| FORM PTO-1619A | 11-17-1998 | 11 IS | U.S. Department of Commerce |
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| Expires 06/30/99 OMB 0651-0027 | | | Patent and Trademark Office PATENT |
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| Name (line 1) Macro-Vision (| Communications, Inc. | | 06241998 |
| Name (line 2) a Delaware con | poration | | Execution Date |
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| Name (line 2) | | · · · · · · · · · · · · · · · · · · · | |
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| Receiving Party | | Mark if additional names of r | eceiving parties attached |
| Name (line 1) Chorum Technol | ogies inc. | | is an assignment and the receiving party is not |
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| Address (line 1) 1155 East Coll | ins Boulevard | | of a domestic representative is attached. (Designation must be a |
| Address (line 2) Suite 200 | · · · · · · · · · · · · · · · · · · · | | separate document from Assignment.) |
| Address (line 3) Richardson | TX/US | A 750 | 181 |
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| Domestic Representative N | ame and Address | inter for the first Receiving Party | only. |
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| Public burden reporting for this collection of informa gathering the data needed to complete the Cover Shi D.C. 20231 and to the Office of Information and Regu | eet. Send comments regarding this burden estimation latory Affairs. Office of Management and Budget. | Ite to the U.S. Patent and Trademark Office, | Chief Information Officer, Washington, |
| Information Collection Budget Package 0651-0027, F | Patent and Trademark Assignment Practice. DO N s to be recorded with required c | OT SEND REQUESTS TO RECORD ASSI | MENT DOCUMENTS TO THIS ADDRESS. |
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| FORM PTC Expires 06/30/99 OMB 0651-0027 | 9-1619B | Page 2 | U.S. Department of Commerce Patent and Trademark Office PATENT | |
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| Correspond | ent Name and Address | Area Code and Telephone Number | the second se | |
| Name | Thomas S. Birney, Esq. | | i | |
| Address (line 1) | Dorr, Carson, Sloan & | Birney, P.C. | | |
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| | being filed together with a <u>new</u> Pate t named executing inventor. | nt Application, enter the date the patent applicati | on was <u>Month Day Year</u> | |
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| | r PCT application number if a U.S. Application Number | | | |
| has | not been assigned. | | | |
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| attache | | lief, the foregoing information is true a priginal document. Charges to deposit | J | |
| | Birney - 30,025 | Thomas & Burn | November 6, 1998 | |
| Name | of Person Signing | Signature | Date | |
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PATENT REEL: 9576 FRAME: 0573

ASSIGNMENT

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WHEREAS, Macro-Vision Communications, Inc., a Delaware corporation, whose address is 5490 Conestoga Court, Boulder, Colorado 80301 (the "Assignor") is the owner of record in the U.S. Patent Office of the following U.S. patent applications:

| Serial No. | Filing Date | Inventor | Title |
|---------------------|-------------|-----------|---|
| 09/020,706 | 02/09/98 | Wu et al. | Temperature Insensitive Polarization Filter |
| 09/ 037,937 | 03/10/98 | Wu et al. | N x M Optical Wavelength Routing Switch |
| 0 8/ 979,525 | 08/08/97 | Wu et al. | 1 x N Digitally Programmable Optical Routing Switch |
| 09/063,611 | 04/21/98 | Wu et al. | N x M Digitally Programmable Optical Routing Switch |
| 08/982,978 | 12/02/97 | Wu et al. | Switchable Wavelength Router |

WHEREAS, the Assignor is also the owner of the following international patent applications under the Patent Cooperation Treaty (PCT):

| Application No. | Filing Date | Inventor | Title |
|-----------------|-------------|-----------|--|
| PCT/US98/06089 | 01/05/98 | Wu et al. | Switchable Wavelength Router |
| PCT/US98/06982 | 04/07/98 | Wu et al. | N x M Optical Wavelength Routing Switch |
| PCT/US98/06312 | 03/30/98 | Wu et al. | 1 x M Digitally Programmable Optical Routing . Switch |

WHEREAS, Chorum Technologies Inc., a Delaware corporation, whose address is 1155 East Collins Boulevard, Suite 200, Richardson, Texas 75081 (the "Assignee"), is desirous of acquiring the entire right, title and interest in and to the aforesaid inventions and patent applications in the United States and in any and all foreign countries.

THEREFORE, in consideration of the sum of Ten Dollars (\$10.00) paid by the Assignee to the Assignor, and other good and valuable consideration, receipt whereof is hereby expressly acknowledged, the Assignor hereby sells, transfers and sets over to the Assignee, and its successors, legal representatives and assigns, the entire right, title and

interest in and to the aforesaid inventions and patent applications for the territory of the United States of America and for all foreign countries, and to all letters patent, divisions, continuations, continuations-in-part, substitutions, reissues, re-examinations and extensions to be obtained therefor, including the right to sue for past infringement.

The Assignor further agrees to cooperate with the Assignee in obtaining and sustaining any or all such letters patent, but at the expense of the Assignee. The Commissioner of Patents is hereby authorized and requested to issue the letters patent solely in accordance with this assignment, to the Assignee, its successors, legal representatives and assigns, as the assignee of the entire right, title and interest therein.

Further, the Assignor agrees to communicate to the Assignee, or its representatives, any facts known to the Assignor respecting the inventions, and testify in any legal proceedings, sign all lawful papers, execute all division, continuation, continuation-in-part, substitution, reissue, re-examinations and extension applications, execute all necessary assignment papers to cause any and all of said letters patent to be issued to the Assignee, make all rightful oaths and generally do everything necessary or desirable to aid the Assignee, its successors and assigns, to obtain and enforce proper protection for the inventions in the United States and in any and all foreign countries.

Macro-Vision Communications, Inc.

By: Jian - In him

Jian-Yu Liu, Vice President

PATENT REEL: 9576 FRAME: 0575 STATE OF COLORADO

COUNTY OF BOULDER

Before me, the undersigned authority, on this day personally appeared Jian-Yu Liu, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed, in the capacity therein stated.

Given under my hand and seal of office on this 24th day of June, 1998.

50 00 00

Public

14y commission expires October 9, 1999 2960 Diagonal Highway. Bouider, CO 80301

RECORDED: 11/06/1998