Form PTO-1595

02-03-2003



U.S. DEPARTMENT OF COMMERCE U.S. Patent and Trademark Office

(Rev. 10/02) OMB No. 0651-0027 102354211 Tab settings ⇒ ⇒ ⇒ To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof. 2. Name and address of receiving party(ies) 1. Name of conveying party(ies): 1.28-03 Name: Nortel Networks Corporation Bookham Technology PLC Internal Address: Additional name(s) of conveying party(ies) attached? X Yes 🔲 No 3. Nature of conveyance: Merger Assignment Street Address: 8200 Dixie Road Security Agreement Change of Name Suite 100 Other \_\_\_\_\_ Ontario, GA City: Brampton State:\_\_\_\_Zip:\_\_\_\_ Execution Date: 11/08/002 Additional name(s) & address(es) attached? Yes X No 4. Application number(s) or patent number(s): If this document is being filed together with a new application, the execution date of the application is: B. Patent No.(s) A. Patent Application No.(s) 6,222,200 09/688,873 Additional numbers attached? X Yes No 6. Total number of applications and patents involved: 209 5. Name and address of party to whom correspondence concerning document should be mailed: 7. Total fee (37 CFR 3.41).....\$8,360.00 Name: Thomas Rayski XX Enclosed Internal Address: Cleary, Gottlieb, Authorized to be charged to deposit account Steen & Hamilton 8. Deposit account number: Street Address: One Liberty Plaza (Attach duplicate copy of this page if paying by deposit account) City: New York State: NY Zip:10006 DO NOT USE THIS SPACE 9. Statement and signature. To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document. Thomas A. Raysti 1-27-63 Name of Person Signing Total number of pages including cover sheet, attachments, and documents:

01/31/2003 ECOOPER 00000078 0%66673 Mail documents to be recorded with required cover sheet information to:

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Commissioner of Patents & Trademarks, Box Assignments Washington, D.C. 20231

# Continuation of Item 1 of Recordation Form Cover Sheet

Bookham Technology, Inc. Bookham Acquisition, Inc. Bookham (Switzerland) AG

#### Continuation of Item 4 of Recordation Form Cover Sheet

## 4.A. Patent Application No.(s)

09/993,849

09/993,824

09/987,785

09/859,938

09/852,994

09/821,580

09/750,874

09/750,124

09/741,350

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00/010,000

09/573,238

09/573,236

09/557,891

09/532,529

09/496,917

09/409,036

027102,030

09/386,604

10/262,763

10/259,890

10/259,745

10/254,594 10/245,199

09/213,088

10/242,497

10/196,956

10/190,592

10/165,465

10/161,523

10/141,914 10/141,862 10/131,335 10/116,168 10/108,856 10/098,446 10/073,101 60/414,404 60/414,402 60/404,166 60/391,648 60/390,882 60/380,261 60/352,572 60/334,013 10/049,886 10/032,421 10/032,416 10/027,229 10/026,150 10/025,866 10/024,972 60/148,148 60/148,017 60/099,308 60/099,252 10/014,807 10/006,509 60/004,620 09/888,888 09/736,095 09/672,703 10/218,267 09/101,276 10/109,916

PCTUS00/21904 PCTUS00/21905

PCTUS01/14918

PCTIB00/01530

PCTCA99/01067

PCTAU00/01380

## 4.B. Patent No.(s)

4,489,477 4,493,287 4,530,099

4,574,730 4,608,276 4,615,031 4,631,078 4,660,207 4,661,962 4,675,876 4,675,877 4,695,125 4,720,684 4,730,171 4,735,648 4,748,307 4,760,580 4,772,086 4,793,840 4,830,459 4,847,665 4,849,373 4,859,628 4,889,830 4,934,774 4,937,638 4,949,352 4,950,046 4,953,006 4,969,712 4,988,159 4,989,214 5,029,981 5,035,916 5,050,953 5,050,960 5,056,096 5,062,687 5,082,380 5,083,090 5,115,444 5,345,459 5,350,923 5,363,457 5,365,534 5,393,707

5,419,804 5,448,581 5,452,318

3

5,483,547 5,502,741 5,522,000 5,524,076 5,530,580 5,534,442 5,536,085 5,542,011 5,567,659 5,568,728 5,570,444 5,574,811 5,586,207 5,664,043 5,668,823 5,694,504 5,703,980 5,777,793 5,778,113 5,793,913 5,799,119 5,825,792 5,828,689 5,869,398 5,872,649 5,901,164 5,930,441 5,933,707 5,936,994 5,956,437 5,960,014 5,985,086 5,991,471 6,026,110 6,028,875 6,041,071 6,058,125 6,075,800 6,104,739 6,124,956 6,141,370 6,151,347 6,158,901

6,188,118 6,201,824 6,204,560

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6,222,200 6,240,221 6,246,826 6,275,321 6,287,401 6,351,589 6,377,717 6,391,214 6,407,438 6,409,241 RE34,516 4,756,589 4,801,185 5,488,679 5,638,473 5,703,976 5,708,740 5,730,888 5,885,881 5,904,491 6,014,475 6,044,192 6,115,518 6,263,131 6,321,000

6,415,077 6,424,755 6,466,704

#### PATENT SECURITY AGREEMENT

WHEREAS, Bookham Technology plc, a public limited company incorporated under the laws of England and Wales (the "<u>Pledgor</u>"), and each of its subsidiaries that are listed on the signature pages hereto (together with the Pledgor, the "<u>Pledgor Parties</u>"), own the Patent Collateral (as defined below); and

WHEREAS, pursuant to a Security Agreement (the "Security Agreement"), dated as of November 8, 2002, between the Pledgor and Nortel Networks Corporation (the "Pledgee"), the Pledgor Parties have granted to the Pledgee a continuing security interest in certain collateral, including, without limitation, the Patent Collateral, to secure certain of the Pledgor's obligations under certain notes issued pursuant to the Acquisition Agreement, dated as of October 7, 2002 between Pledgor and Pledgee;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Pledgor Parties hereby pledge and grant to the Pledgee, to secure such obligations, a continuing security interest in all of the Pledgor Parties' right, title and interest in, to and under the following, whether presently existing or hereafter created or acquired (collectively the "Patent Collateral"):

- (i) all of the patents and pending patent applications listed on Schedule I and all patents issuing from such patent applications; and
- (ii) any and all divisionals, continuations, continuations-in-part, reissues, reexaminations and extensions of any such patents and patent applications.

The Pledgor Parties irrevocably constitute and appoint the Pledgee and any officer or agent thereof, with full power of substitution, as their true and lawful attorney-in-fact with full power and authority in the name of the Pledgor Parties or in the Pledgee's name, from time to time, in the Pledgee's discretion, so long as any Events of Default (as defined in the Security Agreement) shall have occurred and be continuing, to take with respect to the Patent Collateral and to execute any and all documents and instruments which may be necessary or desirable to carry out the terms of this Patent Security Agreement and to accomplish the purposes hereof.

Each of the Pledgor Parties hereby reconfirms the Covenants regarding the Patent Collateral set forth in Section 3.03 of the Security Agreement.

The foregoing security interest is granted in conjunction with the security interests granted by the Pledgor Parties to the Pledgee pursuant to the Security Agreement. The Pledgor Parties and the Pledgee acknowledge and affirm that the rights and remedies of the Pledgee and the Pledgor Parties with respect to the security interest in the Patent Collateral made and granted hereby are more fully set forth in the Security Agreement, the terms and provisions of which are incorporated by reference herein as if fully set forth herein.

This Patent Security Agreement shall be governed by and enforced in accordance with the laws of the State of New York, without giving effect to any conflicts of law principles.

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IN WITNESS WHEREOF, the Pledgor Parties and the Pledgee have caused this Patent Security Agreement to be duly executed by their authorized officers on this 8<sup>th</sup> day of November, 2002.

NORTEL NETWORKS CORPORATION

By:\_\_\_

Name: Khush Dadyburjor, as Attorney-in-

Fact

| BOOKHAM TECHNOLOGY PLC                          |
|---|
| By:   |
| Name:   |
| Title:  |
|   |
|   |
| BOOKHAM TEÇHNOLOGY, INC.                        |
| $\mathcal{M}_{\Lambda}$ $\setminus$ $\setminus$ |
| Ву:   |
| Name:   |
| Title:  |
| _   |
| BOOKHAMACQUISITION, INC.                        |
| BOOKHAM/ACQUISITION, INC.                       |
| 121 12  |
| Ву:   |
| Name:   |
| Title:  |
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| BOOKHAM <sub>A</sub> ŞWITZERLAND) AG            |
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| By:Name:  |
| Title:  |
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| On this <u>for</u> day of November, 2002, before me appeared <u>Klaub Azir Swore</u> , the who signed this instrument, who acknowledged that he/she signed it as affree act on his/l | person  |
|--|---------|
|  | ier own |
| behalf or on behalf of Nortel Networks Corporation with authority to do so.  |         |

State of <u>Untrio</u> (<u>finitu</u>)
)
County of <u>ful (rigin)</u>
)
ss.

| On this 8 day of November, 2002, before me appeared PHILLY 5.5. DAVIS, the person               |
|---|
| who signed this instrument, who acknowledged that he/she signed it as a free act on his/her own |
| behalf or on behalf of Bookham Technology plc, Bookham Technology, Inc, Bookham                 |
| Acquisition Inc., and Bookham (Switzerland) AG with authority to do so.                         |
| State of A/E / Year   |

SS.

State of NEW YORK )

County of NEW YORK

STEVEN FOUNDOS
Notary Public, State Of New York
No.01F06076651
Qualified In Nassau County
Certificate Filed In New York County
Commission Expires July 1,

# **SCHEDULE I**

## **Transferred Patents**

| Disclosure<br>Number | Filed<br>Country | Filed Date | Number                                | Filed<br>Countries in<br>Family                         | Title 2.1  |
|----------------------|------------------|------------|---------------------------------------|---|--|
| 10289RO              | US               | 19-Apr-99  | · · · · · · · · · · · · · · · · · · · | Canada, United<br>States                                | PHOTODETECTOR WITH<br>SPECTRALLY EXTENDED<br>RESPONSIVITY                      |
| 10412RO              | US               | 17-Oct-00  | Pending                               | United States   | EXTERNAL CAVITY LASER USING<br>ANGLE-TUNED FILTER AND<br>METHOD OF MAKING SAME |
| 10413ID              | US               | 30-Jun-99  | Pending                               | United States   | FIBRE TERMINATION COMPOUND GRADED INDEX LENSES                                 |
| 10485RO              | US               | 1-Dec-00   | Pending                               | United States   | ELECTROCHROMIC OPTICAL<br>ATTENUATOR   |
| 10509RO              | US               | 23-Dec-99  | 6287401                               | Canada, United<br>States                                | ALIGNMENT METHOD FOR<br>SEMICONDUCTOR OPTICAL<br>DEVICES UPON CARRIERS         |
| 11006ID              | US               | 2-Feb-00   | Pending                               | United States   | MODULATOR ASSEMBLIES   |
| 11010ID              | US               | 28-Feb-00  | Pending                               | Canada, European<br>Patent Convention,<br>United States | OPTICAL AMPLIFIER STAGE  |
| 1 1920ID             | US               | 21-Apr-00  | Pending                               | United States   | PUMPED OPTICAL AMPLIFICATION DEVICE  |
| 11945ID              | US               | 18-May-00  | Pending                               | United States   | A RAMAN FIBRE LASER  |
| 11954ID              | US               | 18-May-00  | Pending                               | United States   | A RAMAN FIBRE LASER  |
| 12242RO              | US               | 11-Dec-00  | Pending                               | United States   | EPITAXIALLY GROWN<br>AVALANCHE PHOTODIODE                                      |
| 12339ID              | US               | 1-Sep-00   | Pending                               | United States   | OPTICAL FIBER DEVICE   |
| 12349RO              | US               | 12-Oct-00  | Pending                               | Canada, United<br>States                                | COMPACT CHIP LABELING USING STEPPER TECHNOLOGY                                 |
| 12526RO              | US               | 12-Sep-00  | Pending                               | United States   | APPARATUS FOR GRIPPING<br>CERAMIC SUBSTRATES                                   |
| 12615ID              | US               | 29-Sep-00  | Pending                               | United States   | PACKAGING ATMOSPHERE AND<br>METHOD OF PACKAGING A MEMS<br>DEVICE               |
| 12634RO              | US               | 20-Dec-00  | <b>Pen</b> ding                       | United States   | STRUCTURE AND METHOD FOR DOPING OF III-V COMPOUNDS                             |
| 12665R()             | US               | 22-Sep-00  | Pending                               | United States   | PRINT QUALITY TEST STRUCTURE<br>FOR LITHOGRAPHIC DEVICE<br>MANUFACTURING       |
| I 2686ID             | US               | 27-Oct-00  | Pending                               | United States   | GLASS FIBER FIXATIVE AND<br>FIXING PROCESS                                     |

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| Disclosure<br>Number | Filed<br>Country | Filed Date | Patent<br>Number | Filed<br>Countries in<br>Family                         | Title  |
|----------------------|------------------|------------|------------------|---|--|
| 12715RO              | US               | 22-Sep-00  | Pending          | United States   | METHODS FOR MAKING<br>PATTERNS IN RADIATION<br>SENSITIVE POLYMERS                                    |
| 12800AU              | US               | 30-Aug-95  | 5930441          | United States   | SPLIT-BEAM FOURIER FILTER  |
| 12841ID              | US               | 14-Jul-00  | Pending          | United States   | INTEGRATED OPTICAL<br>TRANSMITTER  |
| 12847RO              | US               | 14-Dec-01  | Pending          | Canada, United<br>States                                | CONFINEMENT LAYER OF BURIED<br>HETEROSTRUCTURE<br>SEMICONDUCTOR LASER                                |
| 12849ID              | US               | 9-Nov-00   | Pending          | Patent Cooperation<br>Treaty, United<br>States          | OPTICAL AMPLIFIER METHOD<br>AND APPARATUS  |
| 12948ID              | US               | 6-Dec-00   | Pending.         | Canada, United<br>States                                | OPTICAL AMPLIFIER, OPTICAL<br>AMPLIFIER HYBRID ASSEMBLY<br>AND METHOD OF MANUFACTURE                 |
| 13063CK              | US               | 27-Sep-96  | 6041071          | United States   | ELECTRO-OPTICALLY TUNABLE<br>EXTERNAL CAVITY MIRROR FOR<br>A NARROW LINEWIDTH<br>SEMICONDUCTOR LASER |
| 13144CK              | US               | 31-Aug-99  | Pending          | Canada, United<br>States                                | LASER WITH SETTABLE<br>WAVELENGTHS   |
| 13199CK              | US               | 10-Aug-00  | Pending          | Canada, European<br>Patent Convention,<br>United States | SINGLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE  |
| 13201CK              | US               | 10-Aug-00  | Pending          | Canada, European<br>Patent Convention,<br>United States | DOUBLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE  |
| 13391RO              | US               | 16-Nov-01  | Pending          | United States   | MONOLITHICALLY INTEGRATED OPTICALLY-PUMPED EDGE- EMITTING SEMICONDUCTOR LASER                        |
| 13417RO              | US               | 29-Dec-00  | Pending          | United States   | METHOD OF ETCHING PATTERNS<br>INTO EPITAXIAL MATERIAL  |
| 13444CK              | US               | 17-May-01  | Pending          | Patent Cooperation<br>Treaty, United<br>States          | MICROELATION FOR DWDM<br>TELECOMMUNICATIONS<br>APPLICATIONS  |
| 13494ID              | US               | 29-Mar-01  | Pending          | Canada, European<br>Patent Convention,<br>United States | METHOD AND APPARATUS FOR<br>MINIMIZING GAIN DEVIATION IN<br>OPTIAL FIBRE AMPLIFIERS                  |
| 13495ID              | US               | 4-Oct-00   | 6377717          | United States   | OPTICAL MODULATORS   |
| 13502RO              | US               | 14-Dec-00  | Pending          | United States   | OPTICAL FIBER TERMINATION  |

| Disclosure | Filed   | Filed Date | Patent  | Filed   | Title   |
|------------|---------|------------|---------|---|---|
| Number     | Country |            | Number  | Countries in<br>Family                                  |   |
| 13524RO    | US      | 19-Jul-01  | Pending | United States   | A METHOD AND SYSTEM FOR<br>FABRICATING SEMICONDUCTOR<br>LASERS                                  |
| 13544RO    | US      | 10-May-02  | Pending | United States   | SEMICONDUCTOR LASER   |
| 13584RO    | US      | 13-Nov-00  | Pending | Canada, European<br>Patent Convention,<br>United States | ELECTRODE TERMINATION FOR<br>REDUCED LOCAL HEATING IN AN<br>OPTICAL DEVICE                      |
| 13591ID    | GB      | 18-Dec-01  | Pending | Great Britain,<br>Patent Cooperation<br>Treaty          | OPTICAL MODULATORS  |
| 13614ID    | US      | 26-Nov-01  | Pending | United States,<br>Patent Cooperation<br>Treaty          | OPTICAL PULSE GENERATION  |
| 13721RO    | US      | 20-Sep-02  | Pending | United States   | AN NON-DESTRUCTIVE AND FAST<br>WAY TO DETECT DIFFUSION<br>DEPTH AND UNIFORMITY CROSS A<br>WAFER |
| 13813RO    | US      | 20-May-02  | Pending | United States   | MONOLITHICALLY INTEGRATED<br>HIGH POWER LASER OPTICAL<br>DEVICE                                 |
| 13816RO    | Unfiled | Unfiled    | Unfiled | Unfiled   | APPARATUS FOR MONITORING<br>THE OUTPUT POWER OF DIODE<br>LASERS AND MODULATORS                  |
| 14224ID    | US      | 21-Dec-01  | Pending | United States   | ISOLATION OF MICROWAVE<br>TRANSMISSION LINES  |
| 14429ID    | US      | 6-Dec-01   | Pending | United States   | OPTICAL BEAM SAMPLING<br>MONITOR  |
| 14404RO    | US      | 20-Dec-01  | Pending | United States   | HYBRID CONFINEMENT LAYERS<br>OF BURIED HETEROSTRUCTURE<br>SEMICONDUCTOR LASER                   |
| 14433JD    | US      | 20-Apr-98  | 6204560 | Patent Convention,                                      | TITANIUM NITRIDE DIFFUSION<br>BARRIER FOR USE IN NON-<br>SILICON TECHNOLOGIES AND<br>METHOD     |
| 14434JD    | US      | 1-Sep-00   | Pending | European Patent<br>Convention, United<br>States         | STABILIZED LASER SOURCE   |
| 14435JÐ    | US      | 25-Oct-00  | Pending | Patent Convention,                                      | SUPPORTING STRUCTURE FOR<br>FIBER FIXING AND SUBMICRON<br>FINE ALIGNMENT                        |
| 14480RO    | Unfiled | Unfiled    | Unfiled |   | GAIN COUPLED DISTRIBUTED<br>FEEDBACK LASER USING SELF-<br>ASSEMBLED QUANTUM DOTS                |
|            | ,       |            |         |   |   |

| Disclosure<br>Number | Filed<br>Country | Filed Date        | Patent<br>Number | Filed<br>Countries in<br>Family                                | Title  |
|----------------------|------------------|-------------------|------------------|--|--|
| 14549JD              | us               | 9-May-02          | Pending          | Canada, European<br>Patent Convention,<br>Japan, United States | HIGH POWER SEMICONDUCTOR<br>LASER DIODE  |
| 14551JD              | US               | 19-Dec-01         | Pending          | United States  | HIGH POWER LASER CARRIER   |
| 14552JD              | US               | 6-Nov-01          | Pending          | United States  | ANTI-REFLECTION COATINGS FOR SEMICONDUCTOR LASERS  |
| 14592ID              | US               | 19-Dec-01         | Pending          | United States  | GIMBALLED LENS MOUNT AND<br>ALIGNMENT ASSEMBLY FOR A<br>SENSITIVE OPTICAL ALIGNMENT                  |
| 14676RO              | US               | 26-Dec-01         | Pending          | United States  | ENHANCED LINK OPERATION OF<br>DIRECTLY MODULATED LASERS<br>USING GAIN-COUPLED GRATINGS               |
| 14681ID              | US               | 21-Dec-01         | Pending          | United States  | THERMAL COMPENSATION AND ALIGNMENT FOR OPTICAL DEVICES   |
| 14716RO              | US               | 12-Feb-02         | Pending          | United States  | WAVEGUIDE MODE STRIPPER FOR<br>INTEGRATED OPTICAL<br>COMPONENTS                                      |
| 14777 <b>I</b> D     | US               | 18-Dec-2001       | Pending          | United States  | OPTICAL AMPLIFIERS   |
| 14794RO              | US               | 30-Sep-02         | Pending          | United States  | METHOD AND APPARATUS FOR<br>FLOATING GRATINGS IN DFB<br>(DISTRIBUTED FEEDBACK)<br>LASERS             |
| 14854RO              | Unfiled          | Unfiled           | Unfiled          | Unfiled  | A METHOD FOR MINIMIZING<br>CROSSTALK DUE TO LASER<br>WAVELENGTH VARIATIONS WITH<br>NON-IDEAL FILTERS |
| 14864RO              | US               | 8-Jul-02          | Pending          |  | CURRENT TUNED MACH-ZEHNDER<br>OPTICAL ATTENUATOR   |
| 14942RO              | US               | 5-Apr-02          | Pending          | ì  | RE-CIRCULATING OPTICAL PULSE<br>GENERATOR  |
| 15004RO              | US               | 18-Mar-02         | Pending          | United States  | MICRO-MIRRORS WITH VARIABLE<br>FOCAL LENGTH, AND OPTICAL<br>COMPONENTS COMPRISING<br>MICRO-MIRRORS   |
| L5093RO              | US               | 26-Sep-02         | Pending          |  | MULTIPLE-CONTACT<br>SEMICONDUCTOR OPTICAL<br>AMPLIFIERS  |
| 15095RO              | US               | <b>29-Mar-</b> 02 | Pending          | 1  | FREQUENCY IDENTIFICATION WITH FREQUENCY LOCKER   |

