was arbitrary and capricious. *See Prometheus*, 141 S. Ct. at 1158; *State Farm*, 463 U.S. at 43.

The Commission gave even less consideration to the two other studies that DISH submitted, both of which established that SpaceX

will exceed power limits *even using one beam in an area at a time*. The Commission only briefly summarized the Second Study. *See* Order ¶ 38 (JA0038-39) ("DISH also submits an analysis which, according to DISH, demonstrates that even with an Nco value of one, SpaceX's system will exceed the [power] limits in the 12.2-12.7 GHz band across the United States."). And it relegated the Third Study to a parenthetical in a footnote. *See id.* ¶ 38 n.177 (JA0039). As the plain text of the Order itself makes clear, the Commission utterly failed to engage with either study. *See id.* ¶¶ 38-42 (JA0038-40).

Rather than perform the reasoned decisionmaking demanded by the APA and decades of binding case law, the Commission simply deferred to the ITU's software simulation and a future favorable ITU finding. Yet SpaceX did *not* dispute that the analyses submitted by DISH are more realistic than the ITU software's simulation, and it did *not* deny that the proposed system will in fact violate the power limits according to those more realistic analyses.

Where, as here, an agency fails to reasonably consider relevant data, its action is arbitrary and capricious and is not entitled to the judicial deference owed where an expert agency actually considers the

technical data before it. *See, e.g.*, *Genuine Parts Co. v. EPA*, 890 F.3d 304, 346 (D.C. Cir. 2018) ("Conclusory explanations for matters involving a central factual dispute where there is considerable evidence in conflict do not suffice to meet the deferential standards of our review.") (citing *Int'l Union, United Mine Workers v. Mine Safety & Health Admin.*, 626 F.3d 84, 94 (D.C. Cir. 2010)).

This Court has previously rejected similar attempts by agencies to summarily dismiss relevant data. In *American Radio Relay League, Inc. v. FCC*, 524 F.3d 227 (D.C. Cir. 2008), the Court faulted the Commission for "offer[ing] no reasoned explanation for its dismissal of empirical data that was submitted at its invitation." *Id.* at 241. The Court recognized that, where evidence is of a "critical nature," a conclusory "statement cannot substitute for a reasoned explanation for it provides neither assurance that the Commission considered the relevant factors nor a discernable path to which the court may defer[.]" *Id.* (internal citations omitted). Here, the Commission did not even provide a "conclusory statement" about the studies—much less the "reasoned explanation" required.

The Commission's endorsement of the ITU process despite undisputed evidence of its faults falls far short of what the APA and this Court demand. Just as in *American Radio Relay League*, this Court simply cannot determine whether the Commission considered the risk for interference that DISH demonstrated because the Commission offered no indication it had done so. The Commission's utter failure to consider the relevant studies before it was arbitrary and capricious.[3]

Even less reasonably, the Commission disregarded the very same evidence that it had invited private parties to adduce. In the *Second*

[3] *See also Genuine Parts*, 890 F.3d at 313 (finding arbitrary and capricious agency's decision to ignore studies that did not support its position); *Butte Cnty. v. Hogen*, 613 F.3d 190, 194 (D.C. Cir. 2010) ("[A]n agency's refusal to consider evidence bearing on the issue before it constitutes arbitrary agency action within the meaning of § 706."); *Comcast Corp. v. FCC*, 579 F.3d 1, 8 (D.C. Cir. 2009) (the Commission's decision was arbitrary and capricious where it "failed to 'examine the relevant data and articulate a satisfactory explanation for its action'"); *Am. Farm Bureau Fed'n v. EPA*, 559 F.3d 512, 525 (D.C. Cir. 2009) (agency "too hastily discounted" studies); *Morall v. DEA*, 412 F.3d 165, 178 (D.C. Cir. 2005) (agency's "decision does not withstand review because the agency decisionmaker *entirely ignored* relevant evidence") (emphasis in original); *Robinson v. NTSB*, 28 F.3d 210, 216 (D.C. Cir. 1994) (agency may not ignore evidence relating to critical fact in case); *ALLTEL Corp. v. FCC*, 838 F.2d 551, 558 (D.C. Cir. 1988) ("[T]he Commission must do more than simply ignore comments that challenge its assumptions and must come forward with some explanation that its view is based on some reasonable analysis.").

Modification Order, the International Bureau stated it was the responsibility of third parties to conduct their own analysis if they objected to SpaceX's power limit analysis. *Second Modification Order* ¶ 11 ("We find that SpaceX reasonably accommodated SES/O3b's request for the [power] input data and the fact that SES/O3b's staff is not available to analyze the data, while unfortunate, does not justify a delay in the processing of this application."). Here, DISH *had* conducted its own analysis. For the Commission to then turn around and refuse to consider these studies is not consistent with reasoned decisionmaking.

The Supreme Court's recent decision in *Prometheus* is instructive. There, parties submitted data regarding minority and female ownership of media outlets, which the Commission reviewed before concluding that relaxation of ownership rules was appropriate. 141 S. Ct. at 1158-59. Prometheus challenged the Commission's conclusion, arguing "that countervailing—and superior—evidence was in fact in the record[.]" *Id.* at 1159. The Supreme Court concluded that "[t]he FCC did not ignore the . . . studies" but "simply interpreted them differently." *Id.*

Here, by contrast, the Order does not engage in any interpretation. In fact, the Order fares even worse under the APA's lens than if the Commission had engaged in a mistaken interpretation. If that had happened, the interpretation would be entitled to respect and would not be set aside unless it was not only mistaken but "so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *State Farm*, 463 U.S. at 43. Here, however, the Order made no factual findings for the Court *to* respect.

The Commission's refusal to grapple with the studies that DISH submitted cannot be attributed to a lack of expertise. Analyzing the merits of engineering studies with the goal of preventing interference is both important in light of the Commission's statutory mandate, and routine in light of the regularity with which the Commission undertakes it.

Because the Commission did not "reasonably consider[] the relevant issues and reasonably explain[] the decision," the Order must be set aside with respect to the 12 GHz band. *Prometheus*, 141 S. Ct. at 1158.

C. The Commission Impermissibly Waived the Favorable Finding Requirement

The Commission also erred by granting a waiver that allowed SpaceX to commence operations without a favorable finding from the ITU. Order ¶ 41 (JA0040). Under the Order and the Commission's rules, "SpaceX must receive a favorable or 'qualified favorable' finding in accordance with Resolution 85 (WRC-03) with respect to its compliance with applicable equivalent power flux-density limits . . ." *Id.* ¶ 97(p) (JA0067); 47 C.F.R. § 25.146(a), (c).

