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Paper 44
Entered: January 28, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC., CIENA CORPORATION,
CORIANT OPERATIONS, INC., CORIANT (USA) INC., and
FUJITSU NETWORK COMMUNICATIONS, INC.,
Petitioner,

v.

CAPELLA PHOTONICS, INC.,
Patent Owner.

Case IPR2014-01166[1]
Patent RE42,368

Before JOSIAH C. COCKS, KALYAN K. DESHPANDE, and
JAMES A. TARTAL, *Administrative Patent Judges*.

TARTAL, *Administrative Patent Judge*.

FINAL WRITTEN DECISION

35 U.S.C. § 318(a) and *37 C.F.R. § 42.73*

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[1] IPR2015-00816 was joined with IPR2014-01166 on September 4, 2015, by Order in IPR2015-00816, Paper 12 (IPR2014-01166, Paper 26).

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I. INTRODUCTION

Petitioner, Cisco Systems, Inc., Ciena Corporation, Coriant Operations, Inc., Coriant (USA) Inc., and Fujitsu Network Communications, Inc., filed petitions requesting an *inter partes* review of claims 1–6, 9–13, and 15–22 of U.S. Patent No. RE42,368 (“the ’368 patent”). Paper 2 (“Petition” or “Pet.”); *see also* IPR2015-00816, Paper 1. Based on the information provided in the Petition, and in consideration of the Preliminary Response (Paper 7; *see also* IPR2015-00816, Paper 10) of Patent Owner, Capella Photonics, Inc., we instituted a trial pursuant to 35 U.S.C. § 314(a) of: (1) claims 1–6, 9–11, 13, and 15–22 as obvious over Bouevitch,[2] Smith[3], and Lin[4] under 35 U.S.C. § 103(a); and, (2) claim 12 as obvious over Bouevitch, Smith, Lin, and Dueck[5] under 35 U.S.C. § 103(a). Paper 8 (“Institution Decision”); *see also* IPR2015-00816, Paper 11.

After institution of trial, Patent Owner filed a Response (Paper 19, “Response” or “PO Resp.”) and Petitioner filed a Reply (Paper 25, “Pet. Reply”). The Petition is supported by the Declaration of Dr. Dan Marom (Ex. 1028). The Response is supported by the Declaration of Dr. Alexander V. Sergienko (Ex. 2004).

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[2] U.S. Patent No. 6,498,872 B2, issued December 24, 2002 (Ex. 1003, “Bouevitch”)

[3] U.S. Patent No. 6,798,941 B2, issued September 28, 2004 (Ex. 1004, “Smith”).

[4] U.S. Patent No. 5,661,591, issued August 26, 1997 (Ex. 1010, “Lin”)

[5] U.S. Patent No. 6,011,884, issued January 4, 2000 (Ex. 1021, “Dueck”)

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A transcript of the Oral Hearing conducted on November 5, 2015, is entered as Paper 43 (“Tr.”).[6]

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, Petitioner has shown by a preponderance of the evidence that claims 1–6, 9–13, and 15–22 of the ’368 patent are unpatentable.

II. BACKGROUND

A. The ’368 patent (Ex. 1001)

The ’368 patent, titled “Reconfigurable Optical Add-Drop Multiplexers with Servo Control and Dynamic Spectral Power Management Capabilities,” reissued May 17, 2011, from U.S. Patent No. 6,879,750 (“the ’750 patent”). Ex. 1001. The ’750 patent issued April 12, 2005, from application number 10/745,364, filed December 22, 2003.

According to the ’368 patent, “fiber-optic communications networks commonly employ wavelength division multiplexing (WDM), for it allows multiple information (or data) channels to be simultaneously transmitted on a single optical fiber by using different wavelengths and thereby significantly enhances the information bandwidth of the fiber.” *Id*. at 1:37–42. An optical add-drop multiplexer (OADM) is used both to remove wavelengths selectively from a multiplicity of wavelengths on an optical fiber (taking away one or more data channels from the traffic stream on the

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[6] Patent Owner’s objections to Petitioner’s demonstrative slides for the oral hearing are denied because we are not persuaded that Petitioner’s demonstratives add new argument. *See* Paper 41. Moreover, demonstrative slides are not evidence and have not been relied upon for this final decision.

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fiber), and to add wavelengths back onto the fiber (inserting new data channels in the same stream of traffic). *Id*. at 1:45–51.