| Disclosure<br>Number | Filed<br>Country | Filed Date | Patent<br>Number | Filed<br>Countries in<br>Family | Title  |
|----------------------|------------------|------------|------------------|---------------------------------|--|
| 15113CK              | US               | 7-Jun-02   | Pending          | United States                   | WAVELENGTH STABILIZED<br>OPTICAL DEVICE  |
| 15116JD              | US               | 24-Apr-02  | Pending          | United States                   | HIGH POWER SEMICONDUCTOR<br>LASER DIODE AND METHOD FOR<br>MAKING SUCH A DIODE  |
| 15117JD              | Unfiled          | Unfiled    | Unfiled          | Unfiled                         | PUMP LASER DIODE WITH<br>IMPROVED WAVELENGTH<br>STABILITY  |
| 15138ID              | US               | 3-Jun-02   | Pending          | United States                   | AN IMPROVED METHOD FOR<br>TERMINATING AN OPTICAL<br>WAVEGUIDE INTO AN OPTICAL<br>COMPONENT                                   |
| 15142RO              | US               | 31-Jan-02  | Pending          | United States                   | FLEXIBLE POLYMER WAVEGUIDES FOR OPTICAL WIRE BONDS   |
| 15150RO              | US               | 27-Sep-02  | Pending          | United States                   | METHOD FOR INTEGRATING OPTICAL DEVICES IN A SINGLE EPITAXIA GROWTH STEP  |
| 15164RO              | US               | 2-Oct-02   | Pending          | United States                   | A DOPANT-INDUCED REAL<br>REFRACTIVE INDEX-GUIDED<br>SELF-ALIGNED LASER<br>STRUCTURE WITH INTEGRAL<br>CURRENT BLOCKING LAYER. |
| 15181ID              | US               | 26-Jun-02  | Pending          | United States                   | LASER TRANSMITTER  |
| 15193RO              | US               | 14-May-02  | Pending          | United States                   | OPTIMIZED PERFORMANCE OF<br>INGAASP/INP COMPACT ON-CHIP<br>POLARIZATION CONVERTER  |
| 15320RO              | US               | 15-Oct-02  | Pending          | United States                   | ELECTRO-OPTIC MODULATOR WITH CONTINUOUSLY ADJUSTABLE CHIRP   |
| 15338RO              | Unfiled          | Unfiled    | Unfiled          | Unfiled                         | HIGH POWER DISTRIBUTED<br>FEEDBACK LASER   |
| 15386JD              | US               | 16-Sep-02  | Pending          | United States                   | RIDGE WAVEGUIDE LASER DIODE<br>WITH COMPLEX INDEX GUIDING<br>LAYER   |
| 15389JD              | Unfiled          | Unfiled    | Unfiled          | Unfiled                         | LASER STABILIZATION USING VERY HIGH RELATIVE FEEDBACK  |
| 15390RO              | US               | 16-Aug-02  | Pending          | United States                   | ON-CHIP POLARIZATION<br>SPLITTER/COMBINER DEVICE   |
| 15399ЛЭ              | US               | 17-Oct-02  | Pending          | United States                   | A GUIDED SELF-ALIGNED LASER<br>STRUCTURE WITH INTEGRAL<br>CURRENT BLOCKING LAYER   |

| Disclosure | Filed   | Filed Date | Patent :: | Filed  | Title  |
|------------|---------|------------|-----------|--|--|
| Number     | Country |            | Number    | Countries in<br>Family                                     |  |
| HQ0054     | US      | 19-Feb-99  | 6141370   | Canada, United<br>States                                   | SUPERIMPOSED GRATING WDM<br>TUNABLE LASERS   |
| ID0032     | US      | 6-Oct-94   | 5534442   | United States  | OPTO ELECTRONIC COMPONENTS   |
| ID0079     | US      | 19-Jul-93  | 5393707   | Great Britain,<br>United States                            | SEMICONDUCTOR - SLICE<br>CLEAVING  |
| ID0094     | US      | 17-Nov-95  | 5668823   | France, Germany,<br>Great Britain,<br>Japan, United States | HYBRID OPTIC SOLUTION  |
| ID0134     | US      | 16-Feb-94  | 5419804   | France, Germany,<br>Great Britain,<br>Japan, United States | SEMICONDUCTOR ETCHING<br>PROCESS   |
| ID0137     | US      | 26-Jul-95  | 5574811   | Great Britain,<br>United States                            | PROVIDING OPTICAL COUPLING<br>BETWEEN OPTICAL COMPONENTS   |
| ID0170     | US      | 24-Feb-94  | 5365534   | United States  | INJECTION LASER AND<br>PHOTOSENSOR ASSEMBLY  |
| ID0193     | US      | 13-Feb-95  | 5568728   | Great Britain,<br>United States                            | FILAMENT COOLER  |
| ID0199     | US      | 9-Sep-94   | 5542011   | United States  | CO & COUNTER-PUMPED OPTICAL<br>AMPLIFIER   |
| ID0206     | US      | 9-Sep-94   | 5530580   | France, Germany,<br>Great Britain,<br>Japan, United States | ELECTRO ABSORPTION OPTICAL<br>MODULATORS   |
| ID0216     | US      | 29-Jul-94  | 5522000   | Great Britain,   | PROVIDING OPTICAL COUPLING<br>WITH SINGLE CRYSTAL<br>SUBSTRATE MOUNTED ELECTRO-<br>OPTIC TRANSDUCERS |
| ID0237     | US      | 22-Mar-94  | 5502741   | United States  | DIRECT AMPLITUDE<br>MODULATION OF LASERS   |
| ID0261     | US      | 7-Mar-96   | 5933707   | France, Germany,<br>Great Britain,<br>Japan, United States | IMPROVEMENTS IN CRYSTAL<br>SUBSTRATE PROCESSING  |
| ID0287     | US      | 3-Aug-95   | 6275321   | France, Germany,<br>Great Britain.<br>United States        | POLARISATION-INSENSITIVE<br>OPTICAL MODULATORS   |

| Disclosure<br>Number | Filed<br>Country | Filed Date        | 1 (a 100) | Filed<br>Countries in<br>Family                                   | Title  |
|----------------------|------------------|-------------------|-----------|---|--|
| ID0295               | US               | 12-Dec-95         | 5570444   | France, Germany,<br>Great Britain, Italy,<br>United States        | OPTICALLY COUPLING OPTICAL<br>FIBRES TO INJECTION LASERS |
| ID0311               | US               | 4-Dec-96          | 5872649   | France, Germany,<br>Great Britain, Italy,<br>United States        | OPTICAL AMPLIFIER  |
| ID0384               | US               | 19-Jul-96         | 5664043   | Great Britain,<br>United States                                   | HERMETIC OPTICAL FIBRE FEED-<br>THROUGH                  |
| ID0426               | US               | 30-Apr-97         | 5828689   | Canada, European<br>Patent Convention,<br>Japan, United States    | ETALON ARRANGEMENT                                       |
| ID0431               | US               | 19-Jun-98         | 6058125   | France, Germany,<br>Great Britain, Italy,<br>Japan, United States | SEMICONDUCTOR LASERS                                     |
| ID0467               | US               | 5-Feb-97          | 5985086   | France, Germany,<br>Great Britain, Italy,<br>Japan, United States | CONTROLLED DISPENSE OF GLUE<br>ONTO A SILICON V-GROOVE   |
| ID0519               | US               | 1 <b>-A</b> ug-97 | 6188118   | Canada, European<br>Patent Convention,<br>Japan, United States    | SEMICONDUCTOR PHOTODETECTOR PACKAGING                    |
| ID0651               | US               | 30-May-97         | 5901164   | Canada, European<br>Patent Convention,<br>Japan, United States    | DIRECT AMPLITUDE<br>MODULATION OF LASERS                 |
| ID0687               | US               | 4-Dec-97          | 6124956   | United States   | OPTICAL TRANSMITTER OUTPUT<br>MONITORING TAP             |
| ID0691               | US               | 5-May-98          | 6075800   | United States   | BONDING RIDGE STRUCTURE<br>LASER DIODES TO SUBSTRATES    |
| ID0764               | US               | 16-Aug-99         | 6351589   | United States   | A REMOVABLY COATED OPTICAL<br>FIBRE                      |

| Disclosure<br>Number | Filed<br>Country | Filed Date | Patent<br>Number | Filed<br>Countries in<br>Family                                      | Title   |
|----------------------|------------------|------------|------------------|--|---|
| ID0803               | US               | 24-Dec-97  | 5956437          | Canada, European<br>Patent Convention,<br>Japan, United States       | ELECTRICALLY CONTROLLABLE<br>OPTICAL ATTENUATOR   |
| ID0908               | US               | 30-Apr-98  | Pending          | United States  | SEMICONDUCTOR OPTO<br>ELECTRONIC DEVICE PACKAGING |
| ID1107               | US               | 29-Mar-99  | 6240221          | Canada, European<br>Patent Convention,<br>United States              | INTEGRATED OPTICAL MACH<br>ZEHNDER STRUCTURES     |
| ID8512               | US               | 15-Jul-83  | 4615031          | Great Britain,<br>United States                                      | INJECTION LASER PACKAGES                          |
| ID8850               | us               | 22-Jul-86  | 4720684          | Canada, United<br>States   | OPTICAL AMPLIFIERS                                |
| ID8852               | US               | 21-May-85  | 4608276          | Canada, United<br>States   | MANUFACTURING OPTICAL FIBRE                       |
| ID8960               | US               | 11-Dec-86  | 4735648          | United States  | OPTICAL FIBRE MANUFACTURE                         |
| ID9003               | US               | 2-Oct-85   | 4631078          | Canada, Germany,<br>Great Britain,<br>Japan, Spain,<br>United States | COATING OPTICAL FIBRES                            |
| ID9186               | US               | 17-Jan-89  | 4949352          | Great Britain,<br>United States                                      | LASER MANUFACTURE                                 |
| ID9209               | US               | 1-May-86   | 4748307          | United States  | TUBE FURNACE                                      |
| ID9312               | US               | 14-Aug-86  | 4793840          | Great Britain,<br>United States                                      | OPTICAL FIBRE MANUFACTURE                         |
| ID9315               | US               | 31-Dec-90  | RE34,516         | France, Germany,<br>Great Britain, New<br>Zealand, United<br>States  | OPTICAL FIBRE CABLE HAVING<br>SLOTTED CORE        |

| Disclosure<br>Number | Filed<br>Country | Filed Date | Patent<br>Number | Filed<br>Countries in                               | Title  |
|----------------------|------------------|------------|------------------|---|--|
|                      |                  |            |                  | Family  |  |
| ID9379               | US               | 24-Nov-86  | 4772086          | Great Britain,<br>United States                     | OPTICAL FIBRE INTEGRATED OPTICAL DEVICE COUPLER                            |
| ID9495               | US               | 31-Mar-87  | 4760580          | Germany, Japan,<br>United States                    | LASER ARRAY  |
| ID9552               | US               | 10-Feb-88  | 4830459          | France, Germany,<br>Great Britain,<br>United States | OPTICAL FIBRE CABLES   |
| ID9604               | US               | 9-Aug-88   | 4988159          | France, Germany,<br>Great Britain,                  | FIBRE TAILED OPTO-ELECTRONIC<br>TRANSDUCER                                 |
|                      |                  |            |                  | Netherlands,<br>Sweden, United<br>States            |  |
| ID9617               | US               | 1-Sep-88   | 4937638          | United States                                       | EDGE EMITTING LIGHT EMISSIVE DIODE   |
| ID9661               | GB               | 12-Oct-88  | 2213957          | Great Britain                                       | WAVEGUIDE TO OPTO-<br>ELECTRONIC TRANSDUCER                                |
| ID9715               | US               | 31-May-90  |                  | Great Britain,                                      | CONTACTLESS MEASUREMENT OF<br>THE ELECTRICAL RESISTANCE<br>PER UNIT LENGTH |
| ID9716               | US               | 31-May-90  |                  |   | CARB ON COATING OF OPTICAL<br>FIBRES                                       |
| ID9731               | GB               | 4-Aug-88   | 2221570          | Great Britain                                       | BONDING A SEMICONDUCTOR TO<br>A SUBSTRATE                                  |
| ID9742               | GB               | 30-Sep-88  | 2223324          | Great Britain                                       | OPTICAL FILTERS  |
| ID9750               | US               | 10-Sep-90  |                  |   | DIFFRACTION GRATING  |
| ID9752               | GB               | 4-Oct-88   | 2223509          | Great Britain                                       | VAPOUR PHASE PROCESSING  |

| Disclosure | Filed   | Filed Date   | Patent                                | Filed  | Title  |
|------------|---------|--|---------------------------------------|--|--|
| Number     | Country | The state of the s | · · · · · · · · · · · · · · · · · · · | Countries in Family  |  |
| ID9763     | US      | 11-Dec-90  | 5115444                               | France, Germany,<br>Great Britain,<br>United States            | MULTICHANNEL CAVITY LASER  |
| ID9774     | GB      | 3-Feb-89   | 2227854                               | Great Britain  | INTEGRATED OPTICS<br>ASYMMETRIC Y-COUPLER  |
| ID9806     | US      | 27-Jun-90  | 5082380                               | United States  | OPTICAL FIBRE CABLE  |
| ID9837     | US      | 12-Oct-90  | 5050960                               | United States  | AERIAL OPTICAL FIBRE CABLE   |
|            |         |  |                                       |  |  |
| ID9856     | GB      | 2-Nov-89   | 2237654                               | Great Britain  | SEMICONDUCTOR OPTICAL<br>SOURCE  |
| ID9870     | US      | 17-Sep-90  | 5056096                               | France, Germany,<br>Great Britain,<br>Japan, United States     | RING LASER   |
| MO0068     | US      | 8-Jun-89   | 4934774                               |  | OPTICAL WAVEGUIDE AND<br>METHOD FOR ITS MANUFACTURE  |
| MO0166     | US      | 20-Sep-96  |                                       | United States  | A METHOD FOR LOW LOSS INSERTION OF AN OPTICAL SIGNAL FROM A OPTICAL FIBER TO A WAVEGUIDE INTEGRATED ONTO A SEMICONDUCTOR WAFER |
| MO0167     | US      | 10-Jul-96  |                                       | Canada, European<br>Patent Convention,<br>Japan, United States | A METHOD FOR THE HYBRID INTEGRATION OF DISCRETE ELEMENTS ON A SEMICONDUCTOR SUBSTRATE  |

| Disclosure<br>Number | Filed<br>Country | Filed Date | Patent<br>Number | Filed<br>Countries in<br>Family | Title  |
|----------------------|------------------|------------|------------------|---------------------------------|--|
| MO0167               | US               | 15-May-98  | 6158901          |                                 | METHOD FOR HYBRID<br>INTEGRATION OF DISCRETE<br>ELEMENTS ON SEMICONDUCTOR<br>SUBSTRATE |
| MO0167               | US               | I-Jun-00   | 6391214          | ,                               | METHOD FOR HYBRID INTEGRATION OF DISCRETE ELEMENTS ON SEMICONDUCTOR SUBSTRATE          |
| RE1009               | US               | 28-Nov-89  | 4950046          | Canada, United<br>States        | FIBER OPTIC COUPLER  |
| RE1037               | US               | 28-Apr-86  | 4730171          | Canada, United<br>States        | OPTICAL SIGNAL MODULATORS  |
| RO1624               | US               | 11-Feb-81  | 4695125          | United States                   | HERMETIC OPTICAL ATTENUATOR  |
| RO1807               | US               | 3-Dec-82   | 4493287          | Canada, United<br>States        | DIFFUSION EQUIPMENT  |
| RO1809               | US               | 9-Dec-82   | 4530099          | United States                   | A PLANAR NARROW-STRIPE<br>LASER WITH IMPROVED CHARGE<br>CARRIER CONFINEMENT            |
| RO1882               | US               | 27-Feb-84  | 4574730          | Canada, United<br>States        | MELT DISPENSING LIQUID PHASE EPITAXY BOAT  |
| RO1903               | US               | 23-Feb-84  | 4489477          | Canada, United<br>States        | METHOD FOR SCREENING LASER DIODES  |
| RO1944               | US               | 22-Oct-84  | 4661962          | Canada, United<br>States        | PHASED LINEAR LASER ARRAY  |
| RO1961               | US               | 9-Sep-88   | 4889830          | Canada, United<br>States        | ZINC DIFFUSION INTO INDIUM<br>PHOSPHIDE  |
| RO1987               | US               | 21-Nov-84  | 4660207          | Canada, United<br>States        | DOUBLE HETEROSTRUCTURE<br>SURFACE EMITTING LASER<br>STRUCTURE                          |
| RO1994               | US               | 14-Feb-85  | 4675877          | Canada, United<br>States        | A SURFACE EMITTING LASER   |
| RO2005               | US               | 14-Feb-85  | 4675876          | Canada, United<br>States        | A BRAGG DISTRIBUTED<br>FEEDBACK SURFACE EMITTING<br>LASER                              |
| RO2268               | US               | 11-Apr-88  | 4859628          | Canada, United<br>States        | AN INTERRUPTED LIQUID PHASE EPITAXY TECHNIQUE  |
| RO2314               | US               | 31-Mar-88  | 4847665          | United States                   | MONOLITHIC INTEGRATION OF<br>OPTOELECTRONIC AND<br>ELECTRONIC                          |
| RO2349               | US               | 2-Jun-88   | 4849373          | Canada, United<br>States        | GROWTH OF SEMI-INSULATING<br>INP BY LIQUID PHASE EPITAXY                               |
| l                    |                  | 1          | ſ                | 1                               |  |

| Disclosure<br>Number | Filed<br>Country | Filed Date | Number  | Filed<br>Countries in<br>Family                            | Title   |
|----------------------|------------------|------------|---------|--|---|
| RO2461               | US               | 22-Jun-89  | 4969712 | United States  | OPTOELECTRONIC APPARATUS<br>AND METHOD FOR ITS<br>FABRICATION   |
| RO2468               | US               | 27-Jul-89  | 4953006 | Canada, United<br>States                                   | PACKAGING METHOD AND<br>PACKAGE FOR EDGE COUPLED<br>OPTOELECTRONIC DEVICE   |
| RO2564               | US               | 11-May-90  | 4989214 | France, Germany,<br>Great Britain,<br>United States        | LASER DIODE STRUCTURE   |
| RO2579               | US               | 14-Sep-90  | 5050953 | Great Britain,<br>United States                            | MULTICHANNEL FIBER OPTIC<br>TRANSMITTER RECEIVER  |
| RO2714               | US               | 23-Dec-92  | 5350923 | United States  | APPARATUS FOR USE WITH<br>ANALYTICAL MEASURING<br>INSTRUMENTS   |
| RO2785               | US               | 15-Jul-93  | 5363457 | France, Germany,<br>Great Britain,<br>Japan, United States | OPTICAL PHASE MODULATING<br>DEVICES AND METHODS FOR<br>THEIR OPERATION  |
| RO2788               | US               | 9-Sep-93   | 5345459 | United States  | METHOD OF REDUCING THE<br>THERMALLY INDUCED SHIFT IN<br>THE EMISSION WAVELENGTH OF<br>LASER DIODES                          |
| RO2799               | US               | 16-Dec-93  | 5452318 | United States  | GAIN COUPLED DFB LASER WITH<br>INDEX COUPLING COMPENSATION  |
| RO2809               | US               | 29-Nov-93  | 5586207 | United States  | METHODS AND ASSEMBLIES FOR<br>PACKAGING ELECTRONIC<br>DEVICES AND FOR COUPLING<br>OPTICAL FIBERS TO THE<br>PACKAGED DEVICES |
| RO2817               | US               | 29-Nov-93  | 5448581 | United States  | CIRCULAR GRATING LASERS   |
| RO2875               | US .             | 25-May-95  | 5526076 | United States  | CHIRP CONTROL OF A MACH<br>ZEHNDER OPTICAL MODULATOR<br>USING NONEQUAL POWER<br>SPLITTING                                   |

| Disclosure<br>Number | Filed<br>Country | Filed Date | Patent<br>Number | Filed<br>Countries in<br>Family                                | Title  |
|----------------------|------------------|------------|------------------|--|--|
| RO2879               | US               | 10-May-94  | 5483547          | United States  | SEMICONDUCTOR LASER STRUCTURE FOR IMPROVED STABILITY OF THE THRESHOLD CURRENT WITH RESPECT TO CHANGES IN AMBIENT TEMPERATURE |
| RO2956               | US               | 8-Mar-96   | 5694504          | Canada, Great<br>Britain, Japan,<br>United States              | SEMICONDUCTOR MODULATOR<br>WITH A 2-2 SHIFT  |
| RO2969               | US               | 25-May-95  | 5567659          | United States  | METHOD OF ETCHING PATTERNS<br>IN III-V MATERIAL WITH<br>ACCURATE DEPTH CONTROL   |
| RO2974               | US               | 30-Mar-95  | 5536085          | United States  | MULTI WAVELENGTH GAIN COUPLED DISTRIBUTED FEEDBACK LASER ARRAY WITH FINE TUNABILITY  |
| RO2999               | US               | 3-Jul-96   |                  | Canada, European<br>Patent Convention,<br>Japan, United States | COUPLING OF STRONGLY AND<br>WEAKLY GUIDING WAVEGUIDES<br>FOR COMPACT INTEGRATED<br>MACH ZEHNDER MODULATORS                   |
| RO3007               | US               | 11-Oct-96  | 6028875          | United States  | BURIED HETEROSTRUCTURE<br>LASER WITH QUATERNARY<br>CURRENT BLOCKING G LAYER  |
| RO3015               | US               | 24-Nov-97  |                  |  | THIN FILM RESISTOR FOR OPTOELECTRONIC INTEGRATED CIRCUITS  |
| RO3066               | US               | 9-Jun-98   | 6151347          | United States  | LASER DIODE AND METHOD OF<br>FABRICATION THEREOF   |
| RO3090               | US               | 7-Nov-96   |                  | · •  | CONFIGURABLE CHIRP MACH-<br>ZEHNDER OPTICAL MODULATOR  |
| RO3090               | US               | 7-Nov-96   | 5991471          |  | CONFIGURABLE CHIRP MACH-<br>ZEHNDER OPTICAL MODULATOR  |
| RO3092               | US               | 25-Jul-96  | 5777793          |  | POLARIZATION INSENSITIVE<br>MULTILAYER PLANAR<br>REFLECTION FILTERS WITH NEAR<br>IDEAL SPECTRAL RESPONSE                     |

