### Inter Partes Review of USPN RE42,368 Declaration of Timothy J. Drabik, Ph.D. (Exhibit 1016)

| UNITED STATES PATENT AND TRADEMARK OFFICE                          |
|--|
| BEFORE THE PATENT TRIAL AND APPEAL BOARD                           |
| FUJITSU NETWORK COMMUNICATIONS, INC.                               |
| Petitioner   |
| V.   |
| CAPELLA PHOTONICS, INC.  |
| Patent Owner   |
| Inter Partes Review Case No. <u>Unassigned</u> Patent No. RF42 368 |

# DECLARATION OF TIMOTHY J. DRABIK, Ph.D.

Mail Stop "PATENT BOARD"

Patent Trial and Appeal Board U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450



# Inter Partes Review of USPN RE42,368 Declaration of Timothy J. Drabik, Ph.D.

### **TABLE OF CONTENTS**

| I.   | INTRODUCTION   |  |                                       |    |  |  |
|------|--|--|---------------------------------------|----|--|--|
|      | A.   | Background   |                                       |    |  |  |
|      | B.   | Qualifications   |                                       |    |  |  |
|      |  | 1.   | Education                             | 2  |  |  |
|      |  | 2.   | Career History                        | 3  |  |  |
|      |  | 3.   | Publications                          | 5  |  |  |
|      |  | 4.   | Other Relevant Qualifications         | 6  |  |  |
| II.  | THE  | <b>'</b> 368   | PATENT                                | 7  |  |  |
| III. | LIST OF DOCUMENTS CONSIDERED IN FORMULATING MY OPINION |  |                                       |    |  |  |
| 13.7 | _  |  |                                       |    |  |  |
| IV.  |  | ECHNICAL BACKGROUND 1  |                                       |    |  |  |
|      | A.   |  | ical switching for telecommunications |    |  |  |
|      |  | 1.   | Fiber cross-connects                  |    |  |  |
|      | D  | 2.   | Wavelength switches                   |    |  |  |
|      | B.   | Free-space optical systems                                   |                                       |    |  |  |
|      |  | 1.   | Basic properties of lenses            |    |  |  |
|      |  | 2.   | Gaussian light beams                  |    |  |  |
|      |  | 3.   | The "Fourier lens"                    |    |  |  |
|      |  | 4.   | Concave mirrors as focusing elements  |    |  |  |
|      |  | 5.   | Wavelength-dispersive elements        | 21 |  |  |
| V.   | STATE OF THE ART AT THE TIME OF THE ALLEGED INVENTION  |  |                                       |    |  |  |
|      | A.   | Transparent optical switching prior to the alleged invention |                                       |    |  |  |
|      | B.   | Reconfigurable Optical Add-Drop Multiplexers                 |                                       |    |  |  |
|      | C.   | Wavelength Selective Switches 2                              |                                       |    |  |  |
|      | D.   | MEMS Mirrors   |                                       |    |  |  |
| VI.  | PER  | RSON OF ORDINARY SKILL IN THE ART                            |                                       |    |  |  |
| VII. | OVERVIEW OF THE '368 PATENT                            |  |                                       |    |  |  |
|      | A.   | Operation of the disclosed system of the '368 Patent         |                                       |    |  |  |
|      |  | 1  |                                       |    |  |  |



