



## COMPETITION COMMISSION OF INDIA

(Combination Registration No. C-2015/09/312)

16<sup>th</sup> December 2015

### Notice under sub-section (2) of Section 6 of the Competition Act, 2002 filed by Avago Technologies Limited (“Avago” or “Acquirer”)

#### CORAM:

Mr. Ashok Chawla  
Chairperson

Mr. S. L. Bunker  
Member

Mr. Sudhir Mital  
Member

Mr. Augustine Peter  
Member

Mr. U. C. Nahta  
Member

Mr. M. S. Sahoo  
Member

Mr. G. P. Mittal  
Member

**Legal Representative of the parties:** Shardul Amarchand Mangaldas & Co.

#### Order under sub-section (1) of Section 31 of the Competition Act, 2002

1. On 28<sup>th</sup> September 2015, the Competition Commission of India (“**Commission**”) received a notice under sub-section (2) of Section 6 of the Competition Act, 2002 (“**Act**”) filed by Avago Technologies Limited (“**Avago**” or “**Acquirer**”) regarding acquisition of sole control of Broadcom Corporation (“**Broadcom**”) by Avago. The notice was filed pursuant to the execution of an Agreement and Plan of Merger by and among Pavonia Limited, Avago, Safari Cayman L.P., Avago Technologies Cayman Holdings Ltd., Avago Technologies Cayman Finance Limited, Buffalo CS Merger Sub, Inc., Buffalo UT Merger Sub, Inc. and Broadcom on 28<sup>th</sup> May 2015.
2. As stated by the Acquirer, Avago is incorporated under the laws of the Republic of Singapore and is listed on NASDAQ. Avago is a global technology company active



in the design, manufacture, marketing and sale of a range of semiconductor devices for use in wireless and wireline communications, storage and industrial applications. Avago is the successor of the Semiconductor Products Group, which until 2005 was part of Agilent Technologies, Inc., which, in turn, originally spun-off from Hewlett Packard's (HP) semiconductor division. Avago is dual headquartered in San Jose, California (United States) and Singapore. According to the Acquirer, Avago is essentially a "fables" provider of semiconductor devices, as it primarily relies on third-party "fabrication" plants (also called fabs or foundries)<sup>1</sup>.

3. Globally, Avago operates in four business segments: (a) Wireless communications – under the wireless communications business segment, Avago provides analog semiconductor devices for wireless devices such as smartphones and tablets, as well as wireless base stations and other radio frequency (RF) applications; (b) Wireline infrastructure - in the wireline infrastructure business segment, Avago is predominantly active in the provision of design and integration support services to Original Equipment Manufacturers ("OEMs"). Avago is also active in the provision of Application Specific Standard Products ("ASSPs")<sup>2</sup>. ASSPs may be described as "off-the-shelf" or "merchant" ICs, which can be purchased in identical form by a number of different customers<sup>3</sup>; (c) Enterprise storage - globally, Avago provides a wide range of semiconductor devices for use in hard disk drives etc.; (d) Industrial and other - in this segment, Avago provides a variety of products notably for industrial and factory automation, automotive infotainment etc.
  
4. *Presence of Avago in India:* As submitted by the Acquirer, Avago has a limited presence in India. Subsidiaries of the Acquirer in India are as follows: Emulex Communication Private Limited ("**Emulex India**"), LSI India Research & Development Private Limited ("**LSI India**") and PLX Technology India Private

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<sup>1</sup> Fabs/foundries are specialized manufacturing plants dedicated to the production of semiconductor devices. Fabs may manufacture ICs made of silicon or other semiconductors, such as the so-called "III-V" semiconductors. III-V refers to elements from the 3rd and 5th groups in the periodic table of chemical elements, and examples of these materials are gallium arsenide, or GaAs, gallium nitride, or GaN, and indium phosphide, or InP.

<sup>2</sup> ASSPs is a term used for standardized ICs that are entirely designed by the IC vendor and sold in identical form to multiple customers as an "off-the-shelf" product. OEMs incorporate ASSPs in the electronic equipment they manufacture, e.g., networking equipment, mobile phones, television set top boxes, digital cameras, MP3 players, automobile engine and industrial process controllers, and basically everything that uses or processes information and data.

<sup>3</sup> Avago inherited from Emulex Corporation an ASSP Ethernet controllers business, for which Avago had minimal sales in India.



Limited (“**PLX**”). Further, as submitted in the notice, Emulex India and LSI India only provide intragroup software development services unrelated to any product sales to India. PLX is now in the process of liquidation.

5. Broadcom is incorporated in California, USA. As stated by the Acquirer, Broadcom is a global fabless semiconductor company active in two business segments: (a) Broadband and connectivity – In this segment, Broadcom’s semiconductor solutions include set top box solutions, broadband modem solutions, connectivity solutions (e.g., integrated and discrete Wi-Fi, Bluetooth etc.), GPS etc.; (b) Infrastructure and networking – Broadcom is engaged in the wireline communication business. Following products manufactured by Broadcom are used for wireline communications, namely, provision of ASSPs, Ethernet Switching ICs and physical layer devices (“**PHYS**”), which includes switches and fabrics, copper and optical transceivers, processors (including multicore processors etc.). Broadcom also offers Ethernet controllers, edge and core routers, wireless infrastructure and wireless access points, switches and routers, servers and workstations etc.
6. *Presence of Broadcom in India:* It has been further submitted, Broadcom has a limited presence in India. Broadcom is present in India through two subsidiaries, namely, Broadcom Communications Technologies Private Ltd. (“**BCTPL**”)<sup>4</sup> and Broadcom Semiconductors India Private Ltd. (“**BSIPL**”)<sup>5</sup>, and these entities only provide support to Broadcom’s global operations and neither sells products or services to third parties, either in India or worldwide. As per further submission, Broadcom has limited sales to third-party customers in Wireline Communications ASSPs and consumer ASSPs in India.
7. With respect to horizontal overlaps, it has been submitted that both parties are active in the Wireline Communications ASSPs business in India, although the Parties offer different products within this market. In this regard, it has been submitted that the combined market share of the parties, post the consummation of the proposed combination, would be less than 5% in the Wireline Communications ASSPs business in India. Further, based on the submission of the Acquirer it is

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<sup>4</sup> As submitted by the Acquirer, BCTPL provides wholly intra-group research and development services and acts as one of the Broadcom R&D centres.

<sup>5</sup> As submitted by the Acquirer, BSIPL provides wholly intra-group sales and marketing support.



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observed that there are major competitors such as Freescale Semiconductor Inc., Intel Corporation, ST Microelectronics S.A., Cortina Systems, Inc., PMC – Sierra Inc. and Marvell Technology Group Limited which would provide competitive constraint to the parties.

8. With respect to the vertical relationship between the parties, it has been submitted that there exists no vertical arrangement/relationship between the parties to the combination.
9. Considering facts on record, details provided in the notice and assessment of the proposed combination on the basis of factors stated in sub-section (4) of Section 20 of the Act, the Commission is of the opinion that the proposed combination is not likely to have an appreciable adverse effect on competition in India and, therefore, the Commission approves the proposed combination under sub-section (1) of Section 31 of the Act. This approval is, however, without prejudice to any proceedings under Section 43A of the Act.
10. This Order shall stand revoked if, at any time, information provided by the Acquirer is found to be incorrect.
11. The Secretary is directed to communicate to the Acquirer accordingly.