| Disclosure<br>Number | Filed<br>Country | Filed Date | Number  | Filed<br>Countries in<br>Family                                       | Title  |
|----------------------|------------------|------------|---------|---|--|
| RO3139               | US               | 11-Jul-96  | 5825792 | Canada, France,<br>Germany, Great<br>Britain, Japan,<br>United States | WAVELENGTH MONITORING AND<br>CONTROL ASSEMBLY FOR WDM<br>OPTICAL TRANSMISSION<br>SYSTEMS                   |
| RO3478               | US               | 18-Sep-97  | 5936994 | European Patent<br>Convention, Japan,<br>United States                | TWO SECTION COMPLEX COUPLED DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER WITH ENHANCED WAVELENGTH TUNING RANGE |
| RO3479               | US               | 16-Oct-97  | 6026110 | United States   | DISTRIBUTED FEEDBACK<br>SEMICONDUCTOR LASER WITH<br>GAIN MODULATION  |
| RO3610               | US               | 24-Dec-97  | 6104739 | European Patent<br>Convention, Japan,<br>United States                | SERIES OF STRONGLY COUPLED<br>DFB LASERS   |
| RO3746               | US               | 19-Dec-97  | 5869398 | United States   | ETCHING OF INDIUM PHOSPHIDE<br>MATERIALS FOR<br>MICROELECTRONIC FABRICATION                                |
| RO3920               | US               | 10-Nov-99  | Pending | Canada, European<br>Patent Convention,<br>Japan                       | A GAIN COUPLED DISTRIBUTED<br>FEEDBACK SEMICONDUCTOR<br>LASER  |
| RO4144               | US               | 11-Dec-98  | 6201824 | United States   | STRONGLY COMPLEX COUPLED<br>DFB LASERS SERIES  |
| RO4324               | US               | 15-Dec-98  | Pending | United States   | GENERATION OF SHORT OPTICAL<br>PULSES USING STRONGLY<br>COMPLEX COUPLED DFB LASERS                         |
| RO4416               | US               | 2-Sep-99   | 6246826 | United States   | VARIABLE OPTICAL ATTENUATOR<br>WITH PROFILED BLADE   |
| RO4504               | US               | 20-Jul-00  |         | Canada, European<br>Patent Convention,<br>Japan, United States        | COMPOUND CAVITY REFLECTION<br>MODULATION LASER SYSTEM  |
| 15502RO              | Unfiled          | Unfiled    | Unfiled | Unfiled   | A P-SUBSTRATE SELF-ALIGNED<br>LASER STRUCTURE WITH IRON<br>DOPED CURRENT BLOCKING<br>LAYERS                |

| Disclosure<br>Number | Filed<br>Country | Filed Date | Patent<br>Number | Filed<br>Countries in<br>Family | Title  |
|----------------------|------------------|------------|------------------|---------------------------------|--|
| 15507RO              | Unfiled          | Unfiled    | Unfiled          | Unfiled                         | A MAGNETO-OPTIC NONRECIPROCAL WAVEGUIDE TE/TM MODE CONVERTER IN SEMICONDUCTING MATERIALS   |
| 15558RO              | Unfiled          | Unfiled    | Unfiled          | Unfiled                         | MANUFACTURE OF A GRATING TEMPLATE AND ITS TRANSFER INTO AL (IN, GA)AS MATERIAL USING IN-SITU ETCHING AND REGROWTH INSIDE A GROWTH REACTOR. |
| 15592RO              | Unfiled          | Unfiled    | Unfiled          | Unfiled                         | ETCHING OF INDEX- OR GAIN-<br>COUPLED GRATINGS INTO<br>INGAASP MATERIAL USING IN-<br>SITU ETCHING IN A GROWTH<br>REACTOR                   |
| 15649JD              | Unfiled          | Unfiled    | Unfiled          | Unfiled                         | LASER STRUCTURE WITH LARGE<br>OPTICAL SUPERLATTICE<br>WAVEGUIDE  |
| 15655RO              | Unfiled          | Unfiled    | Unfiled          | Unfiled                         | HIGH TEMPERATURE OPERATION<br>LASER DIODES   |
| 15656RO              | Unfiled          | Unfiled    | Unfiled          | Unfiled                         | FABRICATION OF A BURIED HETEROSTRUCTURE LASER WITH AN INGAASP ACTIVE LAYER USING IN-SITU ETCHING IN A GROWTH REACTOR                       |
| 15683ID              | Untiled          | Unfiled    | Unfiled          | Unfiled                         | OPTICAL ATTENUATOR AND MODULATOR   |

| Disclosure<br>Number | Filed<br>Country | Filed<br>Date | Patent<br>Number                   | Filed<br>Countries<br>in Family                          | Title  | Status /<br>Comment     |
|----------------------|------------------|---------------|------------------------------------|--|--|-------------------------|
| ID0130               | US               | 29-Oct-93     | 5355248                            | Great Britain,<br>United States                          | OPTICAL<br>AMPLIFIER                         | Expired or<br>Abandoned |
| ID0348               | US               | 13-Jun-96     | 5844926                            | United States  | LASERS                                       | Expired or<br>Abandoned |
| RO1269               | US               | 7-Jan-83      | 4528438                            | United States  | END POINT<br>CONTROL IN<br>PLASMA<br>ETCHING | Expired or Abandoned    |
| ID8907               | US               |               | 4911742                            | United States,<br>Australia,<br>France, Great<br>Britain | OPTICAL<br>FIBER                             | Expired or<br>Abandoned |
| 11 <b>620ID</b>      | US               |               | Pending prior<br>to<br>abandonment | Patent<br>Cooperation<br>Treaty, United<br>States        | VARIABLE<br>OPTICAL<br>ATTENUATOR            | Expired or<br>Abandoned |

| Disclosure<br>Number | Filed<br>Country | Filed Date | Patent<br>Number: | Filed Countries in<br>Family                            | Title   |
|----------------------|------------------|------------|-------------------|---|---|
| 10163ID              | US               | 28-Sep-00  | 6424755           | Canada, United<br>States, European<br>Patent Convention | SLOTTED MONOLITHIC OPTICAL<br>WAVEGUIDES                  |
| 11550RO              | US               | 28-Sep-00  | Pending           | Canada, United<br>States                                | HYBRID ATTACH MIRRORS FOR<br>A MEMS OPTICAL SWITCH        |
| 12801AU              | US               |            | 6014475           | United States,<br>European Patent<br>Convention         | FIBRE OPTIC CIRCULATOR                                    |
| 12803AU              | US               |            | 6263131           | United States,<br>Canada, European<br>Patent Convention | REFLECTIVE NON RECIPROCAL<br>OPTICAL DEVICE               |
| 12803AU              | US               |            | 6415072           | United States   | REFLECTIVE NON RECIPROCAL<br>OPTICAL DEVICE               |
| 13240AU              | US               |            |                   | United States   | POLARISATION SPLITTING<br>CIRCULATOR METHOD AND<br>DEVICE |
| 140811D              | US               |            | <b> </b>          | United States   | FIBRE OPTICAL COMPONENT                                   |

| 14669AU | US |           | United States  | VARIABLE ATTENUATION AND<br>SPECTRAL SLOPE OPTICAL<br>DEVICE                                    |
|---------|----|-----------|--|---|
| ID0190  | US | 5703976   | United States,<br>Germany, France,<br>Great Britain, Japan                   | WAVELENGTH RESONANT FUSED<br>FIBRE COUPLER  |
| ID0226  | GB | 2281787   | Great Britain  | OPTICAL WAVEGUIDE GRATINGS  |
| ID0291  | US | 5638473   | United States,<br>Germany, France,<br>Great Britain                          | OPTICAL WAVEGUIDE GRATING<br>FILTER   |
| ID0309  | US | 5730888   | United States  | BRAGG GRATINGS IN<br>WAVEGUIDES   |
| ID0355  | US | 5708740   | United States,<br>Germany, France<br>Great Britain                           | ALL-FIBRE OPTICAL FILTER  |
| ID0421  | US | 5904491   | United States  | PLANAR WAVEGUIDES   |
| ID0423  | US | 5885881   | United States  | PLANAR WAVEGUIDE CLADDING   |
| ID0449  | US | 6044192   | United States,<br>Canada, Germany,<br>France, Great Britain,<br>Italy, Japan | WAVEGUIDE PAIR WITH<br>CLADDING   |
| ID8550  | GB | 2129152   | Great Britain  | OPTICAL FIBRES  |
| ID9170  | US | 4756589   | United States,<br>Canada, Great Britain                                      | BEAM SPLITTER/COMBERS   |
| ID9441  | US | 4801185   | United States,<br>Germany, France,<br>Great Britain, Japan                   | DIRECTIONAL COUPLER   |
| ID9579  | GB | 2207254   | Great Britain  | GLASS CLAD OPTICAL FIBRE<br>DIRECTIONAL COUPLERS  |
| ID9730  | GB | 2222400   | Great Britain  | DOPED ELEMENTS  |
| ID9758  | GB | 2238396   | Great Britain  | OPTICAL WAVEGUIDE TAPER<br>HAVING CORE, INTERLAYER  |
| ID0444  | EР | EP0891570 | United States,<br>Canada, France,<br>Germany, Great<br>Britain, Italy, Japan | TAPERED SINGLE MODE<br>WAVEGUIDES COUPLED TO<br>PHOTODETECTOR BY<br>MULTIMODE FIBRE             |
| RO2922  | US | 5488679   | United States  | POLARISATION INDEPENDENT<br>WAVELENGTH TUNABLE FILTER<br>BASED ON BIREFRINGENCE<br>COMPENSATION |
| 12802AU | US | 6466704   | United States,<br>Canada, Patent<br>Cooperation Treaty                       | OPTICAL FILIERING METHOD<br>AND DEVICE  |
| 12804AU | US |           | United States,<br>Canada   | WAVELENGTH DEPENDENT<br>ISOLATOR  |
| L       |    |           | 1  | 1   |

| 15087ID | US |         | United States   | AN OPTICAL GRATING DEVICE                      |
|---------|----|---------|---|--|
| ID0509  | US | 6115518 | United States,<br>Canada, Great<br>Britain, Japan                     | OPTICAL WAVEGUIDE BRAGG<br>REFLECTION GRATINGS |
| ID0997  | US | 6321000 | United States,<br>Canada, Germany,<br>France, Great Britain,<br>Italy | OPTICAL EQUALIZER                              |

# AMENDMENT TO THE PATENT SECURITY AGREEMENT

This Amendment (this "Amendment"), effective as of November 8, 2002, to the Patent Security Agreement made on November 8, 2002 (the "PSA") is hereby made by and among NORTEL NETWORKS CORPORATION, a corporation duly incorporated under the laws of Canada, having its executive offices at 8200 Dixie Road, Suite 100, Brampton, Ontario L6T 5P6 Canada (the "Pledgee") and BOOKHAM TECHNOLOGY PLC, a public limited company incorporated under the laws of England and Wales having its executive offices at 90 Milton Park, Abingdon, Oxfordshire OX14, 4RY United Kingdom (the "Pledgor") and each of its subsidiaries that are listed on the signature pages hereto (such subsidiaries collectively with the Pledgor, the "Pledgor Parties") (each of Pledgee and the Pledgor Parties, a "Party" and, collectively, the "Parties").

WHEREAS, the Parties, having entered into the PSA, desire to amend the PSA to update the schedule of patents, patent applications and invention disclosures attached thereto.

NOW THEREFORE, in consideration of the foregoing premises and the mutual terms and conditions set forth herein, and for U.S. \$1.00 (ONE DOLLAR) and other good and valuable consideration, receipt and adequacy of which is hereby acknowledged, the Parties hereby agree that the PSA be, and is, amended as follows:

- 1. <u>Schedule I</u> of the PSA is deleted in its entirety and replaced with the new <u>Schedule I</u> attached hereto.
- 2. Except as expressly amended by this Amendment, all of the terms, covenants and conditions of the PSA shall remain unamended and in full force and effect.
- 3. This Amendment is hereby incorporated in, and forms a part of, the PSA. For the avoidance of doubt, this Amendment shall be governed by and enforced in accordance with the laws of the State of New York, without giving effect to any conflicts of law principles.
- 4. This Amendment shall be binding on, and shall inure to the benefit of, the Parties and their respective successors and assigns.
- 5. This Amendment may be executed in any number of counterparts, each of which shall be deemed to be an original but all of which shall constitute one and the same instrument.

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IN WITNESS WHEREOF, the Parties have duly executed this Amendment as of the date first above written.

NORTEL NETWORKS CORPORATION

By: Name: Khush Dadyburjor, as Attorney-in-

Fact

| BOOKHAM TECHNOLOGY PLC                    |
|---|
| By: / / \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ |
| Name:<br>Title:                           |
| BOOKHAM/TECHNOLOGY, INC.                  |
| Pu M Imi                                  |
| By: / Vacco                               |
| Title:                                    |
| Title.                                    |
| BOOKHAM ACQUISITION, INC.                 |
| $M_{\Lambda}$ $M_{\Lambda}$               |
| By:                                       |
| Name:                                     |
| Title:                                    |
|   |
| BOOKHAM (SWITZERLAND) AG                  |
| V/8/                                      |
| Ву:                                       |
| Name:                                     |
| Title:                                    |
|   |
| BOOKHAM TECHNOLOGY PLC                    |
|   |
| Ву:                                       |
| Name:                                     |
| Title:                                    |

Hanny, Lois

On this instrument, who acknowledged that he/she signed it as a free act on his/her own behalf or on behalf of Nortel Networks Corporation with authority to do so.

Privince State of Untrio ) ss. of mil

On this day of December, 2002, before me appeared this instrument, who acknowledged that he/she signed it as a free act on his/her own behalf or on behalf of the Pledgor Parties with authority to do so.

State of Kuyland )
County of Confuelilium ) ss.

STUART P. B. CAPEL SOLICITOR & NOTARY PUBLIC 6 EAST SAINT HELEN STREET ABINGDON, OXON, OX14 5EW TEL: 01235 - 523411 FAX: 01235 - 533283



## **SCHEDULE I**

| DES.    | <b>ब्रि</b> ड्लक्ष्मपुरु संग्र  | G-A | 美術的作品      | · Printer (Co | Set<br>Line | AND AND THE STATE OF THE STATE | Membership after   |
|---------|---|-----|------------|---------------|-------------|---|--|
|         | PHOTODETECTOR WITH<br>SPECTRALLY EXTENDED<br>RESPONSIVITY                 |     | 2,269,298  |               |             |   | PHOTODETECTOR WITH<br>SPECTRALLY EXTENDED<br>RESPONSIVITY                      |
| 10289RO | PHOTODETECTOR WITH<br>SPECTRALLY EXTENDED<br>RESPONSIVITY                 |     | 09/294,114 | 6,222,200     |             |   | PHOTODETECTOR WITH<br>SPECTRALLY EXTENDED<br>RESPONSIVITY                      |
| 10412RO | EXTERNAL CAVITY<br>LASER  | US  | 09/688,873 |               |             |   | EXTERNAL CAVITY LASER USING<br>ANGLE-TUNED FILTER AND<br>METHOD OF MAKING SAME |
| 10413ID | FIBRE TERMINATION<br>COMPOUND GRADED<br>INDEX LENSES                      | US  | 09/750,874 |               |             |   | FIBRE TERMINATION COMPOUND GRADED INDEX LENSES                                 |
| 10485RO | ELECTRICALLY CONTROLLED OPTICAL ATTENUATOR WITH COPLANAR ELECTRODES       | US  | 09/726,409 |               |             |   | ELECTROCHROMIC OPTICAL<br>ATTENUATOR   |
| 10509RO | ALIGNMENT METHOD<br>FOR SEMICONDUCTOR<br>OPTICAL DEVICES UPON<br>CARRIERS | US  | 09/472,121 | 6,287,401     |             |   | ALIGNMENT METHOD FOR<br>SEMICONDUCTOR OPTICAL<br>DEVICES UPON CARRIERS         |
| 10509RO | ALIGNMENT METHOD<br>FOR SEMICONDUCTOR<br>OPTICAL DEVICES UPON<br>CARRIERS | CA  | 2,328,279  |               |             |   | ALIGNMENT METHOD FOR<br>SEMICONDUCTOR OPTICAL<br>DEVICES UPON CARRIERS         |
| 11006ID | MODULATOR<br>ASSEMBLIES   | US  | 09/496,917 |               |             |   | MODULATOR ASSEMBLIES   |
| 11920ID | PUMPED OPTICAL AMPLIFICATION DEVICE                                       | us  | 09/557,891 |               |             |   | PUMPED OPTICAL AMPLIFICATION DEVICE  |
| 11945ID | A RAMAN FIBRE LASER   | US  | 09/573,238 |               |             |   | A RAMAN FIBRE LASER  |
| 11954ID | A RAMAN FIBRE LASER   | US  | 09/573,236 |               |             |   | A RAMAN FIBRE LASER  |
| 12242RO | INVERTED INP/INGAAS<br>AVALANCHE<br>PHOTODIODE                            | US  | 09/733,060 |               |             |   | EPITAXIALLY GROWN<br>AVALANCHE PHOTODIODE                                      |
| 12339ID | OPTICAL FIBER DEVICE  | US  | 09/653,985 |               |             |   | OPTICAL FIBER DEVICE   |
| 12349RO | COMPACT CHIP<br>LABELING USING<br>STEPPER TECHNOLOGY.                     | CĀ  | 2,320,612  |               |             |   | COMPACT CHIP LABELING<br>USING STEPPER TECHNOLOGY                              |
| 12349RO | COMPACT CHIP<br>LABELING USING<br>STEPPER TECHNOLOGY.                     | US  | 09/688,366 |               |             |   | COMPACT CHIP LABELING<br>USING STEPPER TECHNOLOGY                              |
| 12526RO |   | US  | 09/660,542 | 6,409,241     |             |   | APPARATUS FOR GRIPPING<br>CERAMIC SUBSTRATES                                   |
| 12615ID | PACKAGING<br>ATMOSPHERE AND<br>METHOD OF PACKAGING<br>A MEMS DEVICE       | US  | 09/676,256 |               |             |   | PACKAGING ATMOSPHERE AND<br>METHOD OF PACKAGING A<br>MEMS DEVICE               |
| 12634RO | BE DOPING OF INP  | US  | 09/741,350 |               |             |   | STRUCTURE AND METHOD FOR DOPING OF III-V COMPOUNDS                             |
| 12665RO | PRINT QUALITY TEST<br>STRUCTURE FOR DEVICE<br>MANUFACTURING.              | US  | 09/667,620 |               |             |   | PRINT QUALITY TEST STRUCTURE FOR LITHOGRAPHIC DEVICE MANUFACTURING             |
| 12686ID | GLASS FIBER FIXATIVE<br>AND FIXING PROCESS                                | US  | 09/698,800 |               |             |   | GLASS FIBER FIXATIVE AND<br>FIXING PROCESS                                     |
| 12715RO |   | US  | 09/667,622 |               |             |   | METHODS FOR MAKING<br>PATTERNS IN RADIATION<br>SENSITIVE POLYMERS              |

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|---------|--|----|----------------|-----------|-----------------------|---|--|
| 12800AU | SPLIT-BEAM FOURIER<br>FILTER   | US | 08/793,729     | 5,930,441 |                       |   | SPLIT-BEAM FOURIER FILTER  |
| 12841ID | INTEGRATED OPTICAL TRANSMITTER   | US | 09/616,659     |           |                       |   | INTEGRATED OPTICAL<br>TRANSMITTER  |
| 12847RO | BURIED HETEROSTRUCTURE LASER CONFINEMENT LAYER                                 | CA | 2,328,641      |           |                       |   | CONFINEMENT LAYER OF<br>BURIED HETEROSTRUCTURE<br>SEMICONDUCTOR LASER                                |
| 12847RO | BURIED HETEROSTRUCTURE LASER CONFINEMENT LAYER                                 | US | 10/014,807     |           |                       |   | CONFINEMENT LAYER OF<br>BURIED HETEROSTRUCTURE<br>SEMICONDUCTOR LASER                                |
| 12849ID | OPTICAL AMPLIFIER METHOD AND APPARATUS   | US | 09/710,372     |           |                       |   | OPTICAL AMPLIFIER METHOD AND APPARATUS   |
| 12849ID | OPTICAL AMPLIFIER METHOD AND APPARATUS   | wo | PCT/GB01/04944 |           |                       |   | OPTICAL AMPLIFIER METHOD<br>AND APPARATUS  |
| 12948ID | OPTICAL AMPLIFIER, OPTICAL AMPLIFIER HYBRID ASSEMBLY AND METHOD OF MANUFACTURE | US | 09/731,434     |           |                       | ,   | OPTICAL AMPLIFIER, OPTICAL<br>AMPLIFIER HYBRID ASSEMBLY<br>AND METHOD OF<br>MANUFACTURE              |
| 12948ID | OPTICAL AMPLIFIER, OPTICAL AMPLIFIER HYBRID ASSEMBLY AND METHOD OF MANUFACTURE | CA | 2,364,383      |           |                       |   | OPTICAL AMPLIFIER, OPTICAL<br>AMPLIFIER HYBRID ASSEMBLY<br>AND METHOD OF<br>MANUFACTURE              |
|         | AGILE, WIDELY TUNABLE<br>DIODE LASER WITH<br>NARROW LINEWIDTH                  |    | 08/726,049     | 6,041,071 |                       |   | ELECTRO-OPTICALLY TUNABLE<br>EXTERNAL CAVITY MIRROR FOR<br>A NARROW LINEWIDTH<br>SEMICONDUCTOR LASER |
|         | AGILE, WIDELY TUNABLE<br>DIODE LASER WITH<br>NARROW LINEWIDTH                  |    | 60/004,620     |           |                       |   | AGILE, WIDELY TUNABLE DIODE<br>LASER WITH NARROW<br>LINEWIDTH  |
| 13063CK | AGILE, WIDELY TUNABLE<br>DIODE LASER WITH<br>NARROW LINEWIDTH                  | US | 09/532,529     |           |                       |   | ELECTRO-OPTICALLY TUNABLE EXTERNAL CAVITY MIRROR FOR A NARROW LINEWIDTH SEMICONDUCTOR LASER          |
| 13144CK | LASER WITH SETTABLE<br>WAVELENGTHS   | US | 0              |           | Mailed<br>Application | TAYEBATI, PARVIZ<br>(7043-5010439),<br>VAKHSHOORI,<br>DARYOOSH (7068-<br>5010442) | LASER WITH SETTABLE WAVELENGTHS  |
| 13144CK | LASER WITH SETTABLE WAVELENGTHS  |    |                |           |                       |   | LASER WITH SETTABLE<br>WAVELENGTHS   |
| 13144CK | WAVELENGTHS  | US | 60/099,308     |           |                       |   | LASER WITH SETTABLE WAVELENGTHS  |
| 13144CK | WAVELENGTHS  | US | 09/386,604     |           |                       |   | LASER WITH SETTABLE WAVELENGTHS  |
| 13144CK | WAVELENGTHS  | CA | 2,317,133      |           |                       |   | LASER WITH SETTABLE WAVELENGTHS  |
|         | SINGLE ETALON OPTICAL<br>WAVELENGTH<br>REFERENCE DEVICE                        |    | 60/148,017     |           |                       |   | SINGLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE  |
|         | SINGLE ETALON OPTICAL<br>WAVELENGTH<br>REFERENCE DEVICE                        |    | 09/636,817     |           |                       |   | SINGLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE  |
| 13199CK | SINGLE ETALON OPTICAL<br>WAVELENGTH<br>REFERENCE DEVICE                        | wo | PCT/US00/21904 | !         | Nat'l Phase<br>Filed  |   | SINGLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE  |
| 13199CK | SINGLE ETALON OPTICAL<br>WAVELENGTH<br>REFERENCE DEVICE                        | CA | 2,381,662      |           |                       |   | SINGLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE  |
| 13199CK | SINGLE ETALON OPTICAL<br>WAVELENGTH<br>REFERENCE DEVICE                        | EP | 973357.7       |           |                       |   | SINGLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE  |

