

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

## FORM 10-K

(Mark One)

- ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE  
SECURITIES EXCHANGE ACT OF 1934  
FOR THE FISCAL YEAR ENDED DECEMBER 31, 1997
- TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF  
THE SECURITIES EXCHANGE ACT OF 1934

Commission File No. 0-25826

HARMONIC LIGHTWAVES, INC.  
(Exact name of Registrant as specified in its charter)

DELAWARE  
(State of incorporation)

77-0201147  
(I.R.S. Employer Identification No.)

549 Baltic Way  
Sunnyvale, CA 94089  
(408) 542-2500  
(Address, including zip code, and  
telephone number, including area code, of  
Registrant's principal executive offices)  
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Securities registered pursuant to section 12(b) of the Act: None

Securities registered pursuant to section 12(g) of the Act: Common Stock, par value \$.001 per share

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes X No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. \_\_\_\_\_

Based on the closing sale price of the Common Stock on the NASDAQ National Market System on March 11, 1998, the aggregate market value of the voting stock held by non-affiliates of the Registrant was \$93,516,535. Shares of Common Stock held by each officer and director and by each person who owns 5% or more of the outstanding Common Stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

The number of shares outstanding of the Registrant's Common Stock, \$.001 par value, was 11,503,212 at March 11, 1998.

## DOCUMENTS INCORPORATED BY REFERENCE

Document

Location in Form 10-K

1997 Annual Report to Stockholders (pages 16 - 34).

Parts II and IV

Portions of the Proxy Statement for the 1998 Annual Meeting of Stockholders  
(which will be filed with the Securities and Exchange Commission within 120

The Board Compensation Committee Report and the Performance Graph to be included with the 1998 Proxy Statement shall not be deemed to be "soliciting material" or to be "filed" with the Commission or otherwise incorporated by reference into this report.

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## PART I

## ITEM 1. BUSINESS

Harmonic Lightwaves, Inc. ("Harmonic" or the "Company") designs, manufactures and markets digital and lightwave based communications systems that deliver video, audio and data over hybrid fiber/coax ("HFC"), satellite and wireless networks. The Company's advanced solutions enable cable television and other network operators to provide a range of broadcast and interactive broadband services that include high speed Internet access and video on demand. The Company offers a broad range of fiber optic transmission and digital headend products for HFC networks, and through its acquisition of N.M. New Media Communication Ltd. ("NMC") in January 1998 expanded its product offerings to include high speed data delivery software and hardware. Harmonic was incorporated in June 1988 in California and in May 1995 reincorporated into Delaware.

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Actual results could differ materially from those projected in the forward-looking statements as a result of a number of factors, including those set forth under "Factors That May Affect Future Results of Operations" and elsewhere in this Annual Report on Form 10-K.

## INDUSTRY BACKGROUND

Communications service providers worldwide are facing increasing competition as a result of recent and proposed regulatory reform. For example, the United States Telecommunications Act of 1996 (the "Telecom Act") permits cable television multiple system operators ("MSOs") and local exchange carriers such as the regional Bell operating companies ("RBOCs") to enter each other's markets and to provide other services, such as high-speed data communications. Historically, U.S. local exchange carriers have been prohibited from transmitting video programming in their local service areas. Likewise, MSOs have been prohibited by federal regulation from offering telephony services. In addition, the emergence of direct broadcast satellite ("DBS") systems and other alternative video programming delivery systems has subjected cable television operators to increasing competitive pressures. DBS systems broadcast compressed digital video over satellite to a receiving dish located at the subscriber's home and offer consumers up to 200 channels of video programming. The continued penetration of DBS is expected to put increasing pressure on cable television operators to provide additional programming and better quality service. In addition, telephone companies are introducing alternative technologies such as DSL ("Digital Subscriber Loop") which support the delivery of video programming and data services over their existing copper loop networks. To address this more competitive environment and to take advantage of new business opportunities, such as the provision of Internet access and high-speed data services, the Company believes that domestic cable television operators will be under

increasing pressure to upgrade and rebuild their networks.

Similar government initiatives and deregulation of telecommunications markets abroad have fostered substantial growth and competition in many foreign cable television markets. Because of the early stage of development of many foreign cable television markets and stringent system performance criteria established by foreign government regulations, the provision of cable television service in many foreign countries will require significant investment in advanced video transmission equipment. These trends are expected to contribute to the increased use of fiber optic transmission systems in the future.