Although the Commission has authority to waive its rules for "good cause shown," 47 C.F.R. § 1.3, it must do so "only pursuant to a relevant standard." *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969). This Court has acknowledged "the requirement that those seeking waiver of a Commission rule substantiate their applications with sufficient basis to demonstrate that waiver would be in the public interest[.]" *W. Michigan Telecasters, Inc. v. FCC*, 460 F.2d 883, 887 (D.C. Cir. 1972). In the Court's words, "the FCC is directed to consider in detail such requests[.]" *Id.* "The agency may not act out of unbridled discretion or whim in granting waivers any more than in any other aspect of its regulatory function." *WAIT Radio*, 418 F.2d at 1159; *see*

also Ne. Cellular Tel. Co., L.P. v. FCC, 897 F.2d 1164, 1166 (D.C. Cir. 1990) ("[The Commission] does not articulate any standard by which we can determine the policy underlying its waiver.").

Here, the Commission likewise did not articulate any standard. Instead, it satisfied itself by stating that it "see[s] no reason to revoke our previously-granted waiver of section 25.146(c)." Order ¶ 41 (JA0040). This is unreasonable, especially when the order initially granting the waiver was a Bureau-level action rather than a Commission action, and the Order itself failed to analyze whether the grant of a waiver would be in the public interest. *See First Modification Order* ¶ 28. In fact, this rationale flips reasoned decisionmaking on its head: the Commission extended the waiver not because there was a good reason to do so, but because there was supposedly *no* good reason *not* to do so.

Indeed, the waiver actually violated *the Commission's own standard* for granting waivers. The Commission may only waive a rule for "good cause shown." 47 C.F.R. § 1.3. Good cause exists when "particular facts would make strict compliance inconsistent with the public interest[,]" *Ne. Cellular*, 897 F.2d at 1166, as "the waiver cannot

undermine the purpose of the rule, and there must be a stronger public interest benefit in granting the waiver than in applying the rule." *Piper Networks Order*, 35 FCC Rcd. 12912 ¶ 6 (2020); *see also WAIT Radio*, 418 F.2d at 1157 (waiver of general rule may be in the public interest for "a new service that will not undermine the policy, served by the rule . . .").

Regardless of whether the initial grant was proper, the Commission has a duty to ensure a continuing waiver is appropriate. At the time of the Order, it had been nearly *two years* since the International Bureau initially granted the waiver. After two years, the Commission was obliged to ask itself whether the public interest and the policy behind the rule are still being served by allowing SpaceX to avoid the requirement. *Bais Yaakov of Spring Valley v. FCC*, 852 F.3d 1078, 1086 (D.C. Cir. 2017) (Pillard, J. dissenting) ("[W]aivers are justified by reference to the same public interest that supports the general requirement—not by reference to regulated parties' interest in avoiding costs . . . .").

The waiver is all the more curious because the Commission has not felt it necessary to give one to other non-geostationary satellite

operators, even though all face the same allegedly slow ITU approval process. *See, e.g.*, *OneWeb Order*, 32 FCC Rcd. 5366 ¶ 24(d) (2017). In fact, for OneWeb, the Commission noted that "[r]eview by the ITU of OneWeb's compliance with ITU [power] limits, using methods now approved by the ITU, will provide sufficient additional assurances that OneWeb will comply with the identical [power] limits in section 25.208 beyond the other technical demonstrations OneWeb has already provided." *Id.* ¶ 19.

This Court has expressed concern in waiver cases about precisely this sort of differential, haphazard behavior by the agency. *See NetworkIP, LLC v. FCC*, 548 F.3d 116, 127 (D.C. Cir. 2008); *Ne. Cellular*, 897 F.2d at 1167 ("The difficulty presented here is even more striking, since the Commission has not simply deviated from exemption standards; it never stated any standards in the first place.").

Further exacerbating the Commission's error is the fact that SpaceX did not even file a request for renewal of its ITU waiver. *See* SpaceX Third Modification Application, Waiver Requests at 1 (JA0071) (requesting only that the Commission "grant a waiver, to the extent necessary, of various limitations in the Commission's Schedule S

software"). The Commission, *sua sponte*, decided to extend the waiver without performing any analysis of whether the continued delay by SpaceX to obtain approval from the ITU was in the public interest or frustrating the purpose of the rule.

Just as important, the Order did not pause to consider a fundamental inconsistency: the relegation of the all-important technical questions to an ITU finding is irreconcilable with a waiver of the obligation to obtain the finding until *after* service has commenced. At that point, millions of homes may have lost their television service or suffered its interruption. With one hand, the Order is undoing the safeguard, ineffective though it may be, that it put in place with the other. And the Order does not even give SpaceX a deadline by which to request or receive the ITU finding. SpaceX could obtain that finding a decade from now, and it would still be in compliance with its license.

That was arbitrary and capricious, an abuse of discretion, and contrary to law.

D. SpaceX's Application Should be Considered in the Commission's 2020 Processing Round

The Commission also erred in not considering the effects of interference from SpaceX's proposed system on DISH when

grandfathering SpaceX's status as a 2018 processing round applicant instead of consigning it to the inferior status of the later, 2020 processing round.[4]

Once again, the Order did not ignore the interference effects because the Commission believed they do not exist, but only because it misapplied the very standard it professed to follow. Under that standard, set forth in *Teledesic*, the Commission had to consider the effects on all other users of the spectrum. *Teledesic*, 14 FCC Rcd. 2261 ¶ 5 (1999). In fact, without even discussing the question, the Commission confined itself to the interference effects on other non-geostationary systems.

DISH and others argued that SpaceX's requested modification "is a complete redesign of SpaceX's authorized system that will substantially increase interference into other systems" and should therefore have been demoted to the 2020 round. Order ¶ 15 (JA0024-25). The Commission adopted the standard of a prior Bureau-level order, whereby demotion was appropriate if an application were to

[4] The operations of licensees from subsequent processing rounds are subservient to those of licensees from prior rounds. *See* Order ¶ 17 (JA0026-27).

"present significant interference problems." *Id.* ¶ 16 (JA0026) ("We apply the same standard in this Commission-level decision, for the reasons set forth in the *Teledesic Order*[.]"). Therefore, if a non-geostationary "modification application were to present significant interference problems, we would treat the modification as a newly filed application and would consider the modification application in a subsequent satellite processing round." *Teledesic* ¶ 5.

But the Order here considers *only* interference to other non-geostationary systems. *See* Order ¶ 17 (JA0026) ("[T]he question . . . is relevant to SpaceX's status vis-à-vis *other [non-geostationary] systems*[.]") (emphasis added). Indeed, the Order's entire discussion is sub-headed "Analysis of Overall [Non-geostationary] Interference Environment." It was based on that improperly narrow inquiry that the Commission found that "similar to . . . *Teledesic* . . . the SpaceX Third Modification will not present significant interference problems[.]" Order ¶ 18 (JA0028).

By contrast, however, *Teledesic* considered the effect of interference on *both* geostationary and non-geostationary systems:

> When analyzing the potential for increase in interference for satellite-to-Earth transmissions, we need to look at the effect

> on three different types of systems also operating in the frequency bands . . .: terrestrial systems, [geostationary] systems and other [non-geostationary] systems.