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|----------|---|----|--------------------|-------------|----------------------|-----------------|--|
| 13201CK  | DOUBLE ETALON OPTICAL WAVELENGTH REFERENCE DEVICE                                 | US | 60/148,148         |             |                      |                 | DOUBLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE                              |
| 13201CK  | DOUBLE ETALON OPTICAL WAVELENGTH REFERENCE DEVICE                                 | wo | PCT/US00/21905     |             | Nat'l Phase<br>Filed |                 | DOUBLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE                              |
| 13201CK  | DOUBLE ETALON OPTICAL WAVELENGTH REFERENCE DEVICE                                 | US | 09/636,807         |             |                      |                 | DOUBLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE                              |
| 13201CK  | DOUBLE ETALON OPTICAL WAVELENGTH REFERENCE DEVICE                                 | CA | 2,381,665          |             |                      |                 | DOUBLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE                              |
| 13201CK  | OPTICAL WAVELENGTH<br>REFERENCE DEVICE  | EP | 00957375.9         |             |                      |                 | DOUBLE ETALON OPTICAL<br>WAVELENGTH REFERENCE<br>DEVICE                              |
| <u></u>  | INTEGRATED OPTICALLY PUMPED EDGE EMITTING SEMICONDUCTOR LASER                     |    | 09/987,785         |             |                      |                 | MONOLITHICALLY INTEGRATED OPTICALLY-PUMPED EDGE- EMITTING SEMICONDUCTOR LASER        |
| 13417RO  | GRATING ETCHING WITH<br>INP MASKING   | US | 09/750,124         |             |                      |                 | METHOD OF ETCHING<br>PATTERNS INTO EPITAXIAL<br>MATERIAL                             |
| 13444CK  | MICROELATION FOR DWDM TELECOMMUNICATIONS APPLICATIONS                             | US | 09/859,938         |             |                      |                 | MICROELATION FOR DWDM TELECOMMUNICATIONS APPLICATIONS                                |
| 13444CK  | MICROELATION FOR DWDM TELECOMMUNICATIONS APPLICATIONS                             | wo | PCT/US01/14918     |             |                      |                 | MICROELATION FOR DWDM<br>TELECOMMUNICATIONS<br>APPLICATIONS                          |
| 13494ID  | METHOD AND APPARATUS FOR MINIMIZING GAIN DEVIATION IN                             | US | <b>09/8</b> 21,580 |             |                      |                 | METHOD AND APPARATUS FOR<br>MINIMIZING GAIN DEVIATION IN<br>OPTICAL FIBRE AMPLIFIERS |
| 13494ID  | METHOD AND APPARATUS FOR MINIMIZING GAIN DEVIATION IN                             | EP | 02251194.3         |             |                      |                 | METHOD AND APPARATUS FOR<br>MINIMIZING GAIN DEVIATION IN<br>OPTICAL FIBRE AMPLIFIERS |
| 13494ID  | METHOD AND APPARATUS FOR MINIMIZING GAIN DEVIATION IN                             | CA | 2,374,557          |             |                      |                 | METHOD AND APPARATUS FOR<br>MINIMIZING GAIN DEVIATION IN<br>OPTICAL FIBRE AMPLIFIERS |
| 13495ID  | OPTICAL MODULATORS  | US | 09/679,165         | 6,377,717   |                      |                 | OPTICAL MODULATORS   |
| 13502RO  | ANGLED OUTPUT BALL<br>TAPERED OPTICAL FIBER<br>TERMINATION                        | US | 09/735,571         |             |                      |                 | OPTICAL FIBER TERMINATION  |
| 13524RO  | A STATISTICAL MODEL USED TO CONTROL THE LASING WAVELENGTH OF SEMICONDUCTOR LASERS | US | 10/196,956         |             |                      |                 | A METHOD AND SYSTEM FOR FABRICATING SEMICONDUCTOR LASERS                             |
| 13544RO  | SEMICONDUCTOR<br>LASERS   | US | 10/141,914         |             |                      |                 | SEMICONDUCTOR LASER  |
| 13584RO  | ELECTRODE METAL<br>TERMINATION FOR<br>REDUCED LOCAL<br>HEATING                    | US | 09/709,646         |             |                      |                 | ELECTRODE TERMINATION FOR<br>REDUCED LOCAL HEATING IN AN<br>OPTICAL DEVICE           |
| 13584RO  | ELECTRODE METAL<br>TERMINATION FOR<br>REDUCED LOCAL<br>HEATING                    | CA | <b>2,36</b> 1,683  |             |                      |                 | ELECTRODE TERMINATION FOR<br>REDUCED LOCAL HEATING IN AN<br>OPTICAL DEVICE           |
| 13584RO  | ELECTRODE METAL<br>TERMINATION FOR<br>REDUCED LOCAL<br>HEATING                    | EP | 01309541.9         |             |                      |                 | ELECTRODE TERMINATION FOR<br>REDUCED LOCAL HEATING IN AN<br>OPTICAL DEVICE           |
| 13591ID  | OPTICAL MODULATORS  | GB | 0031241.3          |             |                      |                 | OPTICAL MODULATORS   |

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|---------|---|-----|-------------------|-------------|-----------------------|---|---|
| 13591ID | OPTICAL MODULATORS  | wo  | PCT/GB01/0558     | 2           |                       |   | OPTICAL MODULATOR   |
| 13614ID | OPTICAL PULSE<br>GENERATION   | US  | 09/993,849        |             |                       |   | OPTICAL PULSE GENERATION  |
| 13614ID | OPTICAL PULSE<br>GENERATION   | wo  | PCT/GB02/03664    | ļ           |                       |   | OPTICAL PULSE GENERATION  |
| 13721RO | AN NON-DESTRUCTIVE AND FAST WAY TO DETECT DIFFUSION DEPTH AND UNIFORMITY CROSS A WAFER        | US  | 0                 |             | Mailed<br>Application | QIAN, YAHONG<br>(C115-0531819,1), AN,<br>SERGUEI (5C33-<br>0510038,1) | AN NON-DESTRUCTIVE AND<br>FAST WAY TO DETECT<br>DIFFUSION DEPTH AD<br>UNIFORMITY CROSS A WAFER              |
| 13813RO | HIGH POWER LASER<br>DIODE AND METHOD OF<br>FABRICATION THEREOF                                | US  | 10/141,862        |             |                       |   | MONOLITHICALLY INTEGRATED<br>HIGH POWER LASER OPTICAL<br>DEVICE   |
| 13816RO | APPARATUS FOR<br>MONITORING THE<br>OUTPUT POWER OF<br>DIODE LASERS AND<br>MODULATORS          |     |                   |             | Unfiled               |   |   |
| 14224ID | ISOLATION OF<br>MICROWAVE<br>TRANSMISSION LINES   | US  | 10/032,416        |             |                       |   | ISOLATION OF MICROWAVE<br>TRANSMISSION LINES  |
| 14404RO | HYBRID CONFINEMENT<br>LAYERS OF BURIED<br>HETEROSTRUCTURE<br>SEMICONDUCTOR LASER              | US  | 10/027,229        |             |                       |   | HYBRID CONFINEMENT LAYERS OF BURIED HETEROSTRUCTURE SEMICONDUCTOR LASER                                     |
| 14429ID | OPTICAL BEAM<br>SAMPLING MONITOR  | US  | 10/006,509        |             |                       |   | OPTICAL BEAM SAMPLING MONITOR   |
| 14433JD | TITANIUM NITRIDE<br>DIFFUSION BARRIER FOR<br>USE IN NON-SILICON<br>TECHNOLOGIES AND<br>METHOD | CA  | <b>2,29</b> 2,769 |             |                       |   | A TITANIUM NITRIDE DIFFUSION<br>BARRIER FOR USE IN NON-<br>SILICON TECHNOLOGIES AND<br>METALLIZATION METHOD |
| 14433JD | TITANIUM NITRIDE<br>DIFFUSION BARRIER FOR<br>USE IN NON-SILICON<br>TECHNOLOGIES AND<br>METHOD | EP  | 99919257.8        |             |                       |   | A TITANIUM NITRIDE DIFFUSION<br>BARRIER FOR USE IN NON-<br>SILICON TECHNOLOGIES AND<br>METALLIZATION METHOD |
| 14433JD | TITANIUM NITRIDE DIFFUSION BARRIER FOR USE IN NON-SILICON TECHNOLOGIES AND METHOD             | JP  | 11-552490         |             |                       |   | A TITANIUM NITRIDE DIFFUSION<br>BARRIER FOR USE IN NON-<br>SILICON TECHNOLOGIES AND<br>METALLIZATION METHOD |
| 14433JD | TITANIUM NITRIDE DIFFUSION BARRIER FOR USE IN NON-SILICON TECHNOLOGIES AND METHOD             | US  | 09/063,173        | 6,204,560   |                       |   | TITANIUM NITRIDE DIFFUSION BARRIER FOR USE IN NON- SILICON TECHNOLOGIES AND METHOD                          |
| 14433JD | TITANIUM NITRIDE<br>DIFFUSION BARRIER FOR<br>USE IN NON-SILICON<br>TECHNOLOGIES AND<br>METHOD |     | 10-1999-7012042   |             |                       |   | A TITANIUM NITRIDE DIFFUSION<br>BARRIER FOR USE IN NON-<br>SILICON TECHNOLOGIES AND<br>METALLIZATION METHOD |
| 14433JD | TITANIUM NITRIDE DIFFUSION BARRIER FOR USE IN NON-SILICON TECHNOLOGIES AND METHOD             |     | PCT/EP99/02665    |             | Nat'l Phase<br>Filed  |   | A TITANIUM NITRIDE DIFFUSION BARRIER FOR USE IN NON- SILICON TECHNOLOGIES AND METALLIZATION METHOD          |

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|---------|---|----|-------------------|-----------|----------------------|---|---|
| 14433JD | DIFFUSION BARRIER FOR<br>USE IN NON-SILICON<br>TECHNOLOGIES AND<br>METHOD         |    | 0                 |           |                      | DAETWYLER, ANDREAS (- GPS4097856), DEUTSCH, URS (EXTR-GPS4097859), HARDER, CHRISTOPH (AA54-5050202), HEUBERGER, WILHELM (EXTR-GPS4097866), LATTA, ERNST-EBERHARD (EXTR-GPS4097878), JAKUBOWICZ, ABRAM (-GPS4097872), OOSENBRUG, ALBERTUS (- GPS4097875) |   |
| 14434JD | STABILIZED LASER<br>SOURCE  | EP | 99810837.7        |           |                      |   | STABILIZED LASER SOURCE   |
| 14434JD | STABILIZED LASER<br>SOURCE  | US | 10/049,886        |           |                      |   | STABILIZED LASER SOURCE   |
| 14435JD | SUPPORTING<br>STRUCTURE FOR FIBER<br>FIXING AND SUBMICRON<br>FINE ALIGNMENT       | EP | 99811030.8        |           |                      |   | SUPPORTING STRUCTURE FOR<br>FIBER FIXING AND SUBMICRON<br>FINE ALIGNMENT                  |
| 14435JD | SUPPORTING<br>STRUCTURE FOR FIBER<br>FIXING AND SUBMICRON<br>FINE ALIGNMENT       |    | PCT/IB00/01530    |           | Nat'l Phase<br>Filed |   | SUPPORTING STRUCTURE FOR<br>OPTICAL FIBER FIXING AND<br>SUBMICRONFINE ALIGNMENT           |
| 14435JD | SUPPORTING<br>STRUCTURE FOR FIBER<br>FIXING AND SUBMICRON<br>FINE ALIGNMENT       | US | PCT/IB00/01530    |           | Nat'l Phase<br>Filed |   | SUPPORTING STRUCTURE FOR<br>FIBER FIXING AND SUBMICRON<br>FINE ALIGNMENT                  |
| 14435JD | SUPPORTING<br>STRUCTURE FOR FIBER<br>FIXING AND SUBMICRON<br>FINE ALIGNMENT       | CA | 2,390,916         |           | Nat'l Phase<br>Filed |   | SUPPORTING STRUCTURE FOR<br>FIBER FIXING AND SUBMICRON<br>FINE ALIGNMENT                  |
| 14480RO | GAIN COUPLED DISTRIBUTED FEEDBACK LASER USING SELF- ASSEMBLED QUANTUM DOTS        |    |                   | Ī         | Unfiled              |   |   |
| 14549JD | HIGH POWER<br>SEMICONDUCTOR LASER<br>DIODE  | US | 09/852,994        |           |                      |   | HIGH POWER SEMICONDUCTOR<br>LASER DIODE   |
| 14549JD | HIGH POWER<br>SEMICONDUCTOR LASER<br>DIODE  | CA | <b>2,38</b> 5,653 |           |                      |   | HIGH POWER SEMICONDUCTOR<br>LASER DIODE   |
| 14549JD | HIGH POWER<br>SEMICONDUCTOR LASER<br>DIODE  | EP | 2405380.3         |           |                      |   | HIGH POWER SEMICONDUCTOR LASER DIODE  |
| 14549JD | HIGH POWER<br>SEMICONDUCTOR LASER<br>DIODE  | JP | 2002-134066       |           |                      |   | HIGH POWER SEMICONDUCTOR LASER DIODE  |
| 14551JD | CARRIER DESIGN FOR<br>MODULES WITH HIGH<br>POWER LASER DIODES                     | US | 10/026,150        |           |                      |   | HIGH POWER LASER CARRIER  |
| 14552JD | ANTI-REFLECTION<br>COATINGS FOR<br>SEMICONDUCTOR<br>LASERS                        | US | 09/993,824        |           |                      |   | ANTI-REFLECTION COATINGS<br>FOR SEMICONDUCTOR LASERS                                      |
| 14592ID | OPTICAL COMPONENT<br>ALIGNMENT TECHNIQUE  | υs | 10/024,972        |           |                      |   | GIMBALLED LENS MOUNT AND<br>ALIGNMENT ASSEMBLY FOR A<br>SENSITIVE OPTICAL ALIGNMENT       |
| 14676RO | ENHANCED LINK OPERATION OF DIRECTLY MODULATED LASERS USING GAIN- COUPLED GRATINGS | US | 60/334,013        |           |                      |   | ENHANCED LINK OPERATION OF<br>DIRECTLY MODULATED LASERS<br>USING GAIN-COUPLED<br>GRATINGS |

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| 14676RO | OPERATION OF<br>DIRECTLY MODULATED<br>LASERS USING GAIN-<br>COUPLED GRATINGS                  | US      | 10/025,866 |            |               |              | ENHANCED LINK OPERATION OF<br>DIRECTLY MODULATED LASERS<br>COUPLED-COUPLED GRATINGS        |
| 14681ID | THERMAL COMPENSATION AND ALIGNMENT FOR OPTICAL DEVICES  | US      | 10/032,421 |            |               |              | THERMAL COMPENSATION AND ALIGNMENT FOR OPTICAL DEVICES                                     |
| 14716RO | WAVEGUIDE MODE<br>STRIPPER FOR<br>INTEGRATED OPTICAL<br>COMPONENTS                            | US      | 10/073,101 |            |               |              | WAVEGUIDE MODE STRIPPER<br>FOR INTEGRATED OPTICAL<br>COMPONENTS                            |
| 14794RO | A METHOD FOR MAKING<br>FLOATING GRATINGS  | US      | 10/259,745 |            |               |              | METHOD AND APPARATUS FOR<br>FLOATING GRATINGS IN DFB<br>(DISTRIBUTED FEEDBACK)<br>LASERS   |
| 14854RO | A METHOD FOR MINIMIZING CROSSTALK DUE TO LASER WAVELENGTH VARIATIONS WITH NON- IDEAL FILTERS  |         |            |            | Unfiled       |              |  |
| 14864RO | POLARIZATION AND WAVELENGTH INDEPENDENT MHZ SPEED OPTICAL ATTENUATOR                          | US      | 10/190,592 |            |               |              | CURRENT TUNED MACH-<br>ZEHNDER OPTICAL<br>ATTENUATOR                                       |
| 14942RO | OPTICAL PULSE<br>GENERATOR  | US      | 10/116,168 |            |               |              | RE-CIRCULATING OPTICAL<br>PULSE GENERATOR  |
| 15004RO | DEFORMABLE POLYMER<br>MICRO MIRRORS (DPMM)  |         | 10/098,446 |            |               |              | MICRO-MIRRORS WITH VARIABLE FOCAL LENGTH, AND OPTICAL COMPONENTS COMPRISING MICRO-MIRRORS  |
|         | DEFORMABLE POLYMER<br>MICRO MIRRORS (DPMM)  |         | 10/098,446 |            |               |              | MICRO-MIRRORS WITH VARIABLE FOCAL LENGTH, AND OPTICAL COMPO ENTS COMPRISING MICRO-MIRRORS  |
| 15004RO | DEFORMABLE POLYMER<br>MICRO MIRRORS (DPMM)  |         | 10/098,446 |            |               |              | MICRO-MIRRORS WITH VARIABLE FOCAL LENGTH, AND OPTICAL COMPONENTS COMPRISING MICRO-MIRRORS  |
| 15093RO | MULTIPLE-CONTACT<br>SEMICONDUCTOR<br>OPTICAL AMPLIFIERS                                       | US      | 60/414,404 |            |               |              | MULTIPLE-CONTACT OPTICAL AMPLIFIERS  |
| 15095RO | FREQUENCY IDENTIFICATION WITH A FREQUENCY LOCKER  | US      | 10/108,856 |            |               |              | FREQUENCY IDENTIFICATION WITH FREQUENCY LOCKER   |
| 15113CK | METHOD TO IMPROVE TEMPERATURE STABILITY OF FREQUENCY LOCKER IN OPTOELECTRONIC MODULES         | US      | 10/165,465 |            |               |              | WAVELENGTH STABILIZED<br>OPTICAL DEVICE  |
| 15116JD | NEW STRAIGHT-FLARED-<br>STRAIGHT WAVEGUIDE<br>DESIGN  | US      | 10/131,335 |            | _             |              | HIGH POWER SEMICONDUCTOR<br>LASER DIODE AND METHOD FOR<br>MAKING SUCH A DIODE              |
| 15117JD | PUMP LASER DIODE<br>WITH IMPROVED<br>WAVELENGTH STABILITY                                     | US      | 0          |            |               |              | *PUMP LASER DIODE WITH<br>IMPROVED WAVELENGTH<br>STABILITY                                 |
| 15138ID | AN IMPROVED METHOD<br>FOR TERMINATING AN<br>OPTICAL WAVEGUIDE<br>INTO AN OPTICAL<br>COMPONENT | US      | 10/161,523 |            |               |              | AN IMPROVED METHOD FOR<br>TERMINATING AN OPTICAL<br>WAVEGUIDE INTO AN OPTICAL<br>COMPONENT |

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| 15142RO        | SINGLE MODE, HIGH<br>INDEX CONTRAST<br>POLYMER FLEXIBLE<br>WAVEGUIDES   | US | 60/352,572         |           |                       |   | FLEXIBLE POLYMER WAVEGUIDES FOR OPTICAL WIRE BONDS                               |
| 15142RO        | SINGLE MODE, HIGH<br>INDEX CONTRAST<br>POLYMER FLEXIBLE<br>WAVEGUIDES   | US | 60/352,572         |           |                       |   | FLEXIBLE POLYMER WAVEGUIDES FOR OPTICAL WIRE BONDS                               |
| 15150RO        | METHOD FOR INTEGRATING A LASER WITH A WAVEGUIDE IN A SINGLE EPITAXIAL GROWTH STEP                                 | US | 0                  |           | Mailed<br>Application | GLEW, RICK (C116-<br>2819324), BETTY, IAN<br>(5C33-0519725),<br>GREENSPAN,<br>JONATHAN (C116-<br>0262541)   | METHOD FOR INTEGRATING OPTICAL DEVICES IN A SINGLE EPITAXIAGROWTH STEP           |
| 15150RO        | METHOD FOR<br>INTEGRATING A LASER<br>WITH A WAVEGUIDE IN A<br>SINGLE EPITAXIAL<br>GROWTH STEP                     | US | 0                  |           | Mailed<br>Application | GLEW, RICK (C116-<br>2819324), BETTY, IAN<br>(5C33-0519725),<br>GREENSPAN,<br>JONATHAN (C116-<br>0262541)   | METHOD FOR INTEGRATING<br>OPTICAL DEVICES IN A SINGLE<br>EPITAXIAGROWTH STEP     |
| 15164RO        | A DOPANT-INDUCED REAL REFRACTIVE INDEX-GUIDED SELF- ALIGNED LASER STRUCTURE WITH INTEGRAL CURRENT BLOCKING LAYER. | US | O                  |           | Mailed<br>Application | BENOIT (5C32-<br>0531388),<br>LICHTENSTEIN,<br>NORBERT L (AA55-<br>5050260), FILY,<br>ARNAUD (AA55-<br>5053568)   | A GUIDED SELF-ALIGNED LASER<br>STRUCTURE WITH INTEGRAL<br>CURRENT BLOCKING LAYER |
| 15164RO        | A DOPANT-INDUCED REAL REFRACTIVE INDEX-GUIDED SELF- ALIGNED LASER STRUCTURE WITH INTEGRAL CURRENT BLOCKING LAYER. | ບຮ | 0                  |           | Mailed<br>Application | GLEW, RICK (C116-<br>2819324), REID,<br>BENOIT (5C32-<br>0531388),<br>LICHTENSTEIN,<br>NORBERT L (AA55-<br>5050260), FILY,<br>ARNAUD (AA55-<br>5053568) | A GUIDED SELF-ALIGNED LASER<br>STRUCTURE WITH INTEGRAL<br>CURRENT BLOCKING LAYER |
| 15181ID        | LASER TRANSMITTER   | us | 60/391,648         |           |                       |   | LASER TRANSMITTER  |
| 15181ID        | LASER TRANSMITTER   | บร | 60/391,648         |           |                       |   | LASER TRANSMITTER  |
| 15193RO        | OPTIMIZED PERFORMANCE OF INGAASP/INP COMPACT ON-CHIP POLARIZATION CONVERTER                                       | US | 60/380,261         |           |                       |   | OPTIMIZED PERFORMANCE OF<br>INGAASP/INP COMPACT ON-CHIP<br>POLARIATION CONVERTER |
| 15193RO        | OPTIMIZED PERFORMANCE OF INGAASP/INP COMPACT ON-CHIP POLARIZATION CONVERTER                                       | US |                    |           | Mailed<br>Application | EL-REFAEI, HATEM<br>(5C33-0273812),<br>JONES, TREVOR<br>(C115-1342592,2),<br>YEVICK, D (EXTR-<br>GPS0380642,2)  | OPTIMIZED PERFORMANCE OF<br>INGAASP/INP COMPACT ON-CHIP<br>POLARIATION CONVERTER |
| 15320RO        | ELECTRO-OPTIC MODULATOR WITH CONTINUOUSLY ADJUSTABLE CHIRP  | US | 0                  |           | Mailed<br>Application | PROSYK, KELVIN<br>(5C33-0526051),<br>BETTY, IAN (5C33-<br>0519725)  | ELECTRO-OPTIC MODULATOR WITH CONTINUOUSLY ADJUSTABLE CHIRP                       |
| 15338RO        | HIGH POWER DISTRIBUTED FEEDBACK LASER   |    |                    |           | Unfiled               |   |  |
| 15386JD        | RIDGE WAVEGUIDE<br>LASER DIODE WITH<br>COMPLEX INDEX<br>GUIDING LAYER   | US | 0                  |           | Mailed<br>Application |   | HIGH POWER SEMICONDUCTOR<br>LASER DIODE AND METHOD FOR<br>MAKING SUCH A DIODE    |
| 15389JD        | LASER STABILIZATION USING VERY HIGH RELATIVE FEEDBACK   |    |                    |           | Unfiled               |   |  |