Basic cable television service is currently available to approximately 90% of all U.S. households. Accordingly, growth in the U.S. cable television equipment market is being driven primarily by the need to upgrade and rebuild existing cable television networks to provide improved and expanded services. Internationally, significant investment in advanced network infrastructure will be required to bring cable television service to large segments of the population.

The introduction and deployment of fiber optic technology in cable television networks has significantly increased network capacity, quality and reliability. Fiber optic cables provide significant performance advantages compared to coaxial cables, including longer transmission distance, greater channel capacity, reduced cable size and weight, and resistance to interference from external electronic signals. By eliminating the need for amplifiers in the trunk section of a traditional coax network, fiber increases the reliability of a cable television network and the quality of the signal, while

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substantially lowering network installation and maintenance cost. The higher bandwidth of fiber can increase capacity to up to 110 analog channels on a typical HFC network and, together with the removal of amplifiers, facilitates the two-way communication necessary for the provision of advanced interactive services. As a result, HFC architectures are being increasingly adopted on a worldwide basis. In addition to upgrading network infrastructure with fiber optics, MSOs are beginning to introduce digital transmission capability. Digital compression technology, which will permit the system operator to provide new integrated voice, video and data services over HFC networks, is now becoming available. Transmissions in digital format are expected to allow operators to provide subscribers up to several hundred channels of high-quality television, as well as high-speed data communications, Internet access and telephony services.

The competitive pressures to upgrade cable television networks and the corresponding capital requirements have led to significant domestic cable television industry consolidation in recent years. The upgrade of existing networks requires substantial expenditures and the replacement of significant parts of the transmission network. As a result, MSOs have sought to increase their size in order both to achieve the economies of scale made possible by the ownership of adjacent systems ("clustering") and to improve their financial strength. This has been accomplished largely through acquisitions of smaller MSOs and independent cable television operators, many of which cannot afford significant system upgrades. A number of sizable acquisitions and system exchanges by MSOs have been completed during the past several years.

In addition to HFC networks and copper-based telephony networks, other delivery methods, such as satellites and LMDS (Local Multipoint Distribution System), a wireless-based technology, are expected to be utilized for the provision of video and high speed data services in many areas of the world. The first LMDS service operating in the United States offers both video and high speed data service to residents of Queens and Manhattan in New York. The F.C.C. has held recent auctions for licenses required for new LMDS service areas in the United States, and a number of LMDS systems are already in operation in several foreign countries.

Satellite service providers are now introducing data services in addition to multiple television channels. Although such satellite systems have relatively low penetration rates in the United States, operators in other countries are introducing satellite data services to meet the growing demand for connection to the Internet. New satellite systems employing low earth orbit ("LEO") satellites, which are being developed and implemented by a number of major international consortia, are expected to further increase the demand for integrated communications services, including high speed data.

In contrast to the past when consumers were generally limited to a single choice for video service and a single choice for local telephone service, consumers are expected to be able to choose between two or more providers of highly integrated services in the future. The factors affecting the selection of services in the future are expected to include network reliability, price, the number of television channels offered, the speed of data transmission, ease of access, interactivity, and picture, sound and data quality.

N.M. NEW MEDIA COMMUNICATION LTD. ("NMC")

NMC develops systems for the delivery of high-speed data over broadband networks. The products, which have only recently been introduced, include transmitters, data encoders and network management software for the system headend and PCI-based broadband receiver cards for the subscriber.

Initial customers of NMC include operators of satellite, cable television and LMDS networks. These customers are deploying NMC products for the delivery of high-speed data services to residential and business customers. NMC sells its products through its own sales force and a distribution network, including the Company's direct sales force and its distributors. The Company anticipates that a significant portion of NMC's future revenues will be generated in international markets. In the cable television market, NMC's competitors include many of the Company's existing competitors as well as certain large consumer electronics and data networking companies and smaller companies such as Hybrid Networks, Com21 and a number of private companies. In the satellite market, NMC's competitors include Adaptec Inc., Groupe SAGEM and Media4, Inc.

NMC's hardware products are manufactured by Rockwell Semiconductor Systems in the U.S. Certain of its products have been developed in collaboration with IBM Israel, although it is anticipated that in the future NMC will undertake a greater proportion of its development projects internally. NMC is based in Tel Aviv, Israel, operates a sales and technical support office in San Diego and had 16 employees at December 31, 1997. NMC's revenues have not been material in relation to those of the Company, and it incurred a net loss of \$2.6 million in 1997.