# Inter Partes Review of USPN RE42,368 Declaration of Timothy J. Drabik, Ph.D.

| VIII. | THE                    | CLAI   | MS OF THE '368 PATENT                      | 35 |  |  |  |
|-------|------------------------|--|--|----|--|--|--|
| IX.   | LEGAL STANDARDS.       |  |  |    |  |  |  |
|       | A.                     | Antic  | cipation                                   |    |  |  |  |
|       | B.                     | Obvi   | viousness                                  |    |  |  |  |
| X.    | CLA                    | IM CO  | CONSTRUCTION                               |    |  |  |  |
| XI.   | ANALYSIS OF INVALIDITY |  |  |    |  |  |  |
|       | A.                     | Summary of Analysis  |  |    |  |  |  |
|       | B.                     | Point 1: Claims 1–6, 9–12 and 15–22 Are Disclosed by Smith |  |    |  |  |  |
|       |                        | 1.   | Operation of the disclosed system of Smith | 45 |  |  |  |
|       |                        | 2.   | Claim 1 preamble                           | 51 |  |  |  |
|       |                        | 3.   | Claim 1 – input port                       | 51 |  |  |  |
|       |                        | 4.   | Claim 1 – output and other ports           | 51 |  |  |  |
|       |                        | 5.   | Claim 1 – wavelength selective device      | 51 |  |  |  |
|       |                        | 6.   | Claim 1 – beam-deflecting elements         | 52 |  |  |  |
|       |                        | 7.   | Claim 2                                    | 52 |  |  |  |
|       |                        | 8.   | Claim 3                                    | 53 |  |  |  |
|       |                        | 9.   | Claim 4                                    | 53 |  |  |  |
|       |                        | 10.  | Claim 5                                    | 54 |  |  |  |
|       |                        | 11.  | Claim 6                                    | 54 |  |  |  |
|       |                        | 12.  | Claim 9                                    | 54 |  |  |  |
|       |                        | 13.  | Claim 10                                   | 55 |  |  |  |
|       |                        | 14.  | Claim 11                                   | 55 |  |  |  |
|       |                        | 15.  | Claim 12                                   | 55 |  |  |  |
|       |                        | 16.  | Claim 15                                   | 56 |  |  |  |
|       |                        | 17.  | Claim 16                                   | 56 |  |  |  |
|       |                        | 18.  | Claim 17                                   | 56 |  |  |  |
|       |                        | 19.  | Claim 18                                   | 57 |  |  |  |
|       |                        | 20.  | Claim 19                                   | 57 |  |  |  |
|       |                        | 21.  | Claim 20                                   | 58 |  |  |  |



# Inter Partes Review of USPN RE42,368 Declaration of Timothy J. Drabik, Ph.D.

|     |            | 22.   | Claim 21  | 58  |
|-----|------------|---|---|-----|
|     |            | 23.   | Claim 22  | 58  |
|     | C.         | Point 2: Claims 1, 2, 5, 6, 9–12, and 15–21 Are Not Innovative in View of Bouevitch and Carr                        |   |     |
|     |            | 1.  | Operation of the disclosed system of Bouevitch  | 59  |
|     |            | 2.  | Carr reference  | 63  |
|     |            | 3.  | Combination of Bouevitch with Carr  | 64  |
|     | D.         | Point 3: Claims 1–4, 17 and 22 Are Not Innovative in View of Bouevitch and Sparks                                   |   | 92  |
|     | E.         | Point 4: Claims 1–6, 9–12 and 15–22 Are Not Innovative in View of the Combination of Smith and Tew                  |   |     |
|     | F.         | Point 5: Claims 1, 2, 5, 6, 9–12 and 15–21 Are Not Innovative in View of the Combination of Bouevitch, Carr and Tew |   |     |
|     | G.         |   | 6: Claims 1–4, 17 and 22 Are Not Innovative in View of Combination of Bouevitch, Sparks and Tew | 111 |
| XII | CONCLUSION |   |   | 111 |



I, Timothy J. Drabik, hereby declare as follows:

### I. <u>INTRODUCTION</u>

### A. Background

- 1. My name is Timothy J. Drabik. I am a researcher and consultant working in areas related to optics, telecommunications, display technologies, and microelectronics. I undertake consulting through my company, Page Mill Technology Corporation, and also work to develop commercial technologies for information display and optical telecommunications.
- 2. I have been retained to act as an expert witness on behalf of Fujitsu Network Communications, Inc. ("FNC" or "Petitioner") in connection with the above captioned Petition for *Inter Partes* Review of U.S. Patent No. RE42,368 ("Petition"). I understand that this proceeding involves U.S. Patent No. RE42,368 ("the '368 Patent"), titled "Reconfigurable Optical Add-Drop Multiplexers with Servo-Control and Dynamic Spectral Management Capabilities." The '368 Patent is provided as Exhibit 1001.
- 3. I understand that Petitioner challenges the validity of Claims 1-6, 9-12 and 15-22 of the '368 Patent (the "challenged claims").
- 4. I have reviewed and am familiar with the '368 Patent as well as its prosecution history. The '368 prosecution history is provided as Exhibit 1002. Additionally, I have reviewed materials identified in Section III.



# DOCKET

# Explore Litigation Insights



Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

# **Real-Time Litigation Alerts**



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

# **Advanced Docket Research**



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

### **Analytics At Your Fingertips**



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

### API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

#### **LAW FIRMS**

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

#### **FINANCIAL INSTITUTIONS**

Litigation and bankruptcy checks for companies and debtors.

### **E-DISCOVERY AND LEGAL VENDORS**

Sync your system to PACER to automate legal marketing.