The '368 patent describes a "wavelength-separating-routing (WSR) apparatus that uses a diffraction grating to separate a multi-wavelength optical signal by wavelength into multiple spectral channels, which are then focused onto an array of corresponding channel micromirrors." *Id*. at Abstract. "The channel micromirrors are individually controllable and continuously pivotable to reflect the spectral channels into selected output ports." *Id*. According to Petitioner, the small, tilting mirrors are sometimes called Micro ElectroMechanical Systems or "MEMS." Pet. 7.

The WSR described in the '368 patent may be used to construct dynamically reconfigurable OADMs for WDM optical networking applications. *Id*. Figure 1A of the '368 patent is reproduced below.

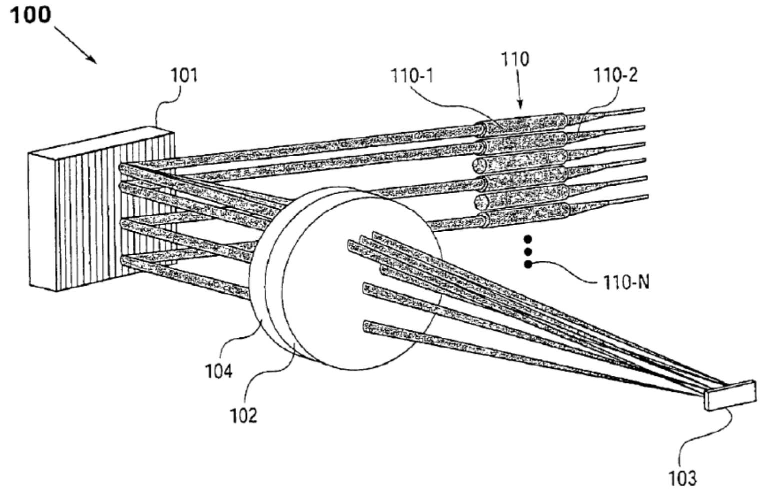

Fig. 1A

Figure 1A depicts wavelength-separating-routing (WSR) apparatus 100, in accordance with the '368 patent. WSR apparatus 100 is comprised of an array of fiber collimators 110 (multiple input/output ports, including input port 110-1 and output ports 110-2 through 110-N), diffraction grating 101 (a

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wavelength separator), quarter wave plate 104, focusing lens 102 (a beam-focuser), and array of channel micromirrors 103. Ex. 1001, 6:57–63, 7:55–56.

A multi-wavelength optical signal emerges from input port 110-1 and is separated into multiple spectral channels by diffraction grating 101, which are then focused by focusing lens 102 into a spatial array of distinct spectral spots (not shown). *Id*. at 6:64–7:2. Channel micromirrors 103 are positioned such that each channel micromirror receives one of the spectral channels.

Figure 1B of the ’368 patent is reproduced below.

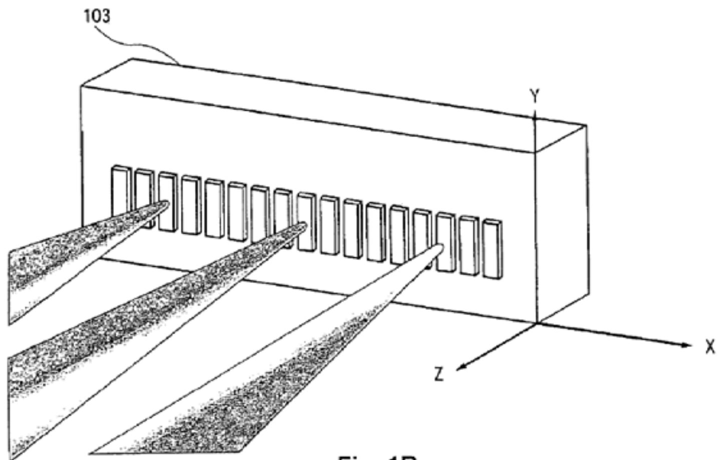

Fig. 1B

Figure 1B depicts a close-up view of the array of channel micromirrors 103 shown above in Figure 1A. *Id*. at 8:6–7. The channel micromirrors “are individually controllable and movable, e.g. pivotable (or rotatable) under analog (or continuous) control, such that, upon reflection, the spectral channels are directed” into selected output ports by way of focusing lens 102 and diffraction grating 101. *Id*. at 7:6–11.

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