## PRODUCTS

Harmonic develops, manufactures and markets highly integrated fiber optic transmission, digital headend and element management systems for delivering interactive services over broadband networks. The Company has applied its technical strengths in optics and electronics, including expertise with lasers, modulators, predistortion linearizers and compression technology, to produce products which provide enhanced network reliability and allow broadband service providers to deliver advanced services, including two-way interactive services. The Company's products incorporate control systems employing internally developed embedded firmware and software to facilitate a high degree of system integration. The "plug and play" design philosophy and communication structure employed in the Company's products enhance ease of installation.

### Optical Transmitters

The Company offers PWRLink transmitters, and MAXLink transmitters and optical amplifiers for a wide range of optical transmission requirements.

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PWRLink Transmitters. The PWRLink series of optical transmitters incorporates DFB semiconductor lasers and provides optical transmission primarily for use at a headend for local distribution to optical nodes and for narrowcasting (the transmission of programming to select subscribers within one system).

MAXLink Transmitters and Optical Amplifiers. The MAXLink transmitters and optical amplifiers operate at a wavelength of 1550nm and serve long-haul applications and fiber dense architectures that are beyond the capability of 1310nm transmitters. This system is suited to evolving cable networks employing such features as redundant rings, broadcast layer transmission and hub interconnects.

### Optical Node Receivers

The Company's optical node receivers convert optical signals received from the

transmitters into RF signals for transmission to the home via coaxial cable. Harmonic's receivers cause low levels of distortion, which maintain the high performance levels provided by the Company's optical transmitters. The receivers are installed in rack mount or strand mount housings, each of which can accommodate return path transmitters and transponders in addition to the optical node receiver.

#### Return Path and Element Management Products

The Company offers a number of return path transmitters, return path receivers and element management hardware and software to provide two way transmission capability to enable the network operator to monitor and control the entire transmission network.

Return Path Transmitters. The Company's return path transmitters send video, voice and data signals from the optical node to the headend. Signals originating at the home can be sent via the coaxial cable to the optical node and then transmitted in optical form to the headend by the return path transmitter.

Return Path Receivers. Harmonic's return path receivers operate at the headend to receive return path optical transmission from the return path transmitters.

Element Management System ("EMS"). Harmonic's EMS consists of transponders and element management software. The transponders operate in broadband networks to capture measurement data. Harmonic's Windows-based EMS software enables the broadband service operator to monitor and control the entire HFC network from a central office or remote locations. The Company's EMS software is designed to be integrated into larger network management systems through the use of simple network management protocol ("SNMP").

#### Digital Headend Products

The Company offers products for the headend for encoding, compression and modulation of digital signals over broadband networks.

Encoders. The Company's encoders convert analog video and audio signals to compressed digital format fully compliant with the MPEG-2 standard.

Modulators. Harmonic's modulators accept digital signals for modulation on to a radio frequency ("RF") carrier for transmission over a broadband network.

Initial shipments of these products for headend applications were made in the fourth quarter of 1997. There can be no assurance that continued development of these and other digital products will be completed in a timely manner, if at all, that they will be successfully manufactured in volume, or that they will achieve market acceptance. See "Factors That May Affect Future Results of Operations - Rapid Technological Change."

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In 1997, 1996 and 1995, sales of optical transmitters accounted for approximately 63%, 71%, and 63%, respectively, of net sales. In 1997, 1996 and 1995, sales of optical node receivers accounted for approximately 11%, 8%, and 12%, respectively, of net sales.

#### SALES AND MARKETING

Harmonic markets its products worldwide through its own direct sales force as well as through system integrators and distributors. The Company's direct sales force supports domestic and international sales and operates from the Company's headquarters in Sunnyvale, California and from several sales offices. Harmonic has adopted a strategy to sell to major domestic customers through its own direct sales force and OEM and distributor revenues were a smaller percentage of net sales in 1997 than they have been in prior years.

