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UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION

COMMISSIONERS:

Lina M. Khan, Chair
Noah Joshua Phillips
Rohit Chopra
Rebecca Kelly Slaughter
Christine S. Wilson

In the Matter of

Broadcom Incorporated,
a corporation.

Docket No. C-4750

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, as amended, 15 U.S.C. § 41, et seq., and by virtue of the authority vested in it by said Act, the Federal Trade Commission ("Commission"), having reason to believe that Broadcom Inc. ("Broadcom"), a corporation, hereinafter sometimes referred to as "Respondent," has violated the provisions of Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues this Complaint stating its charges in that respect as follows:

NATURE OF THE CASE

1. Respondent Broadcom possesses monopoly power in markets for the sale of several semiconductor components (chips) used in connection with the delivery of subscription video and broadband internet service (as hereinafter defined, the "Monopolized Products"). The Monopolized Products are incorporated by Broadcom's customers into video set-top boxes and broadband internet access devices.

2. Broadcom also is a supplier in markets for the sale of other semiconductor components related to the Monopolized Products (as hereinafter defined, the "Related Products"). The Related Products are also incorporated by Broadcom's customers into video set-top boxes and broadband internet access devices.

3. Since 2016, Broadcom has entered and maintained agreements with customers that require customers to purchase, use, or bid Monopolized Products and Related Products from Broadcom on an exclusive or near-exclusive basis. Broadcom secured these restrictive contract terms in part by threatening to retaliate against "disloyal" customers in various ways, including by withholding needed Monopolized Products, by charging higher prices for needed Monopolized Products, or by withholding support for previously purchased Monopolized Products. Broadcom employed threats of retaliation against other customers to deter these customers from using products supplied by Broadcom's rivals. This conduct supplemented the foreclosure effect of its written agreements. Through these contracts and coercive tactics, Broadcom foreclosed rivals from a substantial share of the relevant product markets and harmed competition in these markets.

4. Broadcom entered such agreements and employed such coercive tactics as part of a deliberate strategy to hinder its competitors, to enhance or maintain its monopoly power in the markets for Monopolized Products, and to restrain competition in the markets for Related Products.

5. Broadcom's conduct harmed consumers, competition, and the competitive process, in violation of Section 5 of the FTC Act.

RESPONDENT

6. Respondent Broadcom Inc. is a corporation organized, existing, and doing business under and by virtue of the laws of the United States, with its principal place of business located at 1320 Ridder Park Drive, San Jose, CA 95131.

JURISDICTION

7. At all times relevant herein Broadcom has been, and Broadcom is now, a corporation, as "corporation" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44.

8. Broadcom has engaged in and continues to engage in commerce and activities affecting commerce in the United States, as the term "commerce" is defined in Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44.

INDUSTRY BACKGROUND

9. Broadcom designs, develops, and sells semiconductor components, including Systems-on-a-Chip ("SOCs"), Wi-Fi chips, and front-end chips (described further below), for a wide range of computing and telecommunications applications, including for video set-top boxes ("STBs") that consumers use to access television and other video services, and broadband internet access devices such as modems and gateways ("Broadband Devices") used to access internet service (collectively, "Customer Devices""). Broadcom also provides essential ongoing engineering and software support services ("ESS Services") for devices containing its components.

10. The products at issue in this Complaint are components incorporated into Customer Devices that are purchased by providers of subscription video (e.g., television) or internet connectivity services (“Service Providers”). Service Providers use Customer Devices to provide their services to end consumers. Examples of major United States Service Providers include AT&T, Charter, Comcast, DISH, and Verizon.

11. An STB is a hardware device that converts external source signals into video content for a television, whether such video content is transmitted via traditional (e.g., cable, satellite, fiber-optic) or Internet Protocol (“IP”) technologies.

(a) A “Broadcast STB,” also referred to as a “traditional” STB, is a Set Top Box that uses a broadcast interface to access subscription video services provided by a Service Provider, whether or not the Set Top Box also is capable of decoding IP signals to access video services.

(b) A “Streaming STB” is a Set Top Box that decodes IP signals to access video services provided by a Service Provider or other third party and that does not contain a broadcast interface to access subscription video services provided by a Service Provider.