Teledesic ¶ 20. Thus, the Order did not "apply the same standard" as *Teledesic*, even as it professed to do so. This is both unreasoned decisionmaking and a failure of the agency to follow its own rules, despite having elevated the *Teledesic* decision from Bureau-level precedent to a Commission-level standard. "It is well settled that an agency is legally bound to respect its own regulations, and commits procedural error if it fails to abide them." *Esch v. Yeutter*, 876 F.2d 976, 991 (D.C. Cir. 1989); *see also Service v. Dulles*, 354 U.S. 363, 379-80 (1957).

II. The Commission Violated Its Statutory Mandate to Prevent Interference and Consider the Public Interest

Section 303 of the Communications Act, entitled "Powers and Duties of Commission," requires the Commission to "[m]ake such regulations not inconsistent with law as it may deem necessary to prevent interference between stations[.]" 47 U.S.C. § 303(f). Of course, an agency has "the informed discretion" to proceed either by rulemaking or by "individual, *ad hoc*, litigation." *SEC v. Chenery Corp.*, 332 U.S. 194, 203 (1947). The statutory duty thus extends beyond rulemakings

to cover adjudications such as the Order. Even if it did not, the Commission's duty would still be violated, as the Order nullifies a regulation promulgated by the Commission in discharging its duty—the applicable power limits.[5]

In addition, Sections 307(a), 309(a), and 316(a)(1) of the Communications Act all impose a requirement that the Commission determine whether the grant of a license or modification would serve the public convenience, interest, or necessity. This Court has said that it is "axiomatic" that the "diminution of the signal . . . thus eliminating service to some areas and some people and down-grading service to those who will continue to receive the signal" is "not in the public interest." *Hall v. FCC*, 237 F.2d 567, 572 (D.C. Cir. 1956). "If the requirements of the public interest are to be satisfied, the Commission must consider not only the public benefit from the operation of the new

[5] *De novo* review applies here rather than *Chevron* deference, which kicks in "[w]hen a court reviews an agency's construction of the statute which it administers": the Commission did not even purport to construe that statute. *Chevron, U.S.A. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 842 (1984). Further, because the "statute is clear, the [C]ourt must give effect to Congress's unambiguous language and intent," which the Commission plainly violated. *Murray Energy Corp. v. EPA*, 936 F.3d 597, 608 (D.C. Cir. 2019).

station, but also any public loss which it might occasion. Only by such a balancing can the Commission reach a legally valid conclusion on the ultimate question of the public interest." *Democrat Printing Co. v. FCC*, 202 F.2d 298, 301 (D.C. Cir. 1952).

It is well-established, including by the Commission itself, that interference is a key component of the public interest analysis. *See, e.g.*, *Authorization of Edna Cornaggia*, 8 FCC Rcd. 5442 ¶ 7 (1993) ("One component of the public interest determination is interference protection."); *Metrom Rail, LLC's Request for Waiver*, 35 FCC Rcd. 11347 ¶ 7 (2020) (noting that one strong public interest benefit of a waiver is that it "will not increase the potential for causing harmful interference to authorized users"); *Allocations & Serv. Rules for the 71-76 GHz, 81-86 GHz, & 92-95 GHz Bands*, 20 FCC Rcd. 4889 ¶ 12 (2005) (finding that "the additional assurance of no harmful interference provided by interference analyses in these bands would better serve the public interest"); *Application of Frank Hoopes*, 11 FCC Rcd. 6981 ¶ 4 (1996) ("[T]he demonstration of interference protection, at the time of filing, aids the Commission in the public interest determination[.]")

(citing *Fam. Ent. Network, Inc. Request for Authority*, 9 FCC Rcd. 566 ¶ 12 n.10 (1994)).

These principles are controlling here. As demonstrated by the three DISH studies, DISH's service will likely be harmed by SpaceX's inability to comply with the power limits. The Commission, though, failed to do any sort of public interest balancing to determine if the countervailing benefits of SpaceX's service would balance out the undisputed risks of interference. Given that satellite systems like SpaceX's system are forbidden to cause any "unacceptable interference" into DISH's system, the Commission could not have found that SpaceX's alleged benefits would outweigh the harms to DISH. *See* 47 C.F.R. 2.106 n.5.487A.

III. The Commission Unlawfully Subdelegated Its Authority

"[W]hen an agency delegates power to outside parties, lines of accountability may blur, undermining an important democratic check on government decision-making." *Defs. of Wildlife v. Gutierrez*, 532 F.3d 913, 926 (D.C. Cir. 2008) (quoting *U.S. Telecom Ass'n v. FCC*, 359 F.3d 554, 565 (D.C. Cir. 2004)). To prevent this, this Court has held that, "while federal agency officials may subdelegate their decision-

making authority to subordinates absent evidence of contrary congressional intent, they may not subdelegate to outside entities—private or sovereign—absent affirmative evidence of authority to do so." *USTA*, 359 F.3d at 566; *see also La. Pub. Serv. Comm'n v. FERC*, 860 F.3d 691, 696 (D.C. Cir. 2017); *Gutierrez*, 532 F.3d at 927.

The unlawful subdelegation doctrine is premised on a presumption about Congressional intent: "A general delegation of decision-making authority to a federal administrative agency does not, in the ordinary course of things, include the power to subdelegate that authority beyond federal subordinates." *USTA*, 359 F.3d at 566. Such a subdelegation is therefore not entitled to *Chevron* deference. *Id.*

The Order is vitiated by not one but *two* unlawful subdelegations. *First*, the Commission unlawfully subdelegated to the ITU by ceding expansive policymaking authority in the field of interference. *Second*, the Commission unlawfully delegated to SpaceX—the very entity that the Commission was supposed to be *regulating*—by deferring to its self-certification about the effects of its proposed operations. Both violations require that the Order be vacated with respect to the 12 GHz band.

This Court reviews these claims *de novo* because they turn on the interpretation of a federal statute on a matter as to which agencies do not receive deference. *See United States v. Mosquera-Murillo*, 902 F.3d 285, 292 (D.C. Cir. 2018); *USTA*, 359 F.3d at 566 (no *Chevron* deference regarding agency power to subdelegate authority to outside parties); *see also La. Pub. Serv. Comm'n v. FERC*, 761 F.3d 540, 551 (5th Cir. 2014) (holding that subdelegation challenges are reviewed de novo).

A. ITU

No provision of the Communications Act gives the Commission the express authority to subdelegate to the ITU its duty to prevent interference. While Congress gave the Commission power to craft regulations to prevent interference, *see* 47 U.S.C. § 303(f), that "general delegation of decision-making authority to a federal administrative agency does not . . . include the power to subdelegate that authority beyond federal subordinates." *USTA*, 359 F.3d at 566. Because the statute fails to give the ITU any express role in determining whether interference exists, subdelegation to the ITU is prohibited. *See id.*

One of the rationales for the subdelegation doctrine is the loss of democratic accountability to the American public. *Id.* at 565 ("[W]hen

an agency delegates power to outside parties, lines of accountability may blur, undermining an important democratic check on government decision-making."). Delegating powers to the ITU passes decisionmaking on to a body many steps removed from the average voter. That is one reason why "[t]here is significant debate over the constitutionality of assigning lawmaking functions to international bodies." *Nat. Res. Def. Council v. EPA*, 464 F.3d 1, 9 (D.C. Cir. 2006); *see, e.g.*, Julian Ku, *The Delegation of Federal Power to International Organizations*, 85 Minn. L. Rev. 71 (2000); Edward T. Swaine, *The Constitutionality of International Delegations*, 104 Colum. L. Rev. 1492 (2004).