Historically, the majority of Harmonic's sales have been to relatively few customers, and Harmonic expects this customer concentration to continue in the foreseeable future, notwithstanding the Company's strategy to sell to domestic customers through its own direct sales force. In 1997, sales to Capella (the

Company's Canadian distributor) accounted for 17% of net sales. In 1996, sales to Tratec (the Company's former U.K. distributor), Capella, and ANTEC Corporation ("Antec") accounted for 15%, 15%, and 13%, respectively, of net sales. In 1995, sales to Tratec, ANTEC and Capella accounted for 22%, 15% and 15%, respectively, of net sales. No other customer accounted for more than 10% of the Company's net sales in 1997, 1996 or 1995. Harmonic's products have been purchased by each of the ten largest domestic MSOs and by a number of large cable television operators outside the United States. These end users include Time-Warner, Inc., Cox Communications, Inc., and TeleCommunications, Inc. ("TCI"), in the U.S., Rogers Communications in Canada, CableTel and TeleWest in the U.K., Wharf Cable in Hong Kong and a major provincial telecommunications company in China. The loss of a significant customer or any reduction in orders by any significant customer, or the failure of the Company to qualify its products with a significant MSO could adversely affect the Company's business and operating results.

Sales to customers outside of the United States in 1997, 1996 and 1995 represented approximately 59%, 57% and 65% of net sales, respectively. Harmonic expects international sales to continue to account for a substantial portion of its net sales for the foreseeable future. International sales are made primarily to distributors, which are generally responsible for importing the products, installation and technical support and service to cable television operators within their territory. International sales are subject to a number of risks, including changes in foreign government regulations and telecommunications standards, export license requirements, tariffs and taxes, other trade barriers, fluctuations in foreign currency exchange rates, difficulty in collecting accounts receivable, difficulty in staffing and managing foreign operations, managing distributor relations and political and economic instability. In recent months, certain Asian currencies have devalued significantly in relation to the U.S. dollar. The Company is currently evaluating the effect of recent developments in Asia on the Company's business, and there can be no assurance that the Company's sales in Asia will not be materially adversely affected by such developments. There can be no assurance that international markets will continue to develop or that the Company will receive future orders to supply its products in international markets at rates equal to or greater than those experienced in recent periods.

#### MANUFACTURING AND SUPPLIERS

The Company's manufacturing processes consist primarily of integration and final assembly and test, performed by highly trained personnel employing technologically advanced electronic equipment and proprietary test programs. The manufacturing of the Company's products and subassemblies is a complex process and there can be no assurance that the Company will not experience production problems or manufacturing delays in the future. Because the Company utilizes its own manufacturing facility for this production, and because such manufacturing capabilities are not readily available from third parties, any interruption in operations could have a material adverse effect on the Company's business and operating results.

The Company uses third party contract manufacturers to assemble certain standard parts for its products, including such items as printed circuit boards, metal frames and power supplies. The Company intends to subcontract an increasing

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number of tasks to third parties in the future. The Company's increasing reliance on subcontractors involves several risks, including a potential inability to obtain an adequate supply of components on a timely basis.

Certain components and subassemblies necessary for the manufacture of the Company's products are obtained from a sole supplier or a limited group of suppliers. In particular, the Company relies on Fujitsu as a major source of DFB lasers for its PWRLink and return path transmitters, for which there are limited alternative suppliers. In addition, the optical modulators used in the Company's MAXLink products are currently available only from Uniphase Corporation. Although the Company has qualified alternative suppliers for its lasers, in the event that the supply of optical modulators or lasers is interrupted for any reason, products from alternative suppliers are unlikely to be immediately available in sufficient volume to meet the Company's production needs. Further, certain key elements of the Company's digital headend products are being provided by a sole foreign supplier. The reliance on sole or limited suppliers, particularly foreign suppliers, involves several risks, including a potential

inability to obtain an adequate supply of required components or subassemblies and reduced control over pricing, quality and timely delivery of components. Although the Company attempts to minimize its supply risks by holding safety stocks and continuously evaluating other sources, any interruption in supply could have a material adverse effect on the Company's business and operating results. The Company does not maintain long-term agreements with any of its suppliers. While the Company has historically been able to obtain adequate supplies of components in a timely manner from its principal suppliers, there can be no assurance that the Company will be able to obtain such adequate supplies in the future. Because the purchase of certain key components involves long lead times, in the event of unanticipated increases in demand for the Company's products, the Company could be unable to manufacture certain products in a quantity sufficient to meet its customers' demand. Any inability to obtain adequate deliveries of key components could affect the Company's ability to ship its products on a timely basis, which could damage relationships with its current and prospective customers and could have a material adverse effect on the Company's business and operating results.