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| 15390RC | ON-CHIP POLARIZATION<br>SPLITTER/COMBINER<br>DEVICE  | V US | 60/404,166 |               |                       |  | ON-CHIP POLARIZATION SPLITTER/COMBINER DEVICE                                    |
| 15390RC | ON-CHIP POLARIZATION<br>SPLITTER/COMBINER<br>DEVICE  | V US | 60/404,166 |               |                       |  | ON-CHIP POLARIZATION SPLITTER/COMBINER DEVICE                                    |
| 15399JD | A GUIDED SELF-ALIGNEI<br>LASER STRUCTURE WIT<br>INTEGRAL CURRENT<br>BLOCKING LAYER   |      | 60/390,882 |               |                       |  | A GUIDED SELF-ALIGNED LASER<br>STRUCTURE WITH INTEGRAL<br>CURRENT BLOCKING LAYER |
| 15399JD | A GUIDED SELF-ALIGNEI<br>LASER STRUCTURE WITI<br>INTEGRAL CURRENT<br>BLOCKING LAYER  |      |            |               | Mailed<br>Application | LICHTENSTEIN, NORBERT L (AA55- 5050260), FILY, ARNAUD (AA55- 5053568,1), SCHMIDT BERTHOLD (AA54- 5050359,2), REID, BENOIT (5C32- 0531388,2), KNIGHT, D. GORDON (C116- 1529664,1) |  |
| 15502RO | ALIGNED LASER<br>STRUCTURE WITH IRON<br>DOPED CURRENT<br>BLOCKING LAYERS   |      |            |               | Unfiled               | 1323004,1/   |  |
| 15507RO | A MAGNETO-OPTIC NONRECIPROCAL WAVEGUIDE TE/TM MODE CONVERTER IN SEMICONDUCTING MATERIALS   |      |            |               | Unfiled               |  |  |
| 15558RO | MANUFACTURE OF A GRATING TEMPLATE AND ITS TRANSFER INTO AL (IN, GA)AS MATERIAL USING IN-SITU ETCHING AND REGROWTH INSIDE A GROWTH REACTOR. |      |            |               | Unfiled               |  |  |
| 15592RO | ETCHING OF INDEX- OR<br>GAIN-COUPLED<br>GRATINGS INTO<br>INGAASP MATERIAL<br>USING IN-SITU ETCHING<br>IN A GROWTH REACTOR                  |      |            |               | Unfiled               |  |  |
| 15649JD | LASER STRUCTURE WITH LARGE OPTICAL SUPERLATTICE WAVEGUIDE  |      |            |               | Unfiled               |  |  |
| 15655RO | HIGH TEMPERATURE<br>OPERATION LASER<br>DIODES  |      |            |               | Unfiled               |  |  |
|         | FABRICATION OF A BURIED HETEROSTRUCTURE LASER WITH AN INGAASP ACTIVE LAYER USING IN- SITU ETCHING IN A GROWTH REACTOR                      |      |            |               | unfiled               |  |  |
| HQ0054  | SUPERIMPOSED<br>GRATING WDM TUNABLE<br>LASERS  | СА   | 2,228,683  | 2,228,683     |                       |  | SUPERIMPOSED GRATING WDM<br>TUNABLE LASERS                                       |
| HQ0054  | SUPERIMPOSED<br>GRATING WDM TUNABLE<br>LASERS  | US   | 09/253,129 | 6,141,370     |                       |  | SUPERIMPOSED GRATING WDM<br>TUNABLE LASERS                                       |

| 1534<br>365 | Figure Files  |    | अनुसार देश         | Frenc'fr        | n Sair<br>Suide      | The forest to be defined as the first of the | Tradiction find   |
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| ID0032      | OPTO ELECTRONIC COMPONENTS                                  | US | 08/319,435         | 5,534,442       |                      |  | OPTO ELECTRONIC COMPONENTS                                  |
| ID0079      | SEMICONDUCTOR -<br>SLICE CLEAVING                           | GB | 9216363.3          | 2 269 268       |                      |  | SEMICONDUCTOR - SLICE<br>CLEAVING                           |
| ID0079      | SEMICONDUCTOR -<br>SLICE CLEAVING                           | US | 08/093,766         | 5,393,707       |                      |  | SEMICONDUCTOR - SLICE<br>CLEAVING                           |
| ID0094      | HYBRID OPTIC SOLUTION                                       | DE | 95307824.3         | 695 04<br>280.7 |                      |  | HYBRID OPTIC SOLUTION                                       |
| ID0094      | HYBRID OPTIC SOLUTION                                       | FR | 95307824.3         | 0 713 271       |                      |  | HYBRID OPTIC SOLUTION                                       |
| 1D0094      | HYBRID OPTIC SOLUTION                                       | GB | 9423282.4          | 2 295 265       |                      |  | HYBRID OPTIC SOLUTION                                       |
| ID0094      | HYBRID OPTIC SOLUTION                                       | JP | 293046/1995        |                 |                      |  | HYBRID OPTIC SOLUTION                                       |
| ID0094      | HYBRID OPTIC SOLUTION                                       | υs | 08/560,312         | 5,668,823       |                      |  | HYBRID OPTIC SOLUTION                                       |
| ID0134      | SEMICONDUCTOR<br>ETCHING PROCESS                            | FR | 94301114.8         | 0 614 214       |                      |  | SEMICONDUCTOR ETCHING PROCESS                               |
| ID0134      | SEMICONDUCTOR<br>ETCHING PROCESS                            | GB | 94301114.8         | 0 614 214       |                      |  | SEMICONDUCTOR ETCHING PROCESS                               |
| ID0134      | SEMICONDUCTOR<br>ETCHING PROCESS                            | DE | 69401370.6         | 69401370.6      | 5                    |  | SEMICONDUCTOR ETCHING PROCESS                               |
| ID0134      | SEMICONDUCTOR<br>ETCHING PROCESS                            | GB | 9303257.1          | 2 275 364       |                      |  | SEMICONDUCTOR ETCHING PROCESS                               |
| ID0134      | SEMICONDUCTOR<br>ETCHING PROCESS                            | JP | 6-45068            |                 |                      |  | SEMICONDUCTOR ETCHING<br>PROCESS                            |
| ID0134      | SEMICONDUCTOR<br>ETCHING PROCESS                            | บร | 08/197,071         | 5,419,804       |                      |  | SEMICONDUCTOR ETCHING PROCESS                               |
| ID0137      | PROVIDING OPTICAL<br>COUPLING BETWEEN<br>OPTICAL COMPONENTS | GB | 9417975.1          | 2 293 248       |                      |  | PROVIDING OPTICAL COUPLING<br>BETWEEN OPTICAL<br>COMPONENTS |
| ID0137      | PROVIDING OPTICAL<br>COUPLING BETWEEN<br>OPTICAL COMPONENTS | US | 08/507,613         | 5,574,811       |                      |  | PROVIDING OPTICAL COUPLING<br>BETWEEN OPTICAL<br>COMPONENTS |
| ID0170      | INJECTION LASER AND<br>PHOTOSENSOR<br>ASSEMBLY              | US | 08/201,473         | 5,365,534       |                      |  | INJECTION LASER AND PHOTOSENSOR ASSEMBLY                    |
| ID0193      | FILAMENT COOLER   | GB | 9404290.0          | 2 287 244       |                      |  | FILAMENT COOLER   |
| ID0193      | FILAMENT COOLER   | US | 08/388,151         | 5,568,728       | _                    |  | FILAMENT COOLER   |
| ID0199      | CO & COUNTER-PUMPED<br>OPTICAL AMPLIFIER                    | US | 08/303,367         | 5,542,011       |                      |  | CO & COUNTER-PUMPED<br>OPTICAL AMPLIFIER                    |
| ID0206      | ELECTRO ABSORPTION OPTICAL MODULATORS                       | US | 08/303,374         | 5,530,580       |                      |  | ELECTRO ABSORPTION OPTICAL<br>MODULATORS                    |
| ID0206      | ELECTRO ABSORPTION OPTICAL MODULATORS                       | EP | <b>9430621</b> 6.6 | 0 643 317       | Nat'l Phase<br>Filed |  | ELECTRO ABSORPTION OPTICAL<br>MODULATORS                    |
| ID0206      | ELECTRO ABSORPTION OPTICAL MODULATORS                       | GB | 9417001.6          | 2 281 785       |                      |  | ELECTRO ABSORPTION OPTICAL<br>MODULATORS                    |

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| ID0206 | ELECTRO ABSORPTION OPTICAL MODULATORS   | DE     | 94306216.6 | 694 26<br>796.1 |                      |                           | ELECTRO ABSORPTION OPTICAL<br>MODULATORS   |
| ID0206 | ELECTRO ABSORPTION OPTICAL MODULATORS   | FR     | 94306216.6 | 0 643 317       |                      |                           | ELECTRO ABSORPTION OPTICAL MODULATORS  |
| ID0206 | ELECTRO ABSORPTION OPTICAL MODULATORS   | JP     | 216309/94  |                 |                      |                           | ELECTRO ABSORPTION OPTICAL MODULATORS  |
| ID0216 | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO- OPTIC TRANSDUCERS | DE     | 94305060.9 | 694 10<br>032.3 |                      |                           | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO-OPTIC TRANSDUCERS |
| ID0216 | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO- OPTIC TRANSDUCERS | FR     | 94305060.9 | 0 636 912       |                      |                           | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO-OPTIC TRANSDUCERS |
| ID0216 | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO- OPTIC TRANSDUCERS | GB     | 9315789.9  | 2 280 544       |                      |                           | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO-OPTIC TRANSDUCERS |
| ID0216 | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO- OPTIC TRANSDUCERS | GB     | 94305060.9 | 0 636 912       |                      |                           | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO-OPTIC TRANSDUCERS |
| ID0216 | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO- OPTIC TRANSDUCERS | JР     | 180288/94  |                 |                      |                           | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO-OPTIC TRANSDUCERS |
| 1D0216 | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO- OPTIC TRANSDUCERS | บร     | 08/283,264 | 5,522,000       |                      |                           | PROVIDING OPTICAL COUPLING WITH SINGLE CRYSTAL SUBSTRATE MOUNTED ELECTRO-OPTIC TRANSDUCERS |
| ID0237 | DIRECT AMPLITUDE<br>MODULATION OF LASERS  | US     | 08/216,301 | 5,502,741       |                      |                           | DIRECT AMPLITUDE<br>MODULATION OF LASERS   |
| ID0261 | IMPROVEMENTS IN CRYSTAL SUBSTRATE PROCESSING  | EΡ     | 96301377.6 | 0 732 739       | Nat'l Phase<br>Filed |                           | IMPROVEMENTS IN CRYSTAL<br>SUBSTRATE PROCESSING  |
| ID0261 | IMPROVEMENTS IN CRYSTAL SUBSTRATE PROCESSING  | JР     | 52013/96   |                 |                      |                           | IMPROVEMENTS IN CRYSTAL<br>SUBSTRATE PROCESSING  |
| ID0261 | IMPROVEMENTS IN CRYSTAL SUBSTRATE PROCESSING  | US     | 08/612,314 | 5,933,707       |                      | _                         | IMPROVEMENTS IN CRYSTAL<br>SUBSTRATE PROCESSING  |
| ID0261 | IMPROVEMENTS IN CRYSTAL SUBSTRATE PROCESSING  | GB     | 96301377.6 | 0 732 739       |                      |                           | IMPROVEMENTS IN CRYSTAL<br>SUBSTRATE PROCESSING  |
| ID0261 | IMPROVEMENTS IN CRYSTAL SUBSTRATE PROCESSING  | DE     | 96301377.6 | 696 18<br>264.5 |                      |                           | IMPROVEMENTS IN CRYSTAL<br>SUBSTRATE PROCESSING  |

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|--------|---|-----|--------------------|-----------------|----------------------|---------------------------|--|
| ID0261 | IMPROVEMENTS IN<br>CRYSTAL SUBSTRATE<br>PROCESSING          | FR  | 96301377.6         | 0 732 739       |                      |                           | IMPROVEMENTS IN CRYSTAL<br>SUBSTRATE PROCESSING          |
| ID0287 | POLARISATION-<br>INSENSITIVE OPTICAL<br>MODULATORS          | DE  | 195 28 165.9       |                 |                      |                           | POLARISATION-INSENSITIVE<br>OPTICAL MODULATORS           |
| ID0287 | POLARISATION-<br>INSENSITIVE OPTICAL<br>MODULATORS          | GB  | 9515400.1          | 2 291 979       |                      |                           | POLARISATION-INSENSITIVE<br>OPTICAL MODULATORS           |
| ID0287 | POLARISATION-<br>INSENSITIVE OPTICAL<br>MODULATORS          | FR  | 9509417            | 2723485         |                      |                           | POLARISATION-INSENSITIVE<br>OPTICAL MODULATORS           |
| ID0287 | POLARISATION-<br>INSENSITIVE OPTICAL<br>MODULATORS          | US  | 08/510,752         | 6,275,321       |                      |                           | POLARISATION-INSENSITIVE OPTICAL MODULATORS              |
| ID0295 | OPTICALLY COUPLING<br>OPTICAL FIBRES TO<br>INJECTION LASERS | EP  | 95308872.1         | 0 717 297       | Nat'l Phase<br>Filed |                           | OPTICALLY COUPLING OPTICAL<br>FIBRES TO INJECTION LASERS |
| ID0295 | OPTICALLY COUPLING<br>OPTICAL FIBRES TO<br>INJECTION LASERS | GB  | 9425022.2          | 2 296 101       |                      |                           | OPTICALLY COUPLING OPTICAL<br>FIBRES TO INJECTION LASERS |
| ID0295 | OPTICALLY COUPLING<br>OPTICAL FIBRES TO<br>INJECTION LASERS | US  | 08/570,983         | 5,570,444       |                      |                           | OPTICALLY COUPLING OPTICAL<br>FIBRES TO INJECTION LASERS |
| ID0295 | OPTICALLY COUPLING<br>OPTICAL FIBRES TO<br>INJECTION LASERS | DE  | 95308872.1         | 695 26<br>563.6 |                      |                           | OPTICALLY COUPLING OPTICAL<br>FIBRES TO INJECTION LASERS |
| ID0295 | OPTICALLY COUPLING<br>OPTICAL FIBRES TO<br>INJECTION LASERS | GB  | 95308872.1         | 0 717 297       |                      |                           | OPTICALLY COUPLING OPTICAL<br>FIBRES TO INJECTION LASERS |
| ID0295 | OPTICALLY COUPLING<br>OPTICAL FIBRES TO<br>INJECTION LASERS | FR  | 95308872.1         | 0 717 297       |                      |                           | OPTICALLY COUPLING OPTICAL<br>FIBRES TO INJECTION LASERS |
| ID0295 | OPTICALLY COUPLING<br>OPTICAL FIBRES TO<br>INJECTION LASERS | ΙΤ  | 95308872.1         | 0 717 297       |                      |                           | OPTICALLY COUPLING OPTICAL<br>FIBRES TO INJECTION LASERS |
| ID0311 | OPTICAL AMPLIFIER   | DE  | 96308900.8         | 696 03<br>935.4 |                      |                           | OPTICAL AMPLIFIER  |
| ID0311 | OPTICAL AMPLIFIER   | EP  | 96308900.8         | 0 779 689       | Nat'l Phase<br>Filed |                           | OPTICAL AMPLIFIER  |
| ID0311 | OPTICAL AMPLIFIER   | IT  | 96308900.8         | 0 779 689       |                      |                           | OPTICAL AMPLIFIER  |
| ID0311 | OPTICAL AMPLIFIER   | FR  | 96308900.8         | 0 779 689       |                      |                           | OPTICAL AMPLIFIER  |
| ID0311 | OPTICAL AMPLIFIER   | GB  | 9525766.3          | 2 308 222       |                      |                           | OPTICAL AMPLIFIER  |
| 1D0311 | OPTICAL AMPLIFIER   | US  | <b>08/7</b> 60,175 | 5,872,649       |                      |                           | OPTICAL AMPLIFIER  |
| ID0348 | LASERS  | EB  | PCT/GB96/01406     |                 | Nat'l Phase<br>Filed |                           | LASERS   |
| ID0384 | HERMETIC OPTICAL<br>FIBRE FEED-THROUGH                      | GB  | 9515004.1          | 2 303 467       |                      |                           | HERMETIC OPTICAL FIBRE FEED-<br>THROUGH                  |
| ID0384 | HERMETIC OPTICAL<br>FIBRE FEED-THROUGH                      | US  | 08/684,128         | 5,664,043       |                      |                           | HERMETIC OPTICAL FIBRE FEED-<br>THROUGH                  |

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| ID0426  | ETALON ARRANGEMENT   | EP | 97305110.5  |                    |  |  | ETALON ARRANGEMENT   |
| ID0426  | ETALON ARRANGEMENT   | JP | 179766/1997 |                    |  |  | ETALON ARRANGEMENT   |
| ID0426  | ETALON ARRANGEMENT   | JP | 179766/1997 |                    |  |  | ETALON ARRANGEMENT   |
| ID0426  | ETALON ARRANGEMENT   | ÇA | 2,203,845   | 2,203,845          |  |  | ETALON ARRANGEMENT   |
| ID0426  | ETALON ARRANGEMENT   | US | 08/848,337  | 5,828,689          |  |  | ETALON ARRANGEMENT   |
| ID0431  | SEMICONDUCTOR<br>LASERS  | DE | 97901693.8  | 697 00<br>830.4    |  |  | SEMICONDUCTOR LASERS   |
| ID0431  | SEMICONDUCTOR<br>LASERS  | EP | 97901693.8  | 0 876 696          | Nat'l Phase<br>Filed                     |  | SEMICONDUCTOR LASERS   |
| ID0431  | SEMICONDUCTOR<br>LASERS  | FR | 97901693.8  | 0 876 696          |  |  | SEMICONDUCTOR LASERS   |
| ID0431  | SEMICONDUCTOR<br>LASERS  | GB | 9601703.3   | 2 309 581          |  |  | SEMICONDUCTOR LASERS   |
| ID0431  | SEMICONDUCTOR<br>LASERS  | GB | 97901693.8  | 0 876 696          |  |  | SEMICONDUCTOR LASERS   |
| ID0431  | SEMICONDUCTOR<br>LASERS  | IT | 97901693.8  | 0 876 696          |  |  | SEMICONDUCTOR LASERS   |
| ID0431  | SEMICONDUCTOR<br>LASERS  | JP | 526680/1997 |                    |  |  | SEMICONDUCTOR LASERS   |
| ID0431  | SEMICONDUCTOR<br>LASERS  | us | 09/091,684  | 6,058,125          |  |  | SEMICONDUCTOR LASERS   |
| ID0467  | CONTROLLED DISPENSE<br>OF GLUE ONTO A<br>SILICON V-GROOVE<br>SUBSTRATE | EΡ | 97902473.4  | 0 879 435          | Nat'l Phase<br>Filed                     |  | SECURING AN OPTICAL FIBRE IN<br>A V-GROOVE                           |
| ID0467  | CONTROLLED DISPENSE<br>OF GLUE ONTO A<br>SILICON V-GROOVE<br>SUBSTRATE | GВ | 9602564.8   | 2 310 052          |  |  | CONTROLLED DISPENSE OF<br>GLUE ONTO A SILICON V-<br>GROOVE SUBSTRATE |
| ID0467  | CONTROLLED DISPENSE<br>OF GLUE ONTO A<br>SILICON V-GROOVE<br>SUBSTRATE | JР | 528272/1997 |                    |  |  | CONTROLLED DISPENSE OF<br>GLUE ONTO A SILICON V-<br>GROOVE SUBSTRATE |
| ID0467  | CONTROLLED DISPENSE<br>OF GLUE ONTO A<br>SILICON V-GROOVE<br>SUBSTRATE | US | 08/952,676  | 5,985,086          |  | İ  | CONTROLLED DISPENSE OF<br>GLUE ONTO A SILICON V-<br>GROOVE SUBSTRATE |
| ID0467  | CONTROLLED DISPENSE<br>OF GLUE ONTO A<br>SILICON V-GROOVE<br>SUBSTRATE | DE | 97902473.4  | 697 10<br>047,2    |  |  | SECURING AN OPTICAL FIBRE IN<br>A V-GROOVE                           |
| ID0467  | CONTROLLED DISPENSE<br>OF GLUE ONTO A<br>SILICON V-GROOVE<br>SUBSTRATE | ΙT | 97902473.4  | 0 879 435          |  |  | SECURING AN OPTICAL FIBRE IN<br>A V-GROOVE                           |