In *USTA*, this Court acknowledged "three specific types of legitimate outside party input into agency decision-making processes: (1) establishing a reasonable condition for granting federal approval; (2) fact gathering; and (3) advice giving." 359 F.3d at 566. Such "legitimate outside party input" does not amount to subdelegation and is presumptively permissible. But when outside party involvement goes beyond such input and rises to the level of decisionmaking, the unlawful subdelegation doctrine kicks in with full force, requiring invalidation of

the subdelegated action unless the subdelegation was clearly authorized by law. None of these three types covers this case.

First, the Commission went beyond making ITU approval a condition. "[A] federal agency entrusted with broad discretion to permit or forbid certain activities may condition its grant of permission on the decision of another entity . . . so long as there is a reasonable connection between the outside entity's decision and the federal agency's determination." *Id.* at 567. The use of conditions recognizes that approval by one entity is sometimes useless without the approval of another. *See, e.g.*, *United States v. Matherson*, 367 F. Supp. 779, 782 (E.D.N.Y. 1973) (allowing federal agency to condition grant of vehicular permit on grant of local government permit because traveling through local land was required to reach the National Seashore). The ITU's promulgation of power limits and the independent endorsement of these limits by the Commission is consistent with 47 U.S.C. § 303(r), which directs the Commission to harmonize federal law with international treaties. *But that makes ITU approval a floor, not a ceiling, on the Commission's independent obligation to prevent interference.*

The ITU's role did not relieve the Commission of its own obligation to exercise final authority to scrutinize SpaceX's application. Likewise, in *South Pacific Transportation Co. v. Watt*, 700 F.2d 550 (9th Cir. 1983), the Ninth Circuit held that the Secretary of the Interior could condition approval on the Indian Tribe's approval of the railroad's right-of-way application as approval from both entities was necessary and "[t]he regulation [did] not relinquish to a tribe the final authority to approve; *it delegates a power to disapprove*." *Id.* at 556 (emphasis added). Here, the Commission did not merely delegate a power to disapprove—it abdicated its own final approval authority, effectively treating the ITU's approval as determinative. Order ¶ 40 (JA0040).

Second, the ITU did not merely conduct fact-gathering for the Commission. The Commission concluded here that the ITU is responsible for making the actual determination as to whether power limits would be violated and, thus, whether the applicant may operate. The Commission "rel[ies] on ITU Radiocommunication Bureau review as a technical matter." *Id.* ¶ 40 (JA0040). Even in *USTA*, where the problem turned on states making "crucial decisions" applying the Commission's general impairment standard to specific markets, the

Commission created the standard being applied. *USTA*, 359 F.3d at 567. Here, the ITU created the standards, approved the software being used, and was responsible for unilaterally deciding whether there would be unlawful interference. More egregiously, the ITU has not yet conducted its interference review, and the Commission waived that requirement until after SpaceX's service commences. Order ¶ 41 (JA0040). *USTA* found a problem because "FCC oversight [was] neither timely nor assured," 359 F.3d at 567—and here the Commission is openly acknowledging that it has not conducted *any* oversight and has even failed to require actual prior review by the ITU. Nor was the ITU's process "superintended" by the Commission "in every respect," in sharp contrast to *Tabor v. Joint Board for Enrollment of Actuaries*, 566 F.2d 705, 708 n.5 (D.C. Cir. 1977).

Third, the ITU was not merely providing permissible advice to the Commission. Rather, the Commission "rubber-stamped" interference determinations made by the ITU, and did so preemptively, before they were even made. "[A] federal agency may turn to an outside entity for advice and policy recommendations, provided the agency makes the final decisions itself." *USTA*, 359 F.3d at 568. An "agency may not,

however, merely 'rubber-stamp' decisions made by others under the guise of seeking their 'advice,' nor will vague or inadequate assertions of final reviewing authority save an unlawful subdelegation." *Id.* (internal citations omitted). Here, the Commission refused to assert final reviewing authority. The *2017 Non-Geostationary Order's* requirement for applicants to provide the input data files for public disclosure suggests there is some value for other parties to use that information in their public comments for the Commission's review. *2017 Non-Geostationary Order* ¶ 41.

Finally, the delegate itself sometimes does not want the job. The ITU seems to believe that compliance with the limits is the licensing country's job in cases where the ITU's software cannot adequately model the non-geostationary system. In these cases, the ITU expects an acknowledgment of the difficulty and a commitment of compliance from the domestic licensing administration. *See* Circular at 2-3 (JA0250-51); ITU Resolution 85 (WRC-03) (JA0247-48). But the Commission has not determined whether SpaceX's system can be adequately modeled by the software.

B. SpaceX

The Commission went beyond improperly subdelegating its duties to the ITU when it waived the requirement of an ITU determination until after commencement of service, and for the interim period of indeterminate length, satisfying itself with SpaceX's own self-certification that it will not violate the power limits. Order ¶ 41 (JA0040). In doing so, the Commission further subdelegated its duty, placing it in the hands of the regulated entity itself, with no agency oversight. Here, too, the relevant statute, 47 U.S.C. § 303(f), gives SpaceX no role in determining whether interference exists. Subdelegation to SpaceX is therefore prohibited under this Court's precedent.

The Commission stated that "[a] certification of compliance with [the power] limits is what is required by our rules, and we are satisfied with SpaceX's certification that it will not violate ITU [power] limits relevant to the 12.2-12.7 GHz band." Order ¶ 39 (JA0039). With no actual review by the Commission (or even by the ITU), it cannot be said that SpaceX's self-certification is merely a condition, fact-gathering, or advice to assist the Commission in making its own decision.

While the self-certification requirement may have started out as a condition, the Commission removed any further layers of review beyond it. Moreover, there can be no fact-gathering without the gathering of facts. The Commission did not treat SpaceX's self-certification as one fact to be analyzed alongside the other facts in the record—such as DISH's studies. Instead, the Commission ignored the contrary evidence and accepted SpaceX's self-serving judgment regarding its own compliance without question. Finally, SpaceX's self-certification can hardly be viewed as mere advice for the Commission. Instead, the Commission has "rubber stamped" SpaceX's self-certification. *See USTA*, 359 F.3d at 568.

Because the Order is premised on the Commission's violations of the unlawful subdelegation doctrine, the Order is contrary to law and this Court should vacate it with respect to the 12 GHz band.