#### INTELLECTUAL PROPERTY

The Company currently holds 11 United States patents and 9 foreign patents, and has a number of patent applications pending. Although the Company attempts to protect its intellectual property rights through patents, trademarks, copyrights, maintaining certain technology as trade secrets and other measures, there can be no assurance that any patent, trademark, copyright or other intellectual property right owned by the Company will not be invalidated, circumvented or challenged, that such intellectual property right will provide competitive advantages to the Company or that any of the Company's pending or future patent applications will be issued with the scope of the claims sought by the Company, if at all. There can be no assurance that others will not develop technologies that are similar or superior to the Company's technology, duplicate the Company's technology or design around the patents owned by the Company. In addition, effective patent, copyright and trade secret protection may be unavailable or limited in certain foreign countries in which the Company does business or intends to do business in the future.

The Company believes that the future success of its business will depend on its ability to translate the technological expertise and innovation of its personnel into new and enhanced products. The Company generally enters into confidentiality or license agreements with its employees, consultants, vendors and customers as needed, and generally limits access to and distribution of its proprietary information. Nevertheless, there can be no assurance that the steps taken by the Company will prevent misappropriation of its technology. In addition, the Company has taken in the past, and may take in the future, legal action to enforce the Company's patents and other intellectual property rights, to protect the Company's trade secrets, to determine the validity and scope of the proprietary rights of others, or to defend against claims of infringement or invalidity. Such litigation could result in substantial costs and diversion of resources and could have a material adverse effect on the Company's business and operating results.

In order to successfully develop and market its planned products for digital headend applications, the Company may be required to enter into technology development or licensing agreements with third parties. Although many companies are often willing to enter into such technology development or licensing agreements, there can be no assurance that such agreements will be negotiated on terms acceptable to the Company, or at all. The failure to enter into technology development or licensing agreements, when necessary, could limit the Company's ability to develop and market new products and could have a material adverse effect on the Company's business and operating results.

As is common in its industry, the Company has from time to time received notification from other companies of intellectual property rights held by those companies upon which the Company's products may infringe. Any claim or litigation, with or without merit, could be costly, time consuming and could result in a diversion of management's attention, which could have a material adverse effect on the Company's business operating results and financial condition. If the Company were found to be infringing on the intellectual property rights of any third party, the Company could be subject to liabilities for such infringement, which could be material, and could be required to seek licenses from other companies or to refrain from using, manufacturing or selling

certain products or using certain processes. Although holders of patents and other intellectual property rights often offer licenses to their patent or other intellectual property rights, no assurance can be given that licenses would be offered, that the terms of any offered license would be acceptable to the Company or that failure to obtain a license would not adversely affect the Company's operating results.

#### BACKLOG

The Company schedules production of its systems based upon its backlog, informal commitments from customers and sales projections. The Company's backlog consists of firm purchase orders by customers for delivery within the next twelve months. At December 31, 1997, order backlog amounted to \$5.5 million, compared to \$9.8 million at December 31, 1996. Anticipated orders from customers may fail to materialize and delivery schedules may be deferred or canceled for a number of reasons, including reductions in capital spending by cable television operators or changes in specific customer requirements. In addition, due to weather-related seasonal factors and annual capital spending budget cycles at many of its major end-users, the Company's backlog at December 31, 1997 or any other date, is not necessarily indicative of actual sales for any succeeding period.

In October 1996, the Company and several other equipment vendors received a letter from TCI asking them to stop product shipments until further notice. The Company has excluded from its December 31, 1997 and 1996 backlog all orders from TCI other than those for which firm shipment dates and instructions had been provided by TCI.

#### COMPETITION

The market for cable television transmission equipment is extremely competitive and is characterized by rapid technological change. The principal competitive factors in this market include product performance, reliability, price, breadth of product line, network management capabilities, sales and distribution capability, technical support and service, relationships with cable television operators and general industry and economic conditions. Certain of these factors are outside of the Company's control.

The Company's competitors for its fiber optic transmission products include established suppliers of cable television and telecommunications equipment such as ADC Telecommunications, ANTEC, Lucent Technologies, General Instrument, Philips and Scientific-Atlanta, as well as a number of smaller, more specialized companies. For digital headend products, the Company's competitors include many of the same competitors as in headend fiber optic transmission products, and a number of new competitors. Most of the Company's competitors are substantially larger and have greater financial, technical, marketing and other resources than the Company. Many of such large competitors are in a better position to withstand any significant reduction in capital spending by cable television operators and other broadband service providers. In addition, many of the Company's competitors have more long standing and established relationships with domestic and foreign MSOs than does the Company.

#### RESEARCH AND DEVELOPMENT

The Company has historically devoted a significant amount of its resources to research and development. Research and development expenses in 1997, 1996 and 1995 were \$11.7 million, \$9.2 million, and \$6.1 million, respectively. The Company expects that research and development expenses will continue to increase in the future.