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| ID0467 | CONTROLLED DISPENSE<br>OF GLUE ONTO A<br>SILICON V-GROOVE<br>SUBSTRATE | FR   | 97902473.4         | 0 879 435       |                      |  | SECURING AN OPTICAL FIBRE IN<br>A V-GROOVE                           |
| ID0467 | CONTROLLED DISPENSE<br>OF GLUE ONTO A<br>SILICON V-GROOVE<br>SUBSTRATE | wo   | PCT/GB97/00320     |                 | Nat'l Phase<br>Filed |  | CONTROLLED DISPENSE OF<br>GLUE ONTO A SILICON V-<br>GROOVE SUBSTRATE |
| ID0519 | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                  | JP   | 507707/1998        |                 |                      |  | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                |
| ID0519 | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                  | US   | 09/214,634         | 6,188,118       |                      |  | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                |
| (D0519 | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                  | CA   | 2,258,178          |                 |                      |  | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                |
| ID0519 | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                  | EP   | 97933796.1         |                 |                      |  | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                |
| ID0519 | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                  | wo   | PCT/GB97/02053     |                 | Nat'l Phase<br>Filed |  | SEMICONDUCTOR PHOTODETECTOR PACKAGING                                |
| ID0651 | DIRECT AMPLITUDE<br>MODULATION OF LASERS                               | EP   | 98303274.9         |                 |                      |  | DIRECT AMPLITUDE MODULATION OF LASERS                                |
| ID0651 | DIRECT AMPLITUDE<br>MODULATION OF LASERS                               | US   | <b>08/86</b> 5,760 | 5,901,164       |                      |  | DIRECT AMPLITUDE<br>MODULATION OF LASERS                             |
| ID0651 | DIRECT AMPLITUDE<br>MODULATION OF LASERS                               | CA   | <b>2,23</b> 5,179  |                 |                      |  | DIRECT AMPLITUDE<br>MODULATION OF LASERS                             |
| ID0651 | DIRECT AMPLITUDE<br>MODULATION OF LASERS                               | JP   | 146072/1998        |                 |                      |  | DIRECT AMPLITUDE MODULATION OF LASERS                                |
| ID0687 | OPTICAL TRANSMITTER OUTPUT MONITORING TAP                              | US   | 08/984,894         | 6,124,956       |                      |  | OPTICAL TRANSMITTER OUTPUT MONITORING TAP                            |
| ID0691 | BONDING RIDGE<br>STRUCTURE LASER<br>DIODES TO SUBSTRATES               | υs   | 09/072,810         | 6,075,800       |                      |  | BONDING RIDGE STRUCTURE<br>LASER DIODES TO SUBSTRATES                |
| ID0764 | A REMOVABLY COATED<br>OPTICAL FIBRE                                    | US   | 09/374,807         | 6,351,589       |                      |  | REMOVABLY COATED OPTICAL FIBRE                                       |
| ID0803 | ELECTRICALLY<br>CONTROLLABLE OPTICAL<br>ATTENUATOR                     | EP   | 98309206.5         |                 |                      |  | ELECTRICALLY CONTROLLABLE OPTICAL ATTENUATOR                         |
| ID0803 | ELECTRICALLY<br>CONTROLLABLE OPTICAL<br>ATTENUATOR                     | JP   | 365470/1998        |                 |                      |  | ELECTRICALLY CONTROLLABLE OPTICAL ATTENUATOR                         |
| ID0803 | ELECTRICALLY<br>CONTROLLABLE OPTICAL<br>ATTENUATOR                     | US   | 08/997,752         | 5,956,437       |                      |  | ELECTRICALLY CONTROLLABLE OPTICAL ATTENUATOR                         |
| ID0803 | ELECTRICALLY<br>CONTROLLABLE OPTICAL<br>ATTENUATOR                     | CA   | 2,254,148          |                 |                      |  | ELECTRICALLY CONTROLLABLE<br>OPTICAL ATTENUATOR                      |

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| ID0908 | SEMICONDUCTOR OPTO<br>ELECTRONIC DEVICE<br>PACKAGING | US   | 09/070,899          | 6,407,438     |                 |              | SEMICONDUCTOR OPTO-<br>ELECTRONIC DEVICE<br>PACKAGING |
| ID1107 | INTEGRATED OPTICAL<br>MACH ZENDER<br>STRUCTURES      | EP   | 00301124.4          |               |                 |              | INTEGRATED OPTICAL MACH<br>ZEHNDER STRUCTURES         |
| ID1107 | INTEGRATED OPTICAL<br>MACH ZENDER<br>STRUCTURES      | US   | 09/280,360          | 6,240,221     |                 |              | INTEGRATED OPTICAL MACH ZEHNDER STRUCTURES            |
| ID1107 | INTEGRATED OPTICAL<br>MACH ZENDER<br>STRUCTURES      | CA   | 2,299,794           |               |                 |              | INTEGRATED OPTICAL MACH ZEHNDER STRUCTURES            |
| ID8512 | INJECTION LASER<br>PACKAGES                          | US   | 06/514,066          | 4,615,031     |                 |              | INJECTION LASER PACKAGES                              |
| ID8512 | INJECTION LASER<br>PACKAGES                          | GB   | 8317959             | 2 124 402     |                 |              | INJECTION LASER PACKAGES                              |
| ID8850 | OPTICAL AMPLIFIERS                                   | บร   | 06/888,274          | 4,720,684     |                 |              | OPTICAL AMPLIFIERS                                    |
| ID8850 | OPTICAL AMPLIFIERS                                   | CA   | 469,211             | 1,245,328     |                 |              | OPTICAL AMPLIFIERS                                    |
| ID8852 | MANUFACTURING<br>OPTICAL FIBRE                       | US   | 06/736,327          | 4,608,276     |                 |              | MANUFACTURING OPTICAL<br>FIBRE                        |
| ID8852 | MANUFACTURING<br>OPTICAL FIBRE                       | CA   | 482,229             | 1,261,632     |                 |              | MANUFACTURING OPTICAL<br>FIBRE                        |
| ID8960 | OPTICAL FIBRE MANUFACTURE                            | US   | 06/940,232          | 4,735,648     |                 |              | OPTICAL FIBRE MANUFACTURE                             |
| ID9003 | COATING OPTICAL<br>FIBRES                            | DE   | 85306977.1          | 356 83 25.2   |                 |              | COATING OPTICAL FIBRES                                |
| ID9003 | COATING OPTICAL<br>FIBRES                            | JP   | 222908/85           | 2029150       |                 |              | COATING OPTICAL FIBRES                                |
| ID9003 | COATING OPTICAL<br>FIBRES                            | US   | 06/782,930          | 4,631,078     |                 |              | COATING OPTICAL FIBRES                                |
| ID9003 | COATING OPTICAL<br>FIBRES                            | GB   | <b>8530</b> 6977.1  | 0 178 107     |                 |              | COATING OPTICAL FIBRES                                |
| ID9003 | COATING OPTICAL<br>FIBRES                            | CA   | 492,574             | 1,226,411     |                 |              | COATING OPTICAL FIBRES                                |
| ID9186 | LASER MANUFACTURE                                    | us   | 07/296,946          | 4,949,352     |                 |              | LASER MANUFACTURE                                     |
| ID9186 | LASER MANUFACTURE                                    | GB   | 8512321             | 2 175 442     |                 |              | LASER MANUFACTURE                                     |
| ID9209 | TUBE FURNACE   | us   | 06/858,617          | 4,748,307     |                 |              | TUBE FURNACE  |
| ID9312 | OPTICAL FIBRE<br>MANUFACTURE                         | US   | 06/896,518          | 4,793,840     |                 |              | OPTICAL FIBRE MANUFACTURE                             |
| ID9312 | OPTICAL FIBRE<br>MANUFACTURE                         | GB   | <b>85</b> 20945     | 2 179 339     |                 |              | OPTICAL FIBRE MANUFACTURE                             |
| ID9315 | OPTICAL FIBRE CABLE<br>HAVING SLOTTED CORE           | DÉ   | <b>365 0</b> 2 56.1 | 365 02 56.1   |                 |              | OPTICAL FIBRE CABLE HAVING<br>SLOTTED CORE            |
| ID9315 | OPTICAL FIBRE CABLE<br>HAVING SLOTTED CORE           | FR   | 86306868.0          | 0 216 548     |                 |              | OPTICAL FIBRE CABLE HAVING<br>SLOTTED CORE            |

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| ID9315         | OPTICAL FIBRE CABLE<br>HAVING SLOTTED CORE            | GB  | 86306868.0                 | 0 216 548   |              | The second se | OPTICAL FIBRE CABLE HAVING SLOTTED CORE            |
| ID9315         | OPTICAL FIBRE CABLE<br>HAVING SLOTTED CORE            | NZ  | 217514                     | 217514      |              |   | OPTICAL FIBRE CABLE HAVING SLOTTED CORE            |
| ID9315         | OPTICAL FIBRE CABLE<br>HAVING SLOTTED CORE            | US  | 07/636,902                 | RE34,516    |              |   | OPTICAL FIBRE CABLE HAVING<br>SLOTTED CORE         |
| ID9379         | OPTICAL FIBRE INTEGRATED OPTICAL DEVICE COUPLER       | US  | 06/934,440                 | 4,772,086   |              |   | OPTICAL FIBRE INTEGRATED OPTICAL DEVICE COUPLER    |
| ID9379         | OPTICAL FIBRE<br>INTEGRATED OPTICAL<br>DEVICE COUPLER | GB  | 8530797                    | 2 184 255   |              |   | OPTICAL FIBRE INTEGRATED<br>OPTICAL DEVICE COUPLER |
| ID9495         | LASER ARRAY   | DE  | 87302417.8                 | 376 44 10.6 |              |   | LASER ARRAY  |
| ID9495         | LASER ARRAY   | JP  | 129591/87                  | 2511969     |              |   | LASER ARRAY  |
| ID9495         | LASER ARRAY   | US  | 07/032,779                 | 4,760,580   |              |   | LASER ARRAY  |
| ID9552         | OPTICAL FIBRE CABLES                                  | DE  | 3883556.8                  | 3883556.8   |              |   | OPTICAL FIBRE CABLES                               |
| ID9552         | OPTICAL FIBRE CABLES                                  | FR  | 88300817.9                 | 0 278 648   |              |   | OPTICAL FIBRE CABLES                               |
| ID9552         | OPTICAL FIBRE CABLES                                  | GB  | 8703255                    | 2 201 008   |              |   | OPTICAL FIBRE CABLES                               |
| ID9552         | OPTICAL FIBRE CABLES                                  | US  | 07/154,866                 | 4,830,459   |              |   | OPTICAL FIBRE CABLES                               |
| ID9604         | FIBRE TAILED OPTO-<br>ELECTRONIC<br>TRANSDUCER        | DE  | <b>8830</b> 6994. <b>0</b> | 388 13 01.7 |              |   | FIBRE TAILED OPTO-<br>ELECTRONIC TRANSDUCER        |
| ID9604         | FIBRE TAILED OPTO-<br>ELECTRONIC<br>TRANSDUCER        | FR  | 88306994.0                 | 0 304 182   |              |   | FIBRE TAILED OPTO-<br>ELECTRONIC TRANSDUCER        |
| ID9604         | FIBRE TAILED OPTO-<br>ELECTRONIC<br>TRANSDUCER        | GB  | 8719590                    | 2 208 944   |              |   | FIBRE TAILED OPTO-<br>ELECTRONIC TRANSDUCER        |
| ID9604         | FIBRE TAILED OPTO-<br>ELECTRONIC<br>TRANSDUCER        | GB  | 88306994.0                 | 0 304 182   |              |   | FIBRE TAILED OPTO-<br>ELECTRONIC TRANSDUCER        |
| ID9604         | FIBRE TAILED OPTO-<br>ELECTRONIC<br>TRANSDUCER        | NL  | 88306994.0                 | 0 304 182   |              |   | FIBRE TAILED OPTO-<br>ELECTRONIC TRANSDUCER        |
| ID9604         | FIBRE TAILED OPTO-<br>ELECTRONIC<br>TRANSDUCER        | SE  | 88306994.0                 | 0 304 182   |              |   | FIBRE TAILED OPTO-<br>ELECTRONIC TRANSDUCER        |
| ID9604         | FIBRE TAILED OPTO-<br>ELECTRONIC<br>TRANSDUCER        | US  | 07/230,057                 | 4,988,159   |              |   | FIBRE TAILED OPTO-<br>ELECTRONIC TRANSDUCER        |
| ID9617         | EDGE EMITTING LIGHT<br>EMISSIVE DIODE                 | US  | 07/239,403                 | 4,937,638   |              |   | EDGE EMITTING LIGHT EMISSIVE<br>DIODE              |
| ID9661         | WAVEGUIDE TO OPTO-<br>ELECTRONIC<br>TRANSDUCER        | GB  | 8823873.8                  | 2 213 957   |              |   | WAVEGUIDE TO OPTO-<br>ELECTRONIC TRANSDUCER        |

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|--------|--|-----|---------------------|-----------------|---|----------------------------------|---|
| ID9715 | CONTACTLESS MEASUREMENT OF THE ELECTRICAL RESISTANCE PER UNIT LENGTH | DE  | 690 20 050.1        | 690 20<br>050.1 |   |                                  | CONTACTLESS MEASUREMENT<br>OF THE ELECTRICAL<br>RESISTANCE PERUNIT LENGTH |
| ID9715 | CONTACTLESS MEASUREMENT OF THE ELECTRICAL RESISTANCE PER UNIT LENGTH | FR  | 90305474.0          | 0 400 853       |   |                                  | CONTACTLESS MEASUREMENT<br>OF THE ELECTRICAL<br>RESISTANCE PERUNIT LENGTH |
| ID9715 | CONTACTLESS MEASUREMENT OF THE ELECTRICAL RESISTANCE PER UNIT LENGTH | GB  | 8912458.0           | 2 232 260       |   |                                  | CONTACTLESS MEASUREMENT<br>OF THE ELECTRICAL<br>RESISTANCE PERUNIT LENGTH |
| ID9715 | CONTACTLESS MEASUREMENT OF THE ELECTRICAL RESISTANCE PER UNIT LENGTH | JР  | 141220/1990         | 2991238         |   |                                  | CONTACTLESS MEASUREMENT<br>OF THE ELECTRICAL<br>RESISTANCE PERUNIT LENGTH |
| ID9715 | CONTACTLESS MEASUREMENT OF THE ELECTRICAL RESISTANCE PER UNIT LENGTH | US  | 07/531,791          | 5,083,090       |   |                                  | CONTACTLESS MEASUREMENT<br>OF THE ELECTRICAL<br>RESISTANCE PERUNIT LENGTH |
| ID9716 | CARB ON COATING OF<br>OPTICAL FIBRES                                 | DE  | 690 10 282.8        | 0 400 938       |   |                                  | CARB ON COATING OF OPTICAL<br>FIBRES                                      |
| ID9716 | CARB ON COATING OF<br>OPTICAL FIBRES                                 | FR  | 90305776.8          | 0 400 938       |   |                                  | CARB ON COATING OF OPTICAL<br>FIBRES                                      |
| ID9716 | CARB ON COATING OF<br>OPTICAL FIBRES                                 | GB  | 9011933.0           | 2 236 331       |   |                                  | CARB ON COATING OF OPTICAL<br>FIBRES                                      |
| ID9716 | CARB ON COATING OF<br>OPTICAL FIBRES                                 | JP  | 141221/1990         | 2866707         |   |                                  | CARB ON COATING OF OPTICAL FIBRES   |
| ID9716 | CARB ON COATING OF<br>OPTICAL FIBRES                                 | US  | 07/531,859          | 5,062,687       |   |                                  | CARB ON COATING OF OPTICAL FIBRES   |
| ID9731 | BONDING A<br>SEMICONDUCTOR TO A<br>SUBSTRATE                         | GB  | 8818522.8           | 2 221 570       |   |                                  | BONDING A SEMICONDUCTOR<br>TO A SUBSTRATE                                 |
| ID9742 | OPTICAL FILTERS  | GB  | 8823078.4           | 2 223 324       |   |                                  | OPTICAL FILTERS   |
| ID9750 | DIFFRACTION GRATING  | DE  | 68928711.9          | 0365125         |   |                                  | DIFFRACTION GRATING   |
| ID9750 | DIFFRACTION GRATING  | FR  | 89308702.3          | 0 365 125       |   |                                  | DIFFRACTION GRATING   |
| ID9750 | DIFFRACTION GRATING  | GB  | 8821898.7           | 2 222 891       |   |                                  | DIFFRACTION GRATING   |
| ID9750 | DIFFRACTION GRATING  | ΙΤ  | 22874/BE/98         | 0 365 125       |   |                                  | DIFFRACTION GRATING   |
| ID9750 | DIFFRACTION GRATING  | JР  | 239789/1989         | 2889608         |   |                                  | DIFFRACTION GRATING   |
| ID9750 | DIFFRACTION GRATING  | JP  | <b>23978</b> 9/1989 | 2889608         |   |                                  | DIFFRACTION GRATING   |
| ID9750 | DIFFRACTION GRATING  | JP  | 239789/1989         | 2889608         |   |                                  | DIFFRACTION GRATING   |
| ID9750 | DIFFRACTION GRATING  | US  | 07/579,081          | 5,029,981       |   |                                  | DIFFRACTION GRATING   |

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| ID9750         | DIFFRACTION GRATING                                    | JP     | 239789/1989        | 2889608         |                    |  | DIFFRACTION GRATING                                    |
| ID9750         | DIFFRACTION GRATING                                    | JP     | 239789/1989        | 2889608         |                    |  | DIFFRACTION GRATING                                    |
| ID9750         | DIFFRACTION GRATING                                    | JP     | 239789/1989        | 2889608         |                    |  | DIFFRACTION GRATING                                    |
| ID9750         | DIFFRACTION GRATING                                    | NL     | 89308702.3         | 0 365 125       |                    |  | DIFFRACTION GRATING                                    |
| ID9752         | VAPOUR PHASE<br>PROCESSING                             | GB     | 8823233.5          | 2 223 509       |                    |  | VAPOUR PHASE PROCESSING                                |
| ID9763         | MULTICHANNEL CAVITY<br>LASER                           | DE     | 89312024.6         | 689 18<br>238.4 |                    |  | MULTICHANNEL CAVITY LASER                              |
| ID9763         | MULTICHANNEL CAVITY<br>LASER                           | FR     | 89312024.6         | 0 370 739       |                    |  | MULTICHANNEL CAVITY LASER                              |
| ID9763         | MULTICHANNEL CAVITY<br>LASER                           | GB     | 8827385.9          | 2 225 482       |                    |  | MULTICHANNEL CAVITY LASER                              |
| ID9763         | MULTICHANNEL CAVITY<br>LASER                           | US     | 07/625,818         | 5,115,444       |                    |  | MULTICHANNEL CAVITY LASER                              |
| ID9774         | INTEGRATED OPTICS ASYMMETRIC Y- COUPLER                | GB     | 8902391.5          | 2 227 854       |                    |  | INTEGRATED OPTICS<br>ASYMMETRIC Y-COUPLER              |
| ID9806         | OPTICAL FIBRE CABLE                                    | US     | 07/544,678         | 5,082,380       |                    |  | OPTICAL FIBRE CABLE                                    |
| ID9837         | AERIAL OPTICAL FIBRE<br>CABLE                          | US     | 07/596,381         | 5,050,960       |                    |  | AERIAL OPTICAL FIBRE CABLE                             |
| ID9856         | SEMICONDUCTOR<br>OPTICAL SOURCE                        | GB     | 8924725.8          | 2 237 654       |                    |  | SEMICONDUCTOR OPTICAL SOURCE                           |
| ID9870         | RING LASER   | FR     | 90309362.3         | 0 419 059       |                    |  | RING LASER   |
| ID9870         | RING LASER   | GB     | 8921295.5          | 2 236 426       |                    |  | RING LASER   |
| ID9870         | RING LASER   | DE     | <b>6900378</b> 0.5 | 0 419 059       |                    |  | RING LASER   |
| ID9870         | RING LASER   | JP     | 249922/1990        | 3004336         |                    |  | RING LASER   |
| ID9870         | RING LASER   | US     | 07/583,590         | 5,056,096       |                    |  | RING LASER   |
| MO0068         | OPTICAL WAVEGUIDE<br>AND METHOD FOR ITS<br>MANUFACTURE | FR     | 90304772.8         | 0401971         |                    |  | OPTICAL WAVEGUIDE AND<br>METHOD FOR ITS<br>MANUFACTURE |
| MO0068         | OPTICAL WAVEGUIDE<br>AND METHOD FOR ITS<br>MANUFACTURE | CA     | 2,013,849          | 2,013,849       |                    |  | OPTICAL WAVEGUIDE AND<br>METHOD FOR ITS<br>MANUFACTURE |
| MO0068         | OPTICAL WAVEGUIDE<br>AND METHOD FOR ITS<br>MANUFACTURE | DE     | 90304772.8         | 0401971         |                    |  | OPTICAL WAVEGUIDE AND<br>METHOD FOR ITS<br>MANUFACTURE |
| MO0068         | OPTICAL WAVEGUIDE<br>AND METHOD FOR ITS<br>MANUFACTURE | EΡ     | 90304772.8         | 0401971         |                    |  | OPTICAL WAVEGUIDE AND<br>METHOD FOR ITS<br>MANUFACTURE |
| MO0068         | OPTICAL WAVEGUIDE<br>AND METHOD FOR ITS<br>MANUFACTURE | US     | 07/363,006         | 4,934,774       |                    |  | OPTICAL WAVEGUIDE AND<br>METHOD FOR ITS<br>MANUFACTURE |

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| MO0068 | B OPTICAL WAVEGUIDE<br>AND METHOD FOR ITS<br>MANUFACTURE  | US | 07/501,990         | 5,035,916         |        |                     | OPTICAL WAVEGUIDE AND METHOD FOR ITS MANUFACTURE   |
| MO0068 | OPTICAL WAVEGUIDE<br>AND METHOD FOR ITS<br>MANUFACTURE  | GB | 90304772.8         | 0401971           |        |                     | OPTICAL WAVEGUIDE AND METHOD FOR ITS MANUFACTURE   |
| MO0166 | A METHOD FOR LOW LOSS INSERTION OF AN OPTICAL SIGNAL FROM AN OPTICAL FIBER TO A WAVEGUIDE INTEGRATED ONTO A SEMICONDUCTOR WAFER |    | 08/710,775         | 5,703,980         |        |                     | A METHOD FOR LOW LOSS INSERTION OF AN OPTICAL SIGNAL FROM A OPTICAL FIBER TO A WAVEGUIDE INTEGRATED ONTO A SEMICONDUCTOR WAFER |
| MO0167 | A METHOD FOR THE<br>HYBRID INTEGRATION OF<br>DISCRETE ELEMENTS ON<br>A SEMICONDUCTOR<br>SUBSTRATE                               |    | 2,209,548          |                   |        |                     | A METHOD FOR THE HYBRID<br>INTEGRATION OF DISCRETE<br>ELEMENTS ON A<br>SEMICONDUCTOR SUBSTRATE                                 |
| MO0167 | A METHOD FOR THE<br>HYBRID INTEGRATION OF<br>DISCRETE ELEMENTS ON<br>A SEMICONDUCTOR<br>SUBSTRATE                               | 1  | 97111629.8         |                   |        |                     | A METHOD FOR THE HYBRID<br>INTEGRATION OF DISCRETE<br>ELEMENTS ON A<br>SEMICONDUCTOR SUBSTRATE                                 |
| MO0167 | A METHOD FOR THE<br>HYBRID INTEGRATION OF<br>DISCRETE ELEMENTS ON<br>A SEMICONDUCTOR<br>SUBSTRATE                               | 4  | 9-185588           |                   |        |                     | A METHOD FOR THE HYBRID<br>INTEGRATION OF DISCRETE<br>ELEMENTS ON A<br>SEMICONDUCTOR SUBSTRATE                                 |
| MO0167 | A METHOD FOR THE HYBRID INTEGRATION OF DISCRETE ELEMENTS ON A SEMICONDUCTOR SUBSTRATE   |    | 08/677,922         | 5,793,913         |        |                     | A METHOD FOR THE HYBRID<br>INTEGRATION OF DISCRETE<br>ELEMENTS ON A<br>SEMICONDUCTOR SUBSTRATE                                 |
|        | A METHOD FOR THE HYBRID INTEGRATION OF DISCRETE ELEMENTS ON A SEMICONDUCTOR SUBSTRATE   |    | 09/079,480         | 6,158,901         |        |                     | A METHOD FOR THE HYBRID<br>INTEGRATION OF DISCRETE<br>ELEMENTS ON A<br>SEMICONDUCTOR SUBSTRATE                                 |
|        | A METHOD FOR THE HYBRID INTEGRATION OF DISCRETE ELEMENTS ON A SEMICONDUCTOR SUBSTRATE   |    | 09/584,792         | 6,391,214         |        |                     | METHOD FOR THE HYBRID<br>INTEGRATION OF DISCRETE<br>ELEMENTS ON A<br>SEMICONDUCTOR SUBSTRATE                                   |
| RE1009 | FIBER OPTIC COUPLER   | CA | 476,580            | 1,258,787         |        |                     | FIBER OPTIC COUPLER  |
| RE1009 | FIBER OPTIC COUPLER   | US | 07/442,878         | 4,950,046         |        |                     | FIBER OPTIC COUPLER  |
| RE1037 | OPTICAL SIGNAL<br>MODULATORS  | CA | 507,411            | 1,257,923         |        |                     | OPTICAL SIGNAL MODULATORS  |
| RE1037 | OPTICAL SIGNAL<br>MODULATORS  | US | 06/856,887         | 4,730,171         |        |                     | OPTICAL SIGNAL MODULATORS  |
| RO1624 | HERMETIC OPTICAL<br>ATTENUATOR  | US | <b>06/23</b> 3,500 | 4,695,125         |        |                     | HERMETIC OPTICAL<br>ATTENUATOR   |