12. A Broadband Device is a hardware device, such as a modem, gateway, embedded multimedia terminal adapter, passive optical network terminal, or router, used by a consumer to connect electronic devices to broadband internet service furnished by a Service Provider via a cable, fiber optic, or digital subscriber line (“DSL”) network.

13. Customer Devices are typically manufactured by one or more original equipment manufacturers (“OEMs”) to the specifications of a Service Provider. Because OEMs and Service Providers both play important roles in the selection of components for use in Customer Devices, major OEMs and major Service Providers are both key customers for component suppliers like Broadcom.

14. In the tender and design process for a new STB or Broadband Device, a Service Provider typically issues a request for proposals (“RFP”) to several OEMs, setting forth technical specifications. In some instances, a Service Provider may also specify by name required suppliers of key semiconductor components. The OEMs, working with component suppliers such as Broadcom, develop product designs and submit engineering and commercial proposals to the Service Provider.

15. When a Service Provider launches a device model, it provides the devices to its end-user customers. Once deployed on a Service Provider’s network, Customer Devices remain in service for approximately five to ten years, with STBs typically remaining in service longer than Broadband Devices. While a device is deployed, Service Providers rely on the device’s key component suppliers, including Broadcom, for ongoing ESS Services,

including software support and maintenance, troubleshooting, bug fixes, software updates and upgrades, and testing.

RELEVANT PRODUCTS

16. This action concerns the following products, each comprising a type of component incorporated into Customer Devices (and each, a "Relevant Product"):

(a) A Broadcast STB SOC is an integrated circuit that serves as the core component within, and directs functions and features of, a Broadcast STB;

(b) A DSL Broadband SOC is an integrated circuit that serves as the core component within, and directs functions and features of, a Broadband Device that accesses internet service via a DSL network;

(c) A Fiber Broadband SOC is an integrated circuit that serves as the core component within, and directs functions and features of, a Broadband Device that accesses internet service via a fiber optic network;

(d) A Streaming STB SOC is an integrated circuit that serves as the core component within, and directs functions and features of, a Streaming STB;

(e) A Cable Broadband SOC is an integrated circuit that serves as the core component within, and directs functions and features of, a Broadband Device that accesses internet service via a cable network;

(f) A Wi-Fi Chip is an integrated circuit that enables an STB or Broadband Device to connect to a wireless network;

(g) A Front-End Chip for an STB is an integrated circuit that converts incoming analog signals to digital signals to be read by the SOC in the STB; and

(h) A Front-End Chip for a Broadband Device is an integrated circuit that converts incoming analog signals to digital signals to be read by the SOC in the Broadband Device.

BROADCOM'S ANTICOMPETITIVE CONDUCT

17. Broadcom has long been the dominant supplier of Broadcast STB SOCs, DSL Broadband SOCs, and Fiber Broadband SOCs (the "Monopolized Products").

18. As early as 2016, Broadcom recognized that it faced competitive threats to its monopoly power as to the Monopolized Products from low-priced, nascent rivals. Broadcom understood that nascent rivals could, by working with key OEMs and Service Providers, become stronger, more effective competitors.

19. One competitive threat arose from efforts by leading Service Providers and OEMs to lessen their dependence on Broadcom and to foster competition in Customer Device component markets. Both Service Providers and OEMs sought component supplier diversity for multiple reasons, including to promote competitive pricing and to ensure continuity of supply. OEMs also sought supplier diversity to maximize their ability to meet the component supplier preferences of Service Provider customers.

20. To this end, leading Service Providers at times have asked OEMs to submit multiple responses to RFPs, with each response incorporating components from a different supplier, or have asked OEMs to design and bid a device using particular identified component suppliers. OEMs, in turn, have sought to comply with these requests from their customers.

21. At other times, leading Service Providers sought to provide opportunities for capable but less established suppliers to gain experience and scale by, for example, considering them for partial design awards involving relatively low-end versions of Relevant Products, including Monopolized Products. And in 2016, at least one major OEM actively sought to develop products using non-Broadcom suppliers for Monopolized Products.