IV. The Order Vitiates Judicial Review and Infringes DISH's Right to Due Process

The abdication of the Commission's duties also frustrates the statutory right to judicial review of Commission orders of this kind.[6] The Communications Act gives a "right to appeal" to any "person who is aggrieved or whose interests are adversely affected" by a grant of an application for a station license. 47 U.S.C. § 402(b)(6). In fact, no doubt in light of the highly specialized nature of these Commission actions, the statute does not allow appeals to any Court of Appeals that has venue. Rather, appeals are limited to this Court. 47 U.S.C. § 402(b).

But the consignment of the question of interference to the ITU robs DISH of the right to appeal and strips this Court of its rightful jurisdiction. Suppose the ITU finds, consistent with its Circular, that this is a case "where the software cannot adequately model certain non-geostationary satellite [ ] systems[.]" Circular at 2 (JA0250). Suppose it nevertheless gives the system a favorable finding for an arbitrary reason, say overwork. Or, suppose it referred SpaceX's case to a

---

[6] *See* note 5 above regarding the standard for review. Also, this Court "review[s] constitutional challenges to agency action *de novo*." *National Lifeline Ass'n v. FCC*, 983 F.3d 498, 507 (D.C. Cir. 2020).

working group because the software could not "adequately model" the system, and the working group made recommendations for future use, but not for this case. *See id.* at 3 (JA0251). And, what if the ITU declined to rule, referring back to its Circular, declaiming that the responsibility belongs to Norway, the United States, or anyone *but* the ITU?

Had a comparable action been taken by the Commission, it would be reviewable by this Court, which would almost certainly set it aside. But here, the same action will be unappealable by virtue of the Order's relegation of this important question to a body that lies outside the reach of this Court's (or any court's) jurisdiction. *See Spectrum Five LLC v. FCC*, 758 F.3d 254, 260 (D.C. Cir. 2014).

DISH's right to due process is also offended by the Order. "Ultimately, of course, the procedures of the Commission must be measured against the demands of due process as well as the statutory requirements of the Communications Act." *RKO Gen., Inc. v. FCC*, 670 F.2d 215, 232 (D.C. Cir. 1981). "A procedural due process violation under the Fifth Amendment occurs when a government official deprives a person of property without appropriate procedural protections—

protections that include, at minimum, the basic requirements of notice and an opportunity to be heard." *N. Am. Butterfly Ass'n v. Wolf*, 977 F.3d 1244, 1265 (D.C. Cir. 2020).

The Order deprived DISH of this opportunity before significantly limiting DISH's right to use its satellites by permitting interference into them. DISH has no right or ability to be heard before the ITU and no avenue to appeal or otherwise challenge its ultimate determination. Rather, only countries (or "national administrations") have standing to complain of interference problems with the ITU. The SpaceX system operates under ITU network filings made by both Norway and the United States. But here the national administration for DISH is the United States, and the Commission has already told DISH it will not consider its interference evidence, cutting DISH off from any access to the ITU process.

Because DISH has been deprived of its statutory right to judicial review, as well as its constitutional right to be heard, the Order is contrary to law.

CONCLUSION

For the foregoing reasons, this Court should vacate the Order with respect to SpaceX's authorization to use the 12 GHz band.

Dated: October 26, 2021

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CERTIFICATE OF COMPLIANCE

I, Pantelis Michalopoulos, counsel for Appellant DISH Network Corporation, hereby certify pursuant to Fed. R. App. P. 32(g) that the brief complies with the type-volume limitations of Fed. R. App. P. 27(d)(2). This motion was prepared in a proportionally space typeface using 14-point, Century font, and contains 10,988 words, excluding the parts of the document exempted by Fed. F. App. P. 32(f).

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STATUTES AND REGULATIONS ADDENDUM

STATUTORY AND REGULATORY ADDENDUM

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STATUTES

5 U.S.C. § 706

§ 706. Scope of review

To the extent necessary to decision and when presented, the reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, and determine the meaning or applicability of the terms of an agency action. The reviewing court shall--

(1) compel agency action unlawfully withheld or unreasonably delayed; and

(2) hold unlawful and set aside agency action, findings, and conclusions found to be--

(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;

(B) contrary to constitutional right, power, privilege, or immunity;

(C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right;

(D) without observance of procedure required by law;

(E) unsupported by substantial evidence in a case subject to sections 556 and 557 of this title or otherwise reviewed on the record of an agency hearing provided by statute; or

(F) unwarranted by the facts to the extent that the facts are subject to trial de novo by the reviewing court.

In making the foregoing determinations, the court shall review the whole record or those parts of it cited by a party, and due account shall be taken of the rule of prejudicial error.

47 U.S.C. § 303 (c), (f), (r)

§ 303. Powers and duties of Commission

Except as otherwise provided in this chapter, the Commission from time to time, as public convenience, interest, or necessity requires, shall—

* * *

(c) Assign bands of frequencies to the various classes of stations, and assign frequencies for each individual station and determine the power which each station shall use and the time during which it may operate;

* * *

(f) Make such regulations not inconsistent with law as it may deem necessary to prevent interference between stations and to carry out the provisions of this chapter: Provided, however, That changes in the frequencies, authorized power, or in the times of operation of any station, shall not be made without the consent of the station licensee unless the Commission shall determine that such changes will promote public convenience or interest or will serve public necessity, or the provisions of this chapter will be more fully complied with;

* * *

(r) Make such rules and regulations and prescribe such restrictions and conditions, not inconsistent with law, as may be necessary to carry out the provisions of this chapter, or any international radio or wire communications treaty or convention, or regulations annexed thereto, including any treaty or convention insofar as it relates to the use of radio, to which the United States is or may hereafter become a party.

* * *

47.U.S.C § 307(a)

§ 307. Licenses

(a) Grant

The Commission, if public convenience, interest, or necessity will be served thereby, subject to the limitations of this chapter, shall grant to any applicant therefor a station license provided for by this chapter.

47. U.S.C. § 309(a)

§ 309. Application for license

(a) Considerations in granting application

Subject to the provisions of this section, the Commission shall determine, in the case of each application filed with it to which section 308 of this title applies, whether the public interest, convenience, and necessity will be served by the granting of such application, and, if the Commission, upon examination of such application and upon consideration of such other matters as the Commission may officially notice, shall find that public interest, convenience, and necessity would be served by the granting thereof, it shall grant such application.

47. U.S.C. § 316(a)(1)

§ 316. Modification by Commission of station licenses or construction permits; burden of proof

(a)(1) Any station license or construction permit may be modified by the Commission either for a limited time or for the duration of the term thereof, if in the judgment of the Commission such action will promote the public interest, convenience, and necessity, or the provisions of this chapter or of any treaty ratified by the United States will be more fully complied with. No such order of modification shall become final until the holder of the license or permit shall have been notified in writing of the proposed action and the grounds and reasons therefor, and shall be given reasonable opportunity, of at least thirty days, to protest such proposed order of modification; except that, where safety of life or property is involved, the Commission may by order provide, for a shorter period of notice.