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| RO1807       | DIFFUSION EQUIPMENT  | CA | 416,834          | 1,204,986 |              |                             | DIFFUSION EQUIPMENT  |
| RO1807       | DIFFUSION EQUIPMENT  | us | 06/446,441       | 4,493,287 |              |                             | DIFFUSION EQUIPMENT  |
| RO1809       | A PLANAR NARROW-<br>STRIPE LASER WITH<br>IMPROVED CHARGE<br>CARRIER<br>CONFINEMENT | US | 06/448,383       | 4,530,099 |              |                             | A PLANAR NARROW-STRIPE<br>LASER WITH IMPROVED CHARGE<br>CARRIER<br>CONFINEMENT |
| RO1882       | MELT DISPENSING<br>LIQUID PHASE EPITAXY<br>BOAT                                    | CA | 448,169          | 1,201,220 |              |                             | MELT DISPENSING LIQUID PHASE EPITAXY BOAT                                      |
| RO1882       | MELT DISPENSING<br>LIQUID PHASE EPITAXY<br>BOAT                                    | US | 06/583,985       | 4,574,730 |              |                             | MELT DISPENSING LIQUID PHASE EPITAXY BOAT                                      |
| RO1903       | METHOD FOR<br>SCREENING LASER<br>DIODES  | CA | 447,814          | 1,196,080 |              |                             | METHOD FOR SCREENING<br>LASER DIODES   |
| RO1903       | METHOD FOR<br>SCREENING LASER<br>DIODES  | US | 06/582,956       | 4,489,477 |              |                             | METHOD FOR SCREENING<br>LASER DIODES   |
| RO1944       | PHASED LINEAR LASER<br>ARRAY   | CA | 465,981          | 1,238,707 |              |                             | PHASED LINEAR LASER ARRAY  |
| RO1944       | PHASED LINEAR LASER<br>ARRAY   | US | 06/663,424       | 4,661,962 |              |                             | PHASED LINEAR LASER ARRAY  |
| RO1961       | ZINC DIFFUSION INTO<br>INDIUM PHOSPHIDE  | CA | 495,084          | 1,290,656 |              |                             | ZINC DIFFUSION INTO INDIUM<br>PHOSPHIDE  |
| RO1961       | ZINC DIFFUSION INTO<br>INDIUM PHOSPHIDE  | US | 07/243,138       | 4,889,830 |              |                             | ZINC DIFFUSION INTO INDIUM<br>PHOSPHIDE  |
| RO1987       | DOUBLE HETEROSTRUCTURE SURFACE EMITTING LASER STRUCTURE                            | CA | 483,077          | 1,238,973 |              |                             | DOUBLE HETEROSTRUCTURE<br>SURFACE EMITTING LASER<br>STRUCTURE                  |
| RO1987       | DOUBLE HETEROSTRUCTURE SURFACE EMITTING LASER STRUCTURE                            | US | 06/673,644       | 4,660,207 |              |                             | DOUBLE HETEROSTRUCTURE<br>SURFACE EMITTING LASER<br>STRUCTURE                  |
| RO1994       | A SURFACE EMITTING<br>LASER  | CA | 4 <b>74,</b> 029 | 1,238,971 |              |                             | A SURFACE EMITTING LASER   |
| RO1994       | A SURFACE EMITTING<br>LASER  | US | 06/701,839       | 4,675,877 |              |                             | A SURFACE EMITTING LASER   |
| RO2005       | A BRAGG DISTRIBUTED<br>FEEDBACK SURFACE<br>EMITTING LASER                          | US | 06/701,707       | 4,675,876 |              |                             | A BRAGG DISTRIBUTED<br>FEEDBACK SURFACE EMITTING<br>LASER                      |
| RO2005       | A BRAGG DISTRIBUTED<br>FEEDBACK SURFACE<br>EMITTING LASER                          | CA | 474,030          | 1,238,972 |              |                             | A BRAGG DISTRIBUTED<br>FEEDBACK SURFACE EMITTING<br>LASER                      |
| RO2268       | AN INTERRUPTED LIQUID<br>PHASE EPITAXY<br>TECHNIQUE                                | CA | 562,885          | 1,293,179 |              |                             | AN INTERRUPTED LIQUID PHASE<br>EPITAXY TECHNIQUE                               |
| RO2268       | AN INTERRUPTED LIQUID<br>PHASE EPITAXY<br>TECHNIQUE                                | US | 07/179,834       | 4,859,628 |              |                             | AN INTERRUPTED LIQUID PHASE<br>EPITAXY TECHNIQUE                               |

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| RO2314          | MONOLITHIC INTEGRATION OF OPTOELECTRONIC AND ELECTRONIC DEVICES                 | US  | 07/176,120 | 4,847,665       |                |   | MONOLITHIC INTEGRATION OF<br>OPTOELECTRONIC AND<br>ELECTRONIC<br>DEVICES  |
| RO2349          | GROWTH OF SEMI-<br>INSULATING INP BY<br>LIQUID PHASE EPITAXY                    | US  | 07/201,155 | 4,849,373       |                |   | GROWTH OF SEMI-INSULATING INP BY LIQUID PHASE EPITAXY                     |
| RO2349          | GROWTH OF SEMI-<br>INSULATING INP BY<br>LIQUID PHASE EPITAXY                    | CA  | 568,369    | 1,313,107       |                |   | GROWTH OF SEMI-INSULATING INP BY LIQUID PHASE EPITAXY                     |
| RO2461          | OPTOELECTRONIC APPARATUS AND METHOD FOR ITS FABRICATION                         | US  | 07/369,883 | 4,969,712       |                |   | OPTOELECTRONIC APPARATUS AND METHOD FOR ITS FABRICATION                   |
| RO2468          | PACKAGING METHOD<br>AND PACKAGE FOR<br>EDGE COUPLED<br>OPTOELECTRONIC<br>DEVICE | CA  | 2,018,900  | 2,018,900       |                |   | PACKAGING METHOD AND PACKAGE FOR EDGE COUPLED OPTOELECTRONIC DEVICE       |
| RO2468          | PACKAGING METHOD<br>AND PACKAGE FOR<br>EDGE COUPLED<br>OPTOELECTRONIC<br>DEVICE | US  | 07/385,599 | 4,953,006       |                |   | PACKAGING METHOD AND PACKAGE FOR EDGE COUPLED OPTOELECTRONIC DEVICE       |
| RO2564          | LASER DIODE<br>STRUCTURE  | FR  | 91908207.3 | 0 530 212       |                |   | LASER DIODE STRUCTURE   |
| RO2564          | LASER DIODE<br>STRUCTURE  | DE  | 91908207.3 | 691 07<br>845.9 |                |   | LASER DIODE STRUCTURE   |
| RO2564          | LASER DIODE<br>STRUCTURE  | GB  | 91908207.3 | 0 530 212       |                |   | LASER DIODE STRUCTURE   |
| RO2564          | LASER DIODE<br>STRUCTURE  | US  | 07/522,015 | 4,989,214       |                |   | LASER DIODE STRUCTURE   |
| RO2579          | MULTICHANNEL FIBER<br>OPTIC TRANSMITTER<br>RECEIVER                             | US  | 07/582,464 | 5,050,953       |                |   | MULTICHANNEL FIBER OPTIC<br>TRANSMITTER RECEIVER                          |
| RO2579          | MULTICHANNEL FIBER<br>OPTIC TRANSMITTER<br>RECEIVER                             | GB  | 91185124   | 2 248 968       |                |   | MULTICHANNEL FIBER OPTIC<br>TRANSMITTER RECEIVER                          |
| RO2714          | APPARATUS FOR USE<br>WITH ANALYTICAL<br>MEASURING<br>INSTRUMENTS                | US  | 07/996,411 | 5,350,923       |                |   | APPARATUS FOR USE WITH<br>ANALYTICAL MEASURING<br>INSTRUMENTS             |
| RO2785          | OPTICAL PHASE MODULATING DEVICES AND METHODS FOR THEIR OPERATION                | DE  | 94915483.5 | 694 08<br>144.2 |                |   | OPTICAL PHASE MODULATING<br>DEVICES AND METHODS FOR<br>THEIR<br>OPERATION |
| RO2785          | OPTICAL PHASE MODULATING DEVICES AND METHODS FOR THEIR OPERATION                | FR  | 94915483.5 | 0 708 930       |                |   | OPTICAL PHASE MODULATING<br>DEVICES AND METHODS FOR<br>THEIR<br>OPERATION |

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| RO2785  | OPTICAL PHASE MODULATING DEVICES AND METHODS FOR THEIR OPERATION   | GB   | 94915483.5  | 0 708 930              |       |                           | OPTICAL PHASE MODULATING<br>DEVICES AND METHODS FOR<br>THEIR<br>OPERATION  |
| RO2785  | OPTICAL PHASE MODULATING DEVICES AND METHODS FOR THEIR OPERATION   | JP   | 7-504252-95 | 2691638                |       |                           | OPTICAL PHASE MODULATING<br>DEVICES AND METHODS FOR<br>THEIR<br>OPERATION  |
| RO2785  | OPTICAL PHASE MODULATING DEVICES AND METHODS FOR THEIR OPERATION   | US   | 08/091,708  | 5,363,457              |       |                           | OPTICAL PHASE MODULATING DEVICES AND METHODS FOR THEIR OPERATION   |
| RO2788  | METHOD OF REDUCING THE THERMALLY INDUCED SHIFT IN THE EMISSION WAVELENGTH OF LASER DIODES                                    |      | 08/118,273  | 5,345,459              |       |                           | METHOD OF REDUCING THE THERMALLY INDUCED SHIFT IN THE EMISSION WAVELENGTH OF LASER DIODES                                    |
| RO2799  | GAIN COUPLED DFB<br>LASER WITH INDEX<br>COUPLING<br>COMPENSATION   | US   | 08/170,074  | 5,452,318              |       |                           | GAIN COUPLED DFB LASER WITH<br>INDEX COUPLING<br>COMPENSATION  |
| RO2809  | METHODS AND ASSEMBLIES FOR PACKAGING ELECTRONIC DEVICES AND FOR COUPLING OPTICAL FIBERS TO THE PACKAGED DEVICES              | US   | 08/158,545  | 5,586,207              | ·     |                           | METHODS AND ASSEMBLIES FOR PACKAGING ELECTRONIC DEVICES AND FOR COUPLING OPTICAL FIBERS TO THE PACKAGED DEVICES              |
| RO2817  | CIRCULAR GRATING<br>LASERS   | US   | 08/158,543  | 5,448,581              |       |                           | CIRCULAR GRATING LASERS  |
| RO2875  | CHIRP CONTROL OF A MACH ZEHNDER OPTICAL MODULATOR USING NON EQUAL POWER SPLITTING  | US   | 08/450,841  | 5,524,076              |       |                           | CHIRP CONTROL OF A MACH<br>ZEHNDER OPTICAL MODULATOR<br>USING NON<br>EQUAL POWER SPLITTING                                   |
| RO2879  | SEMICONDUCTOR LASER STRUCTURE FOR IMPROVED STABILITY OF THE THRESHOLD CURRENT WITH RESPECT TO CHANGES IN AMBIENT TEMPERATURE | 1 1  | 08/242,653  | 5,483,547              |       |                           | SEMICONDUCTOR LASER STRUCTURE FOR IMPROVED STABILITY OF THE THRESHOLD CURRENT WITH RESPECT TO CHANGES IN AMBIENT TEMPERATURE |
| RO2956  | SEMICONDUCTOR<br>MODULATOR WITH A 2-2<br>SHIFT   | GB   | 9513146.2   | 2 302 738              |       |                           | SEMICONDUCTOR MODULATOR<br>WITH A 2-2 SHIFT  |
| RO2956  | SEMICONDUCTOR<br>MODULATOR WITH A 2-2<br>SHIFT   | JP   | 8-188293    |                        |       |                           | SEMICONDUCTOR MODULATOR<br>WITH A 2-2 SHIFT  |
| RO2956  | SEMICONDUCTOR<br>MODULATOR WITH A 2-2<br>SHIFT   | CA   | 2,176,099   | 2,176,099              |       |                           | SEMICONDUCTOR MODULATOR<br>WITH A SHIFT  |

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| RO2956      | SEMICONDUCTOR<br>MODULATOR WITH A 2-2<br>SHIFT  | US | 08/612,555         | 5,694,504     |              |                  | SEMICONDUCTOR MODULATOR<br>WITH A 2-2 SHIFT   |
| RO2969      | METHOD OF ETCHING PATTERNS IN III-V MATERIAL WITH ACCURATE DEPTH CONTROL                          | US | 08/450,839         | 5,567,659     |              |                  | METHOD OF ETCHING<br>PATTERNS IN III-V MATERIAL<br>WITH ACCURATE<br>DEPTH CONTROL                             |
| RO2974      | MULTI WAVELENGTH GAIN COUPLED DISTRIBUTED FEEDBACK LASER ARRAY WITH FINE TUNABILITY               | US | 08/413,555         | 5,536,085     |              |                  | MULTI WAVELENGTH GAIN<br>COUPLED DISTRIBUTED<br>FEEDBACK LASER<br>ARRAY WITH FINE TUNABILITY                  |
| RO2999      | COUPLING OF STRONGLY AND WEAKLY GUIDING WAVEGUIDES FOR COMPACT INTEGRATED MACH ZEHNDER MODULATORS | CA | 2,209,455          |               |              |                  | COUPLING OF STRONGLY AND<br>WEAKLY GUIDING WAVEGUIDES<br>FOR<br>COMPACT INTEGRATED MACH<br>ZEHNDER MODULATORS |
| RO2999      | COUPLING OF STRONGLY AND WEAKLY GUIDING WAVEGUIDES FOR COMPACT INTEGRATED MACH ZEHNDER MODULATORS | EP | 97304743.4         |               |              |                  | COUPLING OF STRONGLY AND<br>WEAKLY GUIDING WAVEGUIDES<br>FOR<br>COMPACT INTEGRATED MACH<br>ZEHNDER MODULATORS |
| RO2999      | COUPLING OF STRONGLY AND WEAKLY GUIDING WAVEGUIDES FOR COMPACT INTEGRATED MACH ZEHNDER MODULATORS | JP | 9-174942           |               |              |                  | COUPLING OF STRONGLY AND<br>WEAKLY GUIDING WAVEGUIDES<br>FOR<br>COMPACT INTEGRATED MACH<br>ZEHNDER MODULATORS |
| RO2999      | COUPLING OF STRONGLY AND WEAKLY GUIDING WAVEGUIDES FOR COMPACT INTEGRATED MACH ZEHNDER MODULATORS | US | 08/675,757         | 5,799,119     |              |                  | COUPLING OF STRONGLY AND<br>WEAKLY GUIDING WAVEGUIDES<br>FOR<br>COMPACT INTEGRATED MACH<br>ZEHNDER MODULATORS |
| RO3007      | BURIED HETEROSTRUCTURE LASER WITH QUATERNARY CURRENT BLOCKING LAYER                               | US | 08/728,991         | 6,028,875     |              |                  | BURIED HETEROSTRUCTURE<br>LASER WITH QUATERNARY<br>CURRENT BLOCKI G LAYER                                     |
| RO3015      | THIN FILM RESISTOR<br>FOR OPTOELECTRONIC<br>INTEGRATED CIRCUITS                                   | GB | <b>9700</b> 985.6  | 2 309 335     |              |                  | THIN FILM RESISTOR FOR OPTOELECTRONIC INTEGRATED CIRCUITS   |
| RO3015      | THIN FILM RESISTOR<br>FOR OPTOELECTRONIC<br>INTEGRATED CIRCUITS                                   | JР | <b>9-00</b> 9795   |               |              |                  | THIN FILM RESISTOR FOR<br>OPTOELECTRONIC INTEGRATED<br>CIRCUITS   |
| RO3015      | THIN FILM RESISTOR<br>FOR OPTOELECTRONIC<br>INTEGRATED CIRCUITS                                   | US | 08/977,371         | 5,960,014     |              |                  | THIN FILM RESISTOR FOR<br>OPTOELECTRONIC INTEGRATED<br>CIRCUITS   |
| RO3066      | LASER DIODE AND<br>METHOD OF<br>FABRICATION THEREOF   | US | <b>09/09</b> 3,399 | 6,151,347     |              |                  | LASER DIODE AND METHOD OF<br>FABRICATION THEREOF  |

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| RO3090 | CONFIGURABLE CHIRP<br>MACH-ZEHNDER<br>OPTICAL MODULATOR   | CA | 2,220,240          | 2,220,240       |                      | CONFIGURABLE CHIRP MACH-<br>ZEHNDER OPTICAL MODULATOR   |
| RO3090 | CONFIGURABLE CHIRP<br>MACH-ZEHNDER<br>OPTICAL MODULATOR   | EP | 97308615.0         |                 |                      | CONFIGURABLE CHIRP MACH-<br>ZEHNDER OPTICAL MODULATOR   |
| RO3090 | CONFIGURABLE CHIRP<br>MACH-ZEHNDER<br>OPTICAL MODULATOR   | US | 08/745,168         | 5,778,113       |                      | CONFIGURABLE CHIRP MACH-<br>ZEHNDER OPTICAL MODULATOR   |
| RO3090 | CONFIGURABLE CHIRP<br>MACH-ZEHNDER<br>OPTICAL MODULATOR   | US | 09/057,602         | 5,991,471       |                      | CONFIGURABLE CHIRP MACH-<br>ZEHNDER OPTICAL MODULATOR   |
| RO3092 | POLARIZATION INSENSITIVE MULTILAYER PLANAR REFLECTION FILTERS WITH NEAR IDEAL SPECTRAL RESPONSE | US | 08/686,355         | 5,777,793       |                      | POLARIZATION INSENSITIVE MULTILAYER PLANAR REFLECTION FILTERS WITH NEAR IDEAL SPECTRAL RESPONSE |
| RO3139 | WAVELENGTH MONITORING AND CONTROL ASSEMBLY FOR WDM OPTICAL TRANSMISSION SYSTEMS                 | CA | <b>2,209,</b> 558  |                 |                      | WAVELENGTH MONITORING AND<br>CONTROL ASSEMBLY FOR WDM<br>OPTICAL<br>TRANSMISSION SYSTEMS        |
| RO3139 | WAVELENGTH MONITORING AND CONTROL ASSEMBLY FOR WDM OPTICAL TRANSMISSION SYSTEMS                 | EP | 97111630.6         | 0 818 859       | Nat'l Phase<br>Filed | WAVELENGTH MONITORING AND<br>CONTROL ASSEMBLY FOR WDM<br>OPTICAL TRANSMISSION<br>SYSTEMS        |
| RO3139 | WAVELENGTH MONITORING AND CONTROL ASSEMBLY FOR WDM OPTICAL TRANSMISSION SYSTEMS                 | US | 08/680,284         | 5,825,792       |                      | WAVELENGTH MONITORING AND<br>CONTROL ASSEMBLY FOR WDM<br>OPTICAL<br>TRANSMISSION SYSTEMS        |
| RO3139 | WAVELENGTH MONITORING AND CONTROL ASSEMBLY FOR WDM OPTICAL TRANSMISSION SYSTEMS                 | JP | 9-186204           |                 |                      | WAVELENGTH MONITORING AND<br>CONTROL ASSEMBLY FOR WDM<br>OPTICAL<br>TRANSMISSION SYSTEMS        |
| RO3139 | WAVELENGTH MONITORING AND CONTROL ASSEMBLY FOR WDM OPTICAL TRANSMISSION SYSTEMS                 | GB | 97111630.6         | 0 818 859       |                      | WAVELENGTH MONITORING AND<br>CONTROL ASSEMBLY FOR WDM<br>OPTICAL<br>TRANSMISSION SYSTEMS        |
| RO3139 | WAVELENGTH MONITORING AND CONTROL ASSEMBLY FOR WDM OPTICAL TRANSMISSION SYSTEMS                 | DE | 97111630.6         | 697 11<br>126.1 |                      | WAVELENGTH MONITORING AND<br>CONTROL ASSEMBLY FOR WDM<br>OPTICAL<br>TRANSMISSION SYSTEMS        |
| RO3139 | WAVELENGTH MONITORING AND CONTROL ASSEMBLY FOR WDM OPTICAL TRANSMISSION SYSTEMS                 | FR | 97111630.6         | 0 818 859       |                      | WAVELENGTH MONITORING AND<br>CONTROL ASSEMBLY FOR WDM<br>OPTICAL<br>TRANSMISSION SYSTEMS        |