22. An important factor affecting demand for Relevant Products is that customers are increasingly "cutting the cord" to traditional broadcast (e.g., cable or satellite) television and instead accessing video content via an internet connection, for example, through a Streaming STB that accesses content via the home's broadband modem. This has led to a decline in the use of Broadcast STBs (where Broadcom components are dominant) and to a relative increase in the commercial significance of Streaming STBs.

23. While demand for Broadcast STBs is declining, this decline has a "long tail." Even as many consumers cut the cord, there are many other consumers who will continue using Broadcast STBs for some time to come. Additionally, once deployed, a Broadcast STB remains in use for several years, with Service Providers continuing to rely on Broadcom to provide support for their installed base.

24. As described below, these shifting market dynamics presented Broadcom with an incentive and opportunity to maintain its monopoly power over Broadcast STB SOCs and to use that power to weaken rivals in the markets for Related Products, including components of streaming and cable broadband devices.

25. Broadcom recognized these threats and opportunities. It sought to maintain its monopoly positions by implementing a wide-ranging exclusivity program covering Monopolized Products. Broadcom also conditioned customers' access to Monopolized Products on commitments to purchase, use, or bid Related Products from Broadcom on an exclusive or near-exclusive basis. Through a series of long-term contracts entered with both OEMs and Service Providers, and through an accompanying campaign of threats and retaliation, Broadcom induced customers to purchase or use Broadcom's Relevant Products on an

exclusive or near-exclusive basis. As a result, sales opportunities for Broadcom rivals were severely restricted.

OEM Agreements

26. Between 2016 and the present, Broadcom negotiated and entered into agreements with leading OEMs, pursuant to which the OEMs agreed, for contract and renewal terms spanning multiple years, to purchase, use, or bid Broadcom Relevant Products in STBs and Broadband Devices on an exclusive or near-exclusive basis.

27. Broadcom induced OEMs to enter these agreements by communicating that OEMs that broadly committed to Broadcom would be treated as favored or "strategic" partners. Customers that did not broadly commit to Broadcom would be mere "tactical" customers, facing higher prices and less favorable non-price terms and conditions than their rivals, including disadvantageous technology access, product allocation, delivery lead times, and bid support. In other words, OEMs that did not accept exclusivity, the "tactical" customers, would find themselves at a significant commercial disadvantage relative to other, competing OEMs that did agree to purchase exclusively from Broadcom.

28. In all, Broadcom entered exclusive or near-exclusive agreements with at least ten OEMs, which collectively are responsible for a majority of STB and Broadband Device sales worldwide, and even higher percentages of STB and Broadband Device sales in the United States.

29. These OEMs included the largest and most capable Customer Device OEMs, those with the largest market shares, the most extensive engineering and design capabilities, and the strongest reputations and relationships with downstream Service Provider customers.

Service Provider Agreements

30. In parallel with its pursuit of exclusive agreements with OEMs, in 2016 Broadcom also began seeking exclusivity and high share commitments from major Service Providers, first in the United States, and later around the world.

31. As a lever to extract these commitments, Broadcom threatened that if a Service Provider did not limit its purchases from Broadcom's rivals, Broadcom would implement large increases in the fees it charged for ESS Services on devices containing Broadcom Monopolized Products, including Broadcast STB SOCs, that were already deployed on the Service Providers' networks.

32. Charging substantial fees for ESS Services was a departure from Broadcom's prior practice and course of dealing with the Service Providers. Service Providers rely on Broadcom to provide these ESS Services, which are essential to the continued operation of STBs and Broadband Devices deployed on their networks. Service Providers cannot obtain ESS

Services for Broadcom-based devices from anyone other than Broadcom, nor can they perform these services themselves.

33. This initiative resulted in a series of agreements with major Service Providers pursuant to which the Service Providers committed, for contract terms spanning multiple years, to use Broadcom Relevant Products on an exclusive or near-exclusive basis for their STBs and Broadband Devices.

34. These Service Provider agreements, including agreements with key U.S. Service Providers, have reinforced and exacerbated the effects of Broadcom's OEM agreements on competition, including foreclosing rivals from significant sales opportunities.

Monitoring and Enforcement

35. Broadcom actively monitored customers' compliance with its restrictive agreements, refusing to grant requested exceptions to exclusivity even where Broadcom was not cost-competitive or did not have an appropriate solution for a given RFP.