47 U.S.C. § 402(b), (c)

§ 402. Judicial review of Commission's orders and decisions

(b) Right to appeal

Appeals may be taken from decisions and orders of the Commission to the United States Court of Appeals for the District of Columbia in any of the following cases:

(1) By any applicant for a construction permit or station license, whose application is denied by the Commission.

(2) By any applicant for the renewal or modification of any such instrument of authorization whose application is denied by the Commission.

(3) By any party to an application for authority to transfer, assign, or dispose of any such instrument of authorization, or any rights thereunder, whose application is denied by the Commission.

(4) By any applicant for the permit required by section 325 of this title whose application has been denied by the Commission, or by any permittee under said section whose permit has been revoked by the Commission.

(5) By the holder of any construction permit or station license which has been modified or revoked by the Commission.

(6) By any other person who is aggrieved or whose interests are adversely affected by any order of the Commission granting or denying any application described in paragraphs (1), (2), (3), (4), and (9) of this subsection.

(7) By any person upon whom an order to cease and desist has been served under section 312 of this title.

(8) By any radio operator whose license has been suspended by the Commission.

(9) By any applicant for authority to provide interLATA services under section 271 of this title whose application is denied by the Commission.

(10) By any person who is aggrieved or whose interests are adversely affected by a determination made by the Commission under section 618(a)(3) of this title.

(c) Filing notice of appeal; contents; jurisdiction; temporary orders

Such appeal shall be taken by filing a notice of appeal with the court within thirty days from the date upon which public notice is given of the decision or order complained of. Such notice of appeal shall contain a concise statement of the nature of the proceedings as to which the appeal is taken; a concise statement of the reasons on which the appellant intends to rely, separately stated and numbered; and proof of service of a true copy of said notice and statement upon the Commission. Upon filing of such notice, the court shall have jurisdiction of the proceedings and of the questions determined therein and shall have power, by order, directed to the Commission or any other party to the appeal, to grant such temporary relief as it may deem just and proper. Orders granting temporary relief may be either affirmative or negative in their scope and application so as to permit either the maintenance of the status quo in the matter in which the appeal is taken or the restoration of a position or status terminated or adversely affected by the order appealed from and shall, unless otherwise ordered by the court, be effective pending hearing and determination of said appeal and compliance by the Commission with the final judgment of the court rendered in said appeal.

REGULATIONS

47 C.F.R. § 0.31(a)

§ 0.31 Functions of the Office.

The Office of Engineering and Technology has the following duties and responsibilities:

(a) To evaluate evolving technology for interference potential and to suggest ways to facilitate its introduction in response to Bureau initiatives, and advise the Commission and staff offices in such matters.

47 C.F.R. § 1.3

§ 1.3 Suspension, amendment, or waiver of rules.

The provisions of this chapter may be suspended, revoked, amended, or waived for good cause shown, in whole or in part, at any time by the Commission, subject to the provisions of the Administrative Procedure Act and the provisions of this chapter. Any provision of the rules may be waived by the Commission on its own motion or on petition if good cause therefor is shown.

47 C.F.R. § 1.4(b)(2)

§ 1.4 Computation of time.

(b) General Rule—Computation of Beginning Date When Action is Initiated by Commission or Staff. Unless otherwise provided, the first day to be counted when a period of time begins with an action taken by the Commission, an Administrative Law Judge or by members of the Commission or its staff pursuant to delegated authority is the day after the day on which public notice of that action is given. See § 1.4(b)(1)–(5) of this section. Unless otherwise provided, all Rules measuring time from the date of the issuance of a Commission document entitled "Public Notice" shall be calculated in accordance with this section. See § 1.4(b)(4) of this section for a description of the "Public Notice" document. Unless otherwise provided in § 1.4(g) and (h) of this section, it is immaterial whether the first day is a "holiday." For purposes of this section, the term public notice means the date of any of the following events: See § 1.4(e)(1) of this section for definition of "holiday."

(2) For non-rulemaking documents released by the Commission or staff, including the Commission's section 271 determinations, 47 U.S.C. 271, the release date.

Example 3: The Chief, Mass Media Bureau, adopts an order on Thursday, April 2, 1987. The text of that order is not released to the public until Friday, April 3, 1987. Public notice of this decision is given on Friday, April 3, 1987. Saturday, April 4, 1987, is the first day to be counted in computing filing periods.

47 C.F.R. § 2.106 n.5.487A

5.487A *Additional allocation*: in Region 1, the band 11.7-12.5 GHz, in Region 2, the band 12.2-12.7 GHz and, in Region 3, the band 11.7-12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. 5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

47 C.F.R. § 25.103
provides in pertinent part:

§ 25.103 Definitions.

Terms with definitions including the "(RR)" designation are defined in the same way in § 2.1 of this chapter and in the Radio Regulations of the International Telecommunication Union.

* * *

Direct Broadcast Satellite (DBS) Service. A radiocommunication service in which signals transmitted or retransmitted by Broadcasting–Satellite Service space stations in the 12.2–12.7 GHz band are intended for direct reception by subscribers or the general public. For the purposes of this definition, the term direct reception includes individual reception and community reception.

* * *

Equivalent Power Flux Density (EPFD). The sum of the power flux densities produced at a geostationary-orbit receive earth or space station on the Earth's surface or in the geostationary orbit, as appropriate, by all the transmit stations within a nongeostationary orbit Fixed–Satellite Service system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing in its nominal direction. The equivalent power flux density, in dB(W/m^2) in the reference bandwidth, is calculated using the following formula:

$$10 \log_{10} \left[\sum_{n=1}^{N_a} 10^{\frac{P_i}{10}} \frac{G_t(\theta_i)}{4\pi d_i^2} \cdot \frac{G_r(\phi_i)}{G_{r,max}} \right]$$

Where:

Na is the number of transmit stations in the non-geostationary orbit system that are visible from the GSO receive station considered on the Earth's surface or in the geostationary orbit, as appropriate;

i is the index of the transmit station considered in the non-geostationary orbit system;

Pi is the RF power at the input of the antenna of the transmit station, considered in the non-geostationary orbit system in dBW in the reference bandwidth;

θ_i is the off-axis angle between the boresight of the transmit station considered in the non-geostationary orbit system and the direction of the GSO receive station;

$G_t(\theta_i)$ is the transmit antenna gain (as a ratio) of the station considered in the non-geostationary orbit system in the direction of the GSO receive station; di is the distance in meters between the transmit station considered in the non-geostationary orbit system and the GSO receive station;

φ_i is the off-axis angle between the boresight of the antenna of the GSO receive station and the direction of the ith transmit station considered in the non-geostationary orbit system;

$G_r(\theta_i)$ is the receive antenna gain (as a ratio) of the GSO receive station in the direction of the ith transmit station considered in the non-geostationary orbit system;

$G_{r,max}$ is the maximum gain (as a ratio) of the antenna of the GSO receive station.

* * *

Fixed–Satellite Service (FSS). A radiocommunication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point

within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service; the Fixed–Satellite Service may also include feeder links of other space radiocommunication services. (RR)

Geostationary-orbit (GSO) satellite. A geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a geosynchronous satellite which remains approximately fixed relative to the Earth.