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| RO3478   | TWO SECTION COMPLE COUPLED DISTRIBUTED FEEDBACK SEMICONDUCTOR LASE WITH ENHANCED WAVELENGTH TUNING RANGE                     | R  | 98307439.4     |           |               |                                      | TWO SECTION COMPLEX COUPLED DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER WITH ENHANCED WAVELENGTH TUNING RANGE   |
| RO3478   | TWO SECTION COMPLE;<br>COUPLED DISTRIBUTED<br>FEEDBACK<br>SEMICONDUCTOR LASE;<br>WITH ENHANCED<br>WAVELENGTH TUNING<br>RANGE |    | 10-264323      |           |               |                                      | TWO SECTION COMPLEX COUPLED DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER WITH ENHANCED WAVELENGTH TUNING RANGE   |
| RO3478   | TWO SECTION COMPLE) COUPLED DISTRIBUTED FEEDBACK SEMICONDUCTOR LASEF WITH ENHANCED WAVELENGTH TUNING RANGE                   |    | 08/933,529     | 5,936,994 |               |                                      | TWO SECTION COMPLEX COUPLED DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER WITH ENHANCED WAVELENGTH TUNING RANGE   |
| RO3479   | DISTRIBUTED FEEDBACK<br>SEMICONDUCTOR LASEF<br>WITH GAIN<br>MODULATION   |    | 08/953,015     | 6,026,110 |               |                                      | DISTRIBUTED FEEDBACK<br>SEMICONDUCTOR LASER WITH<br>GAIN<br>MODULATION   |
| RO3610   | SERIES OF STRONGLY<br>COMPLEX COUPLED DFB<br>LASERS  | EP | 98310111.4     |           |               |                                      | SERIES OF STRONGLY<br>COMPLEX COUPLED DFB<br>LASERS  |
| RO3610   | SERIES OF STRONGLY<br>COMPLEX COUPLED DFB<br>LASERS  | JР | 10-366380      |           |               |                                      | SERIES OF STRONGLY<br>COMPLEX COUPLED DFB<br>LASERS  |
| RO3610   | SERIES OF STRONGLY<br>COMPLEX COUPLED DFB<br>LASERS  | US | 08/998,071     | 6,104,739 |               |                                      | SERIES OF STRONGLY<br>COMPLEX COUPLED DFB<br>LASERS  |
| RO3746   | ETCHING OF INDIUM PHOSPHIDE MATERIALS FOR MICROELECTRONICS FABRICATION   | US | 08/994,453     | 5,869,398 |               |                                      | ETCHING OF INDIUM PHOSPHIDE<br>MATERIALS FOR<br>MICROELECTRONICS<br>FABRICATION  |
| RO3920   | HIGH ORDER GAIN<br>COUPLED DFB LASERS  | wo | PCT/CA99/01067 |           |               |                                      | A GAIN COUPLED DISTRIBUTED<br>FEEDBACK SEMICONDUCTOR<br>LASER  |
| RO3920   | HIGH ORDER GAIN<br>COUPLED DFB LASERS  | CA | 2,310,604      |           |               |                                      | A GAIN COUPLED DISTRIBUTED<br>FEEDBACK SEMICONDUCTOR<br>LASER  |
| RO3920   | HIGH ORDER GAIN<br>COUPLED DFB LASERS  | EΡ | 99973441.1     |           |               |                                      | A GAIN COUPLED DISTRIBUTED<br>FEEDBACK SEMICONDUCTOR<br>LASER  |
| RO3920   | HIGH ORDER GAIN<br>COUPLED DFB LASERS  | JP | 2000-588867    |           |               |                                      | A GAIN COUPLED DISTRIBUTED<br>FEEDBACK SEMICONDUCTOR<br>LASER  |

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| RO4144 | COMPACT PROGRAMMABLE MATRIX OF STRONGLY COMPLEX COUPLED DFB LASERS FOR WIDE AND CONTINUOUS SINGLE WAVELENGTH          | US  | 09/209,860         | 6,201,824 |                      |              | STRONGLY COMPLEX COUPLED<br>DFB LASERS SERIES   |
| RO4324 | CONTINUOUSLY TUNABLE HIGH REPETITION RATE SHORT PULSE GENERATION USING DUAL MODE HIGHLY GAIN-COUPLED DFB LASER DIODES | US  | 09/213,088         |           |                      |              | GENERATION OF SHORT<br>OPTICAL PULSES USING<br>STRONGLY COMPLEX COUPLED<br>DFB LASERS |
| RO4416 | VARIABLE OPTICAL<br>ATTENUATOR  | US  | 09/388,628         | 6,246,826 |                      |              | VARIABLE OPTICAL ATTENUATOR WITH PROFILED BLADE                                       |
| RO4504 | ACTIVE REFLECTION<br>MODULATOR  | US  | 09/409,036         |           |                      |              | COMPOUND CAVITY REFLECTION MODULATION LASER SYSTEM                                    |
| RO4504 | ACTIVE REFLECTION<br>MODULATOR  | wo  | PCT/CA00/00856     |           | Nat'l Phase<br>Filed |              | COMPOUND CAVITY REFLECTION MODULATION LASER SYSTEM                                    |
| RO4504 | ACTIVE REFLECTION<br>MODULATOR  | CA  | 2,351,381          |           |                      |              | COMPOUND CAVITY REFLECTION MODULATION LASER SYSTEM                                    |
| RO4504 | ACTIVE REFLECTION<br>MODULATOR  | EP  | 947728.2           |           |                      |              | COMPOUND CAVITY REFLECTION MODULATION LASER SYSTEM                                    |
| RO4504 | ACTIVE REFLECTION<br>MODULATOR  | JР  | 2001-527411        |           |                      |              | COMPOUND CAVITY REFLECTION MODULATION LASER SYSTEM                                    |

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| 10163ID   | SLOTTED MONOLITHIC OPTICAL WAVEGUIDES                 | CA   | 2,311,961         |           |          | SLOTTED MONOLITHIC OPTICAL WAVEGUIDES  |
| 10163ID   | SLOTTED MONOLITHIC OPTICAL WAVEGUIDES                 | EP   | 304657            |           |          | PHASE ADJUSTER USING SLOTTED,<br>CONCATENATED WAVEGUIDES AND THERMO-<br>OPTIC OR ELECTRO-OPTIC INSERTS |
| 10163ID   | SLOTTED MONOLITHIC OPTICAL WAVEGUIDES                 | US   | 09/346,320        | 6,424,755 |          | SLOTTED MONOLITHIC OPTICAL WAVEGUIDES  |
| 11550RO   | HYBRID ATTACH MIRRORS<br>FOR A MEMS OPTICAL<br>SWITCH | CA   | 2,355,450         |           |          | HYBRID ATTACH MIRRORS FOR A MEMS OPTICAL<br>SWITCH   |
| 11550RO   | HYBRID ATTACH MIRRORS<br>FOR A MEMS OPTICAL<br>SWITCH | US   | 09/672,703        |           |          | HYBRID ATTACH MIRRORS FOR A MEMS OPTICAL<br>SWITCH   |
| 12801AU   | FIBRE OPTIC CIRCULATOR                                | EP   | 96940631.3        |           |          | FIBRE OPTIC CIRCULATOR   |
| 12801AU   | FIBRE OPTIC CIRCULATOR                                | US   | 08/942,601        | 6,014,475 |          | FIBRE OPTIC CIRCULATOR   |
| 12802AU   | OPTICAL FILTERING METHOD<br>AND DEVICE                | CA   | 2,318,674         |           |          | OPTICAL FILTERING METHOD AND DEVICE  |
| 12802AU   | OPTICAL FILTERING METHOD AND DEVICE                   | US   | 09/660,147        | 6,466,704 |          | OPTICAL FILTERING METHOD AND DEVICE  |
| 12802AU   | OPTICAL FILTERING METHOD AND DEVICE                   | wo   | PCT/AU00/00735    |           |          | OPTICAL FILTERING METHOD AND DÉVICE  |
| 12803AU   | REFLECTIVE NON<br>RECIPROCAL OPTICAL<br>DEVICE        | CA   | 2,313 <b>,311</b> |           |          | REFLECTIVE NON RECIPROCAL OPTICAL DEVICE   |
| 12803AU   | REFLECTIVE NON<br>RECIPROCAL OPTICAL<br>DEVICE        | EP   | 202289.5          |           |          | REFLECTIVE NON RECIPROCAL OPTICAL DEVICE   |

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| 12803AU | REFLECTIVE NON<br>RECIPROCAL OPTICAL<br>DEVICE               | US | 09/345,027          | 6,263,131       |                      | REFLECTIVE NON-RECIPROCAL OPTICAL DEVICE                  |
| 12803AU | REFLECTIVE NON<br>RECIPROCAL OPTICAL<br>DEVICE               | US | 09/610,601          | 6,415,077       |                      | REFLECTIVE NON-RECIPROCAL OPTICAL DEVICE                  |
| 12804AU | WAVELENGTH DEPENDENT ISOLATOR                                | CA | 10/129828           |                 | Nat'l Phase<br>Filed | WAVELENGTH DEPENDENT ISOLATOR                             |
| 12804AU | WAVELENGTH DEPENDENT ISOLATOR                                | US | PCT/AU00/01380      |                 | Nat'l Phase<br>Filed | WAVELENGTH DEPENDENT ISOLATOR                             |
| 12804AU | WAVELENGTH DEPENDENT ISOLATOR                                | wo | PCT/AU00/01380      |                 | Nat'l Phase<br>Filed | WAVELENGTH DEPENDENT ISOLATOR                             |
| 13240AU | POLARISATION SPLITTING<br>CIRCULATOR METHOD AND<br>DEVICE    | US | 09/736,095          |                 |                      | POLARISATION SPLITTING CIRCULATOR METHOD AND DEVICE       |
| 14081ID | FIBRE OPTICAL COMPONENT                                      | US | 09/888,888          |                 |                      | FIBRE OPTICAL COMPONENT                                   |
| 14669AU | VARIABLE ATTENUATION<br>AND SPECTRAL SLOPE<br>OPTICAL DEVICE | US | 10/218,267          |                 |                      | VARIABLE ATTENUATION AND SPECTRAL SLOPE<br>OPTICAL DEVICE |
| 15087ID | AN OPTICAL GRATING<br>DEVICE                                 | US | 10/109,916          |                 |                      | AN OPTICAL GRATING DEVICE                                 |
| ID0190  | WAVELENGTH RESONANT<br>FUSED FIBRE COUPLER                   | DE | 95308065.2          | 695 27<br>251.9 |                      | WAVELENGTH RESONANT FUSED FIBRE COUPLER                   |
| ID0190  | WAVELENGTH RESONANT<br>FUSED FIBRE COUPLER                   | EP | 95308065.2          | 0 713 109       | Nat'l Phase<br>Filed | WAVELENGTH RESONANT FUSED FIBRE COUPLER                   |
| ID0190  | WAVELENGTH RESONANT<br>FUSED FIBRE COUPLER                   | FR | 95308065.2          | 0 713 109       |                      | WAVELENGTH RESONANT FUSED FIBRE COUPLER                   |
| ID0190  | WAVELENGTH RESONANT<br>FUSED FIBRE COUPLER                   | GB | 9521916.8           | 2 295 245       |                      | WAVELENGTH RESONANT FUSED FIBRE COUPLER                   |
| ID0190  | WAVELENGTH RESONANT<br>FUSED FIBRE COUPLER                   | JР | 293047/1995         |                 |                      | WAVELENGTH RESONANT FUSED FIBRE COUPLER                   |
| ID0190  | WAVELENGTH RESONANT<br>FUSED FIBRE COUPLER                   | US | 08/55 <b>7,8</b> 57 | 5,703,976       |                      | WAVELENGTH RESONANT FUSED FIBRE COUPLER                   |
| ID0226  | OPTICAL WAVEGUIDE<br>GRATINGS                                | GB | 9318670.8           | 2 281 787       |                      | OPTICAL WAVEGUIDE GRATINGS                                |
| ID0291  | OPTICAL WAVEGUIDE<br>GRATING FILTER                          | DE | 95308201.3          | 695 25<br>223.2 |                      | OPTICAL WAVEGUIDE GRATING FILTER                          |
| ID0291  | OPTICAL WAVEGUIDE<br>GRATING FILTER                          | EP | 95308201.3          | 0 713 110       | Nat'l Phase<br>Filed | OPTICAL WAVEGUIDE GRATING FILTER                          |
| ID0291  | OPTICAL WAVEGUIDE<br>GRATING FILTER                          | FR | 95308201.3          | 0 713 110       |                      | OPTICAL WAVEGUIDE GRATING FILTER                          |
| ID0291  | OPTICAL WAVEGUIDE<br>GRATING FILTER                          | GB | 9523489.4           | 2 295 247       |                      | OPTICAL WAVEGUIDE GRATING FILTER                          |
| ID0291  | OPTICAL WAVEGUIDE<br>GRATING FILTER                          | US | 08/55 <b>8,70</b> 9 | 5,638,473       |                      | OPTICAL WAVEGUIDE GRATING FILTER                          |
| ID0309  | BRAGG GRATINGS IN<br>WAVEGUIDES                              | US | 08/647,795          | 5,730,888       |                      | BRAGG GRATINGS IN WAVEGUIDES                              |
| ID0355  | ALL-FIBRE OPTICAL FILTER                                     | DE | 96302352.8          | 696 22<br>778.9 |                      | OPTICAL NOTCH FILTER MANUFACTURE                          |
| 1D0355  | ALL-FIBRE OPTICAL FILTER                                     | EP | 96302352.8          | 0 736 784       | Nat'l Phase<br>Filed | OPTICAL NOTCH FILTER MANUFACTURE                          |

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| ID0355 | ALL-FIBRE OPTICAL FILTER                   | FR | 96302352.8     | 0 736 784       |                      | OPTICAL NOTCH FILTER MANUFACTURE                         |
| ID0355 | ALL-FIBRE OPTICAL FILTER                   | GB | 96302352.8     | 0 736 784       |                      | OPTICAL NOTCH FILTER MANUFACTURE                         |
| ID0355 | ALL-FIBRE OPTICAL FILTER                   | US | 08/628,579     | 5,708,740       |                      | ALL-FIBRE OPTICAL FILTER                                 |
| ID0421 | PLANAR WAVEGUIDES                          | US | 08/842,021     | 5,904,491       |                      | PLANAR WAVEGUIDES  |
| ID0423 | PLANAR WAVEGUIDE<br>CLADDING               | US | 08/842,022     | 5,885,881       |                      | PLANAR WAVEGUIDE CLADDING                                |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | CA | 2,241,189      |                 |                      | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | DE | 97906822.8     | 697 09<br>330.1 |                      | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | EP | 97906822.8     | 0 891 570       | Nat'l Phase<br>Filed | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | FR | 97906822.8     | 0 891 570       | 187                  | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | GB | 9605320.2      | 2 311 145       |                      | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | GB | 97906822.8     | 0 891 570       |                      | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | IT | 97906822.8     | 0 891 570       |                      | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | JP | 532348/1997    |                 |                      | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | US | 09/101,276     |                 |                      | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0444 | WAVEGUIDES TO<br>PHOTODETECTOR<br>ASSEMBLY | wo | PCT/GB97/00606 |                 | Nat'l Phase<br>Filed | WAVEGUIDES TO PHOTODETECTOR ASSEMBLY                     |
| ID0449 | WAVEGUIDE PAIR WITH<br>CLADDING            | CA | 2,239,118      |                 |                      | WAVEGUIDE PAIR WITH CLADDING                             |
| ID0449 | WAVEGUIDE PAIR WITH<br>CLADDING            | DE | 97900292       | 697 02<br>299.4 | Nat'l Phase<br>Filed | METHOD OF PRODUCING A CLADDED WAVEGUIDE<br>PAIR ASSEMBLY |
| ID0449 | WAVEGUIDE PAIR WITH<br>CLADDING            | EP | 97900292       | 0 873 531       | Filed                | METHOD OF PRODUCING A CLADDED WAVEGUIDE<br>PAIR ASSEMBLY |
| ID0449 | WAVEGUIDE PAIR WITH<br>CLADDING            | FR | 97900292       | 0 873 531       | Nat'l Phase<br>Filed | METHOD OF PRODUCING A CLADDED WAVEGUIDE<br>PAIR ASSEMBLY |
| ID0449 | WAVEGUIDE PAIR WITH<br>CLADDING            | GB | 97900292       | 0 873 531       | Nat'l Phase<br>Filed | METHOD OF PRODUCING A CLADDED WAVEGUIDE<br>PAIR ASSEMBLY |

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| ID0449       | WAVEGUIDE PAIR WITH<br>CLADDING   | IT   | 97900292            | 0 873 531       | Nat'l Phase<br>Filed | METHOD OF PRODUCING A CLADDED WAVEGUIDE<br>PAIR ASSEMBLY  |
| ID0449       | WAVEGUIDE PAIR WITH<br>CLADDING   | JР   | 5249 <b>74/1997</b> |                 |                      | WAVEGUIDE PAIR WITH CLADDING  |
| ID0449       | WAVEGUIDE PAIR WITH<br>CLADDING   | US   | 09/091,257          | 6,044,192       |                      | WAVEGUIDE PAIR WITH CLADDING  |
| ID0449       | WAVEGUIDE PAIR WITH<br>CLADDING   | wo   | PCT/GB97/00040      |                 | Nat'l Phase<br>Filed | WAVEGUIDE PAIR WITH CLADDING  |
| ID0509       | MANUFACTURE OF PLANAR WAVEGUIDE COMPONENTS WITH DISPERSIVE ELEMENTS AND FINE LOCAL REF. INDEXCON. | CA   | 2,211,244           |                 |                      | OPTICAL WAVEGUIDE BRAGG REFLECTION GRATINGS   |
| ID0509       | MANUFACTURE OF PLANAR WAVEGUIDE COMPONENTS WITH DISPERSIVE ELEMENTS AND FINE LOCAL REF. INDEXCON. | GB   | 9715185.6           | 2 316 185       |                      | MANUFACTURE OF PLANAR WAVEGUIDE<br>COMPONENTS WITH DISPERSIVE ELEMENTS AND<br>FINE LOCAL REF. INDEXCON. |
| ID0509       | MANUFACTURE OF PLANAR WAVEGUIDE COMPONENTS WITH DISPERSIVE ELEMENTS AND FINE LOCAL REF. INDEXCON. | JP   | 209343/97           |                 |                      | MANUFACTURE OF PLANAR WAVEGUIDE<br>COMPONENTS WITH DISPERSIVE ELEMENTS AND<br>FINE LOCAL REF. INDEXCON. |
| ID0509       | MANUFACTURE OF PLANAR WAVEGUIDE COMPONENTS WITH DISPERSIVE ELEMENTS AND FINE LOCAL REF. INDEXCON. | US   | 08/896,092          | 6,115,518       |                      | OPTICAL WAVEGUIDE BRAGG REFLECTION GRATINGS   |
| ID0997       | SERIAL FILTERING FOR<br>WAVELENGTH FLATTENING<br>OF E.D.F.A.                                      | CA   | 2,282,939           |                 |                      | OPTICAL EQUALIZER   |
| ID0997       | SERIAL FILTERING FOR<br>WAVELENGTH FLATTENING<br>OF E.D.F.A.                                      | DE   | 99306728.9          | 699 01<br>419.0 |                      | OPTICAL GAIN EQUALIZER  |
| ID0997       | SERIAL FILTERING FOR<br>WAVELENGTH FLATTENING<br>OF E.D.F.A.                                      | EP   | 99306728.9          | 1 009 078       | Nat'l Phase<br>Filed | OPTICAL GAIN EQUALIZER  |
| ID0997       | SERIAL FILTERING FOR<br>WAVELENGTH FLATTENING<br>OF E.D.F.A.                                      | FR   | 99306728.9          | 1 009 078       |                      | OPTICAL GAIN EQUALIZER  |
| ID0997       | SERIAL FILTERING FOR<br>WAVELENGTH FLATTENING<br>OF E.D.F.A.                                      | GB   | 99306728.9          | 1 009 078       |                      | OPTICAL GAIN EQUALIZER  |
| ID0997       | SERIAL FILTERING FOR<br>WAVELENGTH FLATTENING<br>OF E.D.F.A.                                      | IT   | 99306728.9          | 1 009 078       |                      | OPTICAL GAIN EQUALIZER  |
| ID0997       | SERIAL FILTERING FOR<br>WAVELENGTH FLATTENING<br>OF E.D.F.A.                                      | US   | 09/209,387          | 6,321,000       |                      | OPTICAL EQUALIZER   |
| ID8550       | OPTICAL FIBRES  | GB   | 8230675             | 2 129 152       |                      | OPTICAL FIBRES  |

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| ID9170   | BEAM SPLITTER/COMBERS  | CA   | 500,513            | 1,288,267   |              | BEAM SPLITTER/COMBERS   |
| ID9170   | BEAM SPLITTER/COMBERS  | GB   | 850 <b>3506</b>    | 2 170 920   |              | BEAM SPLITTER/COMBERS   |
| ID9170   | BEAM SPLITTER/COMBERS  | US   | 06/819,125         | 4,756,589   |              | BEAM SPLITTER/COMBERS   |
| ID9441   | DIRECTIONAL COUPLER  | DE   | 378 25 37.2        | 378 25 37.2 |              | DIRECTIONAL COUPLER   |
| ID9441   | DIRECTIONAL COUPLER  | FR   | 87302418.6         | 0 246 737   |              | DIRECTIONAL COUPLER   |
| ID9441   | DIRECTIONAL COUPLER  | GB   | 8612660            | 2 190 762   |              | DIRECTIONAL COUPLER   |
| ID9441   | DIRECTIONAL COUPLER  | JP   | 118687/87          | 2022576     |              | DIRECTIONAL COUPLER   |
| ID9441   | DIRECTIONAL COUPLER  | US   | 07/032,783         | 4,801,185   |              | DIRECTIONAL COUPLER   |
| ID9579   | GLASS CLAD OPTICAL FIBRE DIRECTIONAL COUPLERS  | GB   | 8716382            | 2 207 254   |              | GLASS CLAD OPTICAL FIBRE DIRECTIONAL<br>COUPLERS  |
| ID9730   | DOPED ELEMENTS   | GB   | 8820848.3          | 2 222 400   |              | DOPED ELEMENTS  |
| ID9758   | "OPTICAL WAVEGUIDE<br>TAPER HAVING CORE,<br>INTERLAYER AND<br>CLADDING"                | GB   | 8926061.6          | 2 238 396   |              | "OPTICAL WAVEGUIDE TAPER HAVING CORE,<br>INTERLAYER AND CLADDING"                           |
| RO2922   | POLARIZATION INDEPENDENT WAVELENGTH TUNABLE FILTER BASED ON BIREFRINGENCE COMPENSATION | US   | 08/329,923         | 5,488,679   |              | POLARIZATION INDEPENDENT WAVELENGTH<br>TUNABLE FILTER BASED ONBIREFRINGENCE<br>COMPENSATION |

**RECORDED: 01/28/2003**.