36. Broadcom communicated to customers that disloyalty as to even a single bid involving a single Relevant Product could mean loss of strategic partner terms, that is, the favorable price, supply, and support terms to which customers were otherwise entitled under their agreements, across numerous product lines.

37. Broadcom induced OEM counterparties to withdraw bids they had made using a rival's Relevant Product under the threat that Broadcom otherwise would charge higher prices for other products, including Monopolized Products.

Threats and Retaliation

38. Broadcom supplemented its formal, written agreements with ad hoc retaliation and threats thereof against Service Providers and OEMs that used, or considered using, Relevant Products from Broadcom's rivals. Targets of these tactics included Service Providers and OEMs that had not entered into written exclusive agreements with Broadcom. Broadcom adopted a strategy of imposing selective price increases as punishment to deter customers from supporting its rivals.

39. For example, when a major Service Provider considered awarding a minority share of a design award to a new supplier rather than to Broadcom, Broadcom thwarted its rival by threatening increased prices on Broadcom's current business with the Service Provider, as well as increased prices for ESS Services. Thereafter, the Service Provider awarded the entirety of the design award to Broadcom.

40. In another example, when an OEM that did not yet have an exclusive agreement with Broadcom submitted a bid to a Service Provider using a non-Broadcom component, Broadcom responded by cutting off all supply and support to that OEM and announcing

significantly increased prices. As a result, and in order to reverse these adverse actions, the OEM withdrew its bid for that Service Provider opportunity. Also as a result of these actions, it entered an exclusive agreement with Broadcom.

41. Broadcom also employed coercive tactics to prevent OEMs from submitting, or to induce them to withdraw, bids that presented a Service Provider with both a Broadcom and an alternative non-Broadcom option, even when the Service Provider specifically requested such alternative bids.

42. Broadcom's threats of retaliation were pervasive and effective, and customers learned to expect them. As one Broadcom employee noted, one only needed to inform a customer that a demand for exclusivity had "visibility" with Broadcom senior management, and the customer would foresee harmful retaliation.

BROADCOM'S MONOPOLY AND MARKET POWER

43. Broadcom has exercised and continues to exercise monopoly and market power with respect to Broadcast STB SOCs, DSL Broadband SOCs, and Fiber Broadband SOCs.

44. Broadcom has been able to maintain prices for these Monopolized Products substantially above the competitive level. Broadcom has also been able to impose upon customers unusual and disfavored non-price terms and weaken competitors through its exclusive contracting practices.

45. Additionally, Broadcom has maintained high shares in the relevant markets for Monopolized Products, which have substantial barriers to entry.

46. There is a separate relevant market for each of the above Relevant Products.

47. Each of the above Relevant Products has distinct characteristics and uses, requires unique design and production capabilities, has distinct prices, and within the semiconductor industry is generally recognized as comprising a distinct market with distinct competitors and competitive conditions.

48. For each of the above Relevant Products, other products are not close enough substitutes to prevent a hypothetical monopolist of the Relevant Product from profitably sustaining a small but significant and non-transitory increase in price.

49. The relevant geographic markets are worldwide. Each supplier of Relevant Products generally ships the products worldwide, and there are no material geographic barriers to competition for sales of Relevant Products.

50. In early 2016, Broadcom's last remaining significant rival in the sale of Broadcast STB SOCs exited that market, leaving Broadcom as the sole remaining major supplier of Broadcast STB SOCs. The remaining suppliers of Broadcast STB SOCs have a

significantly smaller market presence than Broadcom and focus on lower-end products. Broadcom has a recent track record of supplying all of the Broadcast STB SOC requirements of nearly all of the largest United States and European Service Providers. For the high-end Broadcast STBs that these Service Providers need, Broadcom is effectively the only supplier available.

51. In both the DSL and Fiber Broadband SOC markets, Broadcom describes itself as holding a "dominant #1" market share position. In each of these markets, Broadcom's market position dwarfs those of its rivals, which sell devices that target the low to middle tiers of these markets.