Inter–Satellite Service. A radiocommunication service providing links between artificial earth satellites.

Ku band. In this rule part, the terms “Ku band” and “conventional Ku band” refer to the 11.7–12.2 GHz (space-to–Earth) and 14.0–14.5 GHz (Earth-to-space) bands. These paired bands are allocated to the Fixed–Satellite Service and are also referred to as the 12/14 GHz bands.

* * *

NGSO. Non-geostationary orbit.

* * *

47 C.F.R. § 25.146

§ 25.146 Licensing and operating provisions for NGSO FSS space stations.

(a) An NGSO FSS applicant proposing to operate in the 10.7–30 GHz frequency range must certify that it will comply with:

(1) Any applicable power flux-density levels in Article 21, Section V, Table 21–4 of the ITU Radio Regulations (incorporated by reference, § 25.108), except that in the 19.3–19.4 GHz and 19.6–19.7 GHz bands applicants must certify that they will comply with the ITU PFD limits governing NGSO FSS systems in the 17.7–19.3 GHz band; and

(2) Any applicable equivalent power flux-density levels in Article 22, Section II, and Resolution 76 of the ITU Radio Regulations (both incorporated by reference, § 25.108).

(b) [Reserved by 86 FR 11644]

(c) Prior to the initiation of service, an NGSO FSS operator licensed or holding a market access authorization to operate in the 10.7–30 GHz frequency range must receive a "favorable" or "qualified favorable" finding by the ITU Radiocommunication Bureau, in accordance with Resolution 85 of the ITU Radio Regulations (incorporated by reference, § 25.108), regarding its compliance with applicable ITU EPFD limits. In addition, a market access holder in these bands must:

(1) Communicate the ITU finding to the Commission; and

(2) Submit the input data files used for the ITU validation software.

(d) Coordination will be required between NGSO FSS systems and GSO FSS earth stations in the 10.7–12.75 GHz band when:

(1) The GSO satellite network has receive earth stations with earth station antenna maximum isotropic gain greater than or equal to 64 dBi; G/T of 44 dB/K or higher; and emission bandwidth of 250 MHz; and

(2) The EPFDdown radiated by the NGSO satellite system into the GSO specific receive earth station, either within the U.S. for domestic service or any points outside the U.S. for international service, as calculated using the ITU software for examining compliance with EPFD limits exceeds—174.5 dB(W/(m^2/40kHz)) for any percentage of time for NGSO systems with all satellites only operating at or below 2500 km altitude, or—202 dB(W/(m^2/40kHz)) for any percentage of time for NGSO systems with any satellites operating above 2500 km altitude.

(e) An NGSO FSS licensee or market access recipient must ensure that ephemeris data for its constellation is available to all operators of authorized, in-orbit, co-frequency satellite systems in a manner that is mutually acceptable.

INTERNATIONAL

ITU RR 5.487A

5.487A *Additional allocation*: in Region 1, the band 11.7-12.5 GHz, in Region 2, the band 12.2-12.7 GHz and, in Region 3, the band 11.7-12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. 5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

RESOLUTION 85 (WRC-03)

Application of Article 22 of the Radio Regulations to the protection of geostationary fixed-satellite service and broadcasting-satellite service networks from non-geostationary fixed-satellite service systems

The World Radiocommunication Conference (Geneva, 2003),

considering

a) that WRC-2000 adopted, in Article **22**, single-entry limits applicable to non-geostationary (non-GSO) fixed-satellite service (FSS) systems in certain parts of the frequency range 10.7-30 GHz to protect geostationary-satellite (GSO) networks operating in the same frequency bands;

b) that, taking into account Nos. **22.5H** and **22.5I**, wherever the limits referred to in *considering a)* are exceeded by a non-GSO FSS system to which the limits apply without the agreement of the concerned administrations, this constitutes a violation of the obligations under No. **22.2**;

c) that ITU-R has developed Recommendation ITU-R S.1503 to provide a functional description to be used in developing software tools for determining the conformity of non-GSO FSS networks with limits contained in Article **22**;

d) that there is currently no software tool available to the Radiocommunication Bureau for epfd examinations;

e) that the Bureau has issued Circular Letters CR/176 and CR/182, which request additional information from non-GSO systems in order to examine them for compliance with the Article **22** epfd limits;

f) that, since no epfd validation software is available, the Bureau has requested commitments from the notifying administrations that they will meet the epfd limits in Tables **22-1A**, **22-1B**, **22-1C**, **22-1D**, **22-1E**, **22-2** and **22-3**, and that under these commitments the Bureau gives qualified favourable findings to their systems;

g) that the Bureau is not in a position to perform its duties in relation to Nos. **9.7A** and **9.7B** due to the lack of epfd validation software;

h) that during the examination under Nos. **9.35** and **11.31**, the Bureau examines non-GSO FSS systems to ensure their compliance with the single-entry epfd limits given in Tables **22-1A**, **22-1B**, **22-1C**, **22-1D**, **22-1E**, **22-2** and **22-3**,

resolves

1 that since the Bureau is unable to examine non-GSO FSS systems subject to Nos. **22.5C**, **22.5D** and **22.5F** under Nos. **9.35** and/or **11.31**, the notifying administration shall send to the Bureau a commitment that the non-GSO FSS system complies with the limits given in Tables **22-1A**, **22-1B**, **22-1C**, **22-1D**, **22-1E**, **22-2** and **22-3** in addition to the information submitted under Nos. **9.30** and **11.15**;

2 that the Bureau shall issue either a qualified favourable finding under No. **9.35** or a favourable finding with a date of review under No. **11.31** with respect to the limits contained in Tables **22-1A**, **22-1B**, **22-1C**, **22-1D**, **22-1E**, **22-2** and **22-3**, if *resolves* 1 is satisfied, otherwise the non-GSO FSS system will receive a definitive unfavourable finding;

3 that if an administration believes that a non-GSO FSS system, for which the commitment referred to in *resolves* 1 was sent, has the potential to exceed the limits given in Tables **22-1A**, **22-1B**, **22-1C**, **22-1D**, **22-1E**, **22-2** and **22-3**, it may request from the notifying administration additional information with regard to the compliance with the limits mentioned above. Both administrations shall cooperate to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and may exchange any additional relevant information that may be available;

4 that the Bureau shall determine coordination requirements between GSO FSS earth stations and non-GSO FSS systems under Nos. **9.7A** and **9.7B** based on bandwidth overlap, and GSO FSS earth station antenna maximum isotropic gain, G/T and emission bandwidth;

5 that this Resolution shall no longer be applied after the Bureau has communicated to all administrations via a Circular Letter that the epfd validation software is available and the Bureau is able to verify compliance with the limits in Tables **22-1A**, **22-1B**, **22-1C**, **22-1D**, **22-1E**, **22-2** and **22-3** and to determine the coordination requirements under Nos. **9.7A** and **9.7B**,

further resolves

that those provisions of the Radio Regulations that have been amended by this Conference and that are referred to in *resolves* 5 shall provisionally apply as from 5 July 2003,

instructs the Director of the Radiocommunication Bureau

1 to encourage administrations to develop the epfd validation software;

2 to review, once the epfd validation software is available, its findings made in accordance with Nos. **9.35** and **11.31**;

3 to review, once the epfd validation software is available, the coordination requirements under Nos. **9.7A** and **9.7B**.

