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### UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FINISAR CORP., Petitioner,

v.

THOMAS SWAN & CO. LTD., Patent Owner.

> Case IPR2014-00461 Patent 7,664,395 B2

Before SALLY C. MEDLEY, MICHELLE R. OSINSKI, and BARBARA A. PARVIS, *Administrative Patent Judges*.

OSINSKI, Administrative Patent Judge.

DOCKET

### DECISION

Institution of *Inter Partes* Review 37 C.F.R. § 42.108

### I. INTRODUCTION

### A. Background

Finisar Corp. ("Petitioner") filed a corrected Petition (Paper 5, "Pet.") requesting an *inter partes* review of claims 1-27 of U.S. Patent No. 7,664,395 B2 (Ex. 1001, "the '395 patent"). Thomas Swan & Co. Ltd. ("Patent Owner") filed a Preliminary Response (Paper 8, "Prelim. Resp."). We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted "unless . . . is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a).

Upon consideration of the Petition and Preliminary Response, we determine that there is a reasonable likelihood that Petitioner would prevail with respect to claims 1-27 of the '395 patent. Accordingly, we institute an *inter partes* review of claims 1-27 of the '395 patent.

### B. Related Proceedings

The parties represent that the '395 patent is the subject of a district court proceeding in *Thomas Swan & Co. Ltd. v. Finisar Corp.*, Case No. 2:13-cv-178 (E.D. Tex.). Pet. 4; Patent Owner's Mandatory Notices Under 37 C.F.R. § 42.8, Paper 7, 2.

Petitioner filed additional petitions for *inter partes* review of three other patents related to the '395 patent, namely, U.S. Patent Nos. 7,145,710 B2; 8,089,683 B2; and 8,335,033 B2. Prelim. Resp. 3-4; *See* IPR2014-00460 (Papers 2, 5); IPR2014-00462 (Papers 1, 5); IPR2014-00465 (Papers 1, 5).

### C. The '395 Patent

The '395 patent relates to optical routing modules or devices that are configured to perform wavelength routing and selection. Ex. 1001, 42:5-8, 60:5-62:35. Figure 28 of the '395 patent is reproduced below.





Figure 28 of the '395 patent illustrates wavelength routing and selection device 600

Figure 28 depicts a schematic diagram of an optical module or device that enables beams of different wavelengths from input beam 601 to be controlled separately before recombination. *Id.* at 10:53-56, 11:22-23. Device 600 provides three outputs 602, 603, 604 at output ports 612, 613, 614. *Id.* at 42:5-8. Input beam 601 contains an ensemble of channels at different wavelengths entering on same input port 611. *See id.* at 38:29-31.

Input beam 601 is incident on dispersion device 620, which is constructed to disperse light beams of different wavelengths (or different frequencies) in different directions. *Id.* at 42:17-27. For example, dispersion device 620 splits input beam 601 into three single wavelength emergent beams 605, 606, 607, corresponding to different channels of input beam 601. *Id.* at 43:45-53, 42:17-27. Dispersion device 620 is placed in the focal plane of lens 621 that refracts wavelength beams 605, 606, 607 so that they emerge mutually parallel from lens 621 as wavelength beams 615, 616, 617, respectively. *Id.* at 42:17-27, 43:52-53.

Device 600 further includes spatial light modulator ("SLM") 622 comprising a two-dimensional array of pixels. *Id.* at 11:19-24, 42:9-16. The two-dimensional array of pixels of SLM 622 are arranged into multiple groups 623, 624, 625 of pixels. *Id.* at 11:43-55, 43:55-44:7. Each of wavelength beams 615, 616, 617 is incident upon respective group 623, 624, 625 of pixels. *Id.* at 43:53-55. Each group 623, 624, 625 is capable of displaying a respective hologram that provides a different controllable deviation from the specular direction to control the angle at which each beam reflects from SLM 622 as reflected beams 635, 636, 637. *Id.* at 11:43-55, 43:55-44:7. The holograms on which each of the respective wavelength beams 615, 616, 617 lands determine to which output port 612, 613, 614 the corresponding wavelength channel is directed. *Id.* at 42:28-40. Each wavelength channel is thus controllably and independently routed to the desired output port. *Id.* at 42:32-53. Device 600 can route, add/drop, filter, and attenuate multiple wavelengths independently. *Id.* 

### D. Illustrative Claim

Claim 1 is illustrative of the claimed subject matter and is reproduced below.

1. An optical routing module having at least one input and at least one output and operable to select between the outputs, the or each input receiving a respective light beam having an ensemble of different channels, the module comprising: a Spatial Light Modulator (SLM) having a two dimensional array of pixels,

a dispersion device disposed to receive light from said at least one input and constructed and arranged to disperse light beams of different frequencies in different directions whereby different channels of said ensemble are incident upon respective different groups of the pixels of the SLM, and

circuitry constructed and arranged to display holograms on the SLM to determine the channels at respective outputs.

E. Prior Art Relied Upon in the Petition

Michael C. Parker, Dynamic Holograms for Wavelength Division

Multiplexing (Nov. 1996) (Ph.D. dissertation, University of Cambridge) (on

file with Cambridge University Library) ("Parker Thesis," Ex. 1005).

Stephen T. Warr, Free-Space Switching for Optical Fibre Networks

(July 1996) (Ph.D. dissertation, University of Cambridge) (on file with Cambridge University Library) ("Warr Thesis," Ex. 1006).

Kim L. Tan, Dynamic Holography Using Ferroelectric Liquid Crystal on Silicon Spatial Light Modulators (Feb. 1999) (Ph.D. dissertation, University of Cambridge) (on file with Cambridge University Library) ("Tan Thesis," Ex. 1007).

Crossland et al., US 2001/0050787 A1, (published Dec. 13, 2001) ("Crossland," Ex. 1008).

### F. The Asserted Grounds of Unpatentability

The information presented in the Petition sets forth Petitioner's contentions of unpatentability of claims 1-27 of the '395 patent based on the following specific grounds.

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