52. Broadcom is one of the few significant suppliers in each of the markets for Streaming STB SOCs, Cable Broadband SOCs, Wi-Fi Chips for STBs or Broadband Devices, Front-End Chips for STBs, and Front-End Chips for Broadband Devices (collectively, the "Related Products").

53. The markets for Relevant Products are concentrated and have significant barriers to entry and expansion. Such barriers include the need to invest significant time and to invest sunk costs in capital resources to (i) research, develop, and maintain current technological capabilities; (ii) develop and maintain business and engineering relationships with OEMs and Service Providers; and (iii) participate, together with OEMs, in resource intensive Service Provider tender and design processes, from initial information requests through formal proposals, selection, qualification, production, and testing. In addition to these and other structural barriers, Broadcom's anticompetitive practices as alleged herein have created further barriers to entry and expansion by limiting the number of OEM partners and the volume of sales available to would-be rivals.

COMPETITIVE EFFECTS

54. Broadcom's actions described above have foreclosed competitors from a substantial share of each of the relevant markets. This has harmed price and non-price competition and reduced innovation, as described below.

55. Broadcom's conduct has also reduced customer choice. Service Providers and OEMs wish to diversify their supply base and work with multiple component suppliers in order to increase price competition, enhance innovation, and ensure security of supply. Broadcom's conduct has substantially curtailed the ability of key Service Providers and OEMs to purchase and use Relevant Products supplied by Broadcom's rivals in a way that harmed competition.

56. Further, by requiring exclusivity and loyalty commitments for Monopolized Products and by conditioning the availability of, or sales or support terms for, Monopolized Products on exclusivity and loyalty commitments for other Relevant Products, Broadcom has weakened rivals. Winning a design award for a Relevant Product covered by such a commitment

would in effect require a rival to compensate its customers for the penalties—increased prices and/or degraded terms—that Broadcom would impose on the customer as to other projects and for other covered products. Broadcom's actions thus thwarted the ability of rival suppliers of Relevant Products to compete with Broadcom on the merits, resulting in harm to customers.

57. Additionally, as Broadcom recognized, a major OEM or Service Provider could—if unencumbered by exclusivity or loyalty commitments to Broadcom—facilitate entry or expansion by a rival supplier of Relevant Products. But Broadcom's conduct foreclosed rivals from the many significant benefits of engagement with major Service Providers and OEMs, including scale and engineering, business planning, relationship, and reputational benefits. Broadcom's conduct has also impeded rivals' product development efforts as it prevented or discouraged customers from engaging in development work with non-Broadcom suppliers. The loss of opportunities to work with key OEMs and Service Providers on important projects thus degraded rivals' ability to improve their capabilities, offer better products to customers, and position themselves to win business in the future. These opportunities are critical to ensure ongoing innovation and price and non-price competition.

58. Broadcom has further harmed innovation and impeded rivals from effectively competing on the merits because, as a result of Broadcom's conduct, Broadcom's rivals have diverted resources away from, divested from, and/or are considering exiting markets for Monopolized Products.

59. The acts and practices of Broadcom as alleged herein have had the purpose, capacity, tendency, and effect of maintaining Broadcom's monopoly power in the relevant markets for Monopolized Products and of restraining competition unreasonably in the relevant markets for all Relevant Products.

60. There are no legitimate procompetitive efficiencies that justify Broadcom's conduct or that outweigh the substantial anticompetitive effects thereof.

61. Any legitimate objectives of Broadcom's conduct as alleged herein could have been achieved through significantly less restrictive means.

VIOLATION OF FTC ACT

62. The allegations in all of the paragraphs above are re-alleged and incorporated by reference as though fully set forth herein.

63. Broadcom has willfully engaged in anticompetitive and exclusionary acts and practices that enhance or maintain its monopoly power in the markets for Monopolized Products. Broadcom has entered a series of agreements that unreasonably restrain trade in markets for all Relevant Products. These acts and practices constitute unfair methods of competition in or affecting commerce in violation of Section 5 of the Federal Trade Commission Act,

as amended, 15 U.S.C. § 45. Such acts and practices, or the effects thereof, will continue or recur in the absence of appropriate relief.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this twenty-ninth day of June, 2021, issues its complaint against Respondent.

By the Commission, Chair Khan not participating.

April J. Tabor
Secretary

SEAL