Radiocommunication Bureau (BR)

Circular Letter
CR/414

6 December 2016

To the Administrations of ITU Member States

Subject: **Examinations under Resolution 85 (WRC-03)**

Resolution **85 (WRC-03)** requires the Radiocommunication Bureau to review, once the equivalent power flux-density (EPFD) validation software is available, its findings made in accordance with Nos. **9.35** and **11.31** for frequency assignments to non-GSO FSS satellite systems against the single-entry EPFD limits in Tables 22-1A, 22-1B, 22-1C, 22-1D, 22-1E, 22-2 and 22-3 in Article **22** of the Radio Regulations, and to determine the coordination requirements under Nos. **9.7A** and **9.7B.**

In Circular Letter CR/405 (3 June 2016), the Bureau informed administrations of the availability of a beta version of the EPFD validation software for testing and evaluation purposes.

Since the release of the beta version of the software, the Bureau has collected comments and suggestions for possible improvements to the software. Those comments have been taken into account in preparing the final version of the software.

The Bureau is pleased to inform your Administration that the final version of the software for implementing Recommendation ITU-R S.1503-2 is available on the ITU website www.itu.int/ITU-R/go/space-epfd/en and will be made available on the DVD version of BR IFIC (Space services) 2384/06.12.2016 and subsequent issues.

The EPFD validation package includes a Graphical Interface for Batch Calculations (GIBC) module used as an interface to launch the EPFD validation, two EPFD validation tools, two test cases and a user guide.

The purpose of this circular letter is to provide administrations and other users with information and guidance on the EPFD validation software and implementation of the *instructs the Director of the Radiocommunication Bureau* section of Resolution **85** (WRC-03).

In accordance with *instructs the Director of the Radiocommunication Bureau* 2 and 3 of Resolution **85**, the Bureau will be initiating a review of its findings made in accordance with Nos. **9.35** and **11.31**, as appropriate, and of the coordination requirements under Nos. **9.7A** and **9.7B**.

The Bureau will determine whether the frequency assignments to:

a) non-GSO FSS satellite systems comply with the EPFD limits contained in Tables **22-1A**, **22-1B, 22-1C, 22-1D, 22-1E, 22-2 and 22-3** of Article **22**;

b) specific large earth stations (under certain conditions) require coordination under No. **9.7A** with respect to any existing non-GSO FSS satellite systems using the coordination triggers in Appendix **5**; or

c) non-GSO FSS satellite systems require coordination under No. **9.7B** with respect to any large earth station (under certain conditions) using the coordination triggers in Appendix **5**.

For the above purposes, the Bureau will contact individually each administration having submitted non-geostationary satellite systems in the fixed-satellite service, including frequency assignments with qualified favourable findings in accordance with Resolution **85** (WRC-03), and request the administration to submit the following within three months from the date of dispatch of the communication:

- PFD and EIRP mask data (data elements under §A.14 of Appendix **4**) in accordance with the detailed description of the masks in Recommendation ITU-R S.1503-2, Part B. The mask data should be submitted in XML format, the description of which can be found at www.itu.int/ITU-R/go/space-mask-XMLfile/en; and

- any other Appendix **4** data elements required for stations in a frequency band subject to Nos. 22.5C, 22.5D or 22.5F (i.e. subject to EPFD examination) which may have been missing in the original submissions or may require amendment in order to run the EPFD validation software correctly along with the PFD/EIRP mask data.

The above information would not change the formal date of receipt of the frequency assignments concerned if the information or clarification is provided within the three-month period indicated. In the case of a satellite system with different subsets of orbital characteristics that are mutually exclusive, the requested data shall be provided for each subset of orbital parameters subject to the limits in Article **22** and to No. **9.7B**.

If the required information is not provided within the aforementioned three-month period, the submission shall be deemed incomplete and a new formal date of receipt established when the complete information is received.

The submitted PFD and EIRP masks together with the results of the EPFD examination will be published in the BR IFIC (Space services) and posted at www.itu.int/ITU-R/go/space-epfd/en.

The 2015 World Radiocommunication Conference (WRC-15) reviewed the progress reported by the Director of BR regarding the development of the EPFD validation software, and at its eighth plenary meeting approved the second report of Committee 5 to the Plenary Meeting (see Documents CMR15/416 and CMR15/505) indicating that:

- *In cases where the software cannot adequately model certain non-geostationary satellite FSS systems, Resolution **85** (WRC-03) will continue to be applied until an update to Recommendation ITU-R S.1503 improving the modelling of those non-GSO systems has been agreed within ITU-R and has been implemented in the epfd validation software. This would not preclude the Bureau to undertake verification of the non-GSO FSS systems that can be modelled with the existing version of the software.*

In accordance with the above decision, the Bureau would, upon receipt of an indication that *the software cannot adequately model* a particular *non-geostationary satellite FSS system,* refer the case to ITU-R Study Group 4/Working Party 4A for consideration as to whether further improvements to the Recommendation ITU-R S.1503-2 methodology are required in order to model the system adequately. To support this review by the Bureau and Study Group 4/Working Party 4A, further detailed technical description shall be provided, including *inter alia*:

1) the results of calculations using existing EPFD validation software;

2) the results of EPFD calculations using simulation software with adequate modelling of the non-geostationary system;

3) identification of particular areas of Recommendation ITU-R S.1503-2 that need to be reviewed and improved.

The above information will be published on the ITU website and as part of the submission made to Study Group 4/Working Party 4A for consideration. If Study Group 4/Working Party 4A concurs with the administration and concludes that a review of Recommendation ITU-R S.1503-2 is necessary in order to model the system adequately, the Bureau would maintain the "qualified favourable" findings until a new revision of Recommendation ITU-R S.1503 is agreed to and implemented in a new version of the EPFD validation software.

For any specific questions relating to the functioning of the EPFD validation software, or in order to put forward suggestions and ideas for possible improvements, administrations are invited to contact the Bureau via BRMail@itu.int or epfd-support@itu.int.

The Bureau remains at the disposal of your Administration, via the brmail@itu.int e-mail address or the specific EPFD validation tool forum, for any clarifications you may require with respect to the subjects covered in this circular letter.

François Rancy
Director

Distribution:

- Administrations of ITU Member States
- Members of the Radio Regulations Board

CERTIFICATE OF SERVICE

I hereby certify that, on October 26, 2021 I electronically filed the foregoing document with the United States Court of Appeals for the D.C. Circuit by using the CM/ECF system. I certify that the counsel of record for all parties are registered as ECF Filers and that they will be served by the CM/ECF system.

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