Any success of the Company in designing, developing, manufacturing and selling new and/or enhanced products will depend on a variety of factors, including the identification of market demand for new products, product selection, timely implementation of product design and development, product performance and effective manufacturing and assembly processes and sales and marketing. Because of the complexity inherent in such research and development efforts, there can be no assurance that the Company will successfully develop new products, or that new products developed by the Company will achieve market acceptance. Any failure of the Company to successfully develop and introduce new products could



have a material adverse effect on the Company's business and operating results.

#### FACTORS THAT MAY AFFECT FUTURE RESULTS OF OPERATIONS

##### Potential Fluctuations in Future Operating Results

The Company's operating results have fluctuated and are likely to continue to fluctuate in the future, on an annual and a quarterly basis, as a result of a number of factors, many of which are outside of the Company's control. Such factors include the level of capital spending in the cable television industry, changes in the regulatory environment, changes in market demand, the timing of customer orders, competitive market conditions, lengthy sales cycles, new product introductions by the Company and its competitors, market acceptance of new or existing products, the cost and availability of components, the mix of the Company's customer base and sales channels, the mix of products sold, development of custom products, the level of international sales and general economic conditions. In addition, in each quarter of 1997 the Company recognized a substantial portion of its revenues in the last month of the quarter. The Company establishes its expenditure levels for product development and other operating expenses based on projected sales levels, and expenses are relatively fixed in the short term. Accordingly, variations in timing of sales can cause significant fluctuations in operating results. In addition, because a significant portion of the Company's business is derived from orders placed by a limited number of large customers, the timing of such orders can also cause significant fluctuations in the Company's operating results. If sales are below expectations in any given quarter, the adverse impact of the shortfall on the Company's operating results may be magnified by the Company's inability to adjust spending to compensate for the shortfall.

##### Dependence on Cable Television Industry Capital Spending

To date, substantially all of the Company's sales have been derived, directly or indirectly, from sales to cable television operators. Demand for the Company's products depends to a significant extent upon the magnitude and timing of capital spending by cable television operators for constructing, rebuilding or upgrading their systems. The capital spending patterns of cable television operators are dependent on a variety of factors, including access to financing, cable television operators' annual budget cycles, the status of federal, local and foreign government regulation of telecommunications and television broadcasting, overall demand for cable television services, competitive pressures (including the availability of alternative video delivery technologies such as satellite broadcasting), discretionary customer spending patterns and general economic conditions. The Company believes that the consolidation of ownership of domestic cable television systems, by acquisition and system exchanges, together with uncertainty over regulatory issues, particularly the debate over the provisions of the Telecommunications Act of 1996, caused delays in capital spending by major domestic MSOs during the second half of 1995 and first quarter of 1996. Also, the Company's net sales in the second half of 1997 were adversely affected by a slow-down in spending by cable television operators. The factors contributing to this slow capital spending include consolidation and system exchanges by domestic cable customers, which generally has had the effect of delaying certain system upgrades, uncertainty related to development of industry standards for digital transmission, evaluation by many cable customers of which advanced services and system architectures to provide and use, and emphasis on marketing and customer service strategies by certain international customers rather than continued construction of networks. The Company is unable to predict when cable television industry capital spending will increase. In addition, cable television capital spending can be subject to the effects of seasonality, with fewer construction and upgrade projects typically occurring in winter months and otherwise being affected by inclement weather.

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##### Dependence on Key Customers and End Users

Historically, a majority of the Company's sales have been to relatively few customers. Sales to the Company's ten largest customers in 1997, 1996 and 1995 accounted for approximately 56%, 72% and 80%, respectively, of its net sales. Due in part to the consolidation of ownership of domestic cable television systems, the Company expects that sales to relatively few customers will continue to account for a significant percentage of net sales for the foreseeable future. Harmonic has adopted a strategy to sell to major domestic

customers through its own direct sales force and domestic OEM and distributor revenues were a smaller percentage of net sales in 1997 than they have been in prior years. Substantially all of the Company's sales are made on a purchase order basis, and none of the Company's customers has entered into a long-term agreement requiring it to purchase the Company's products. The loss of, or any reduction in orders from, a significant customer would have a material adverse effect on the Company's business and operating results.

#### Highly Competitive Industry

The market for cable television transmission equipment is extremely competitive and has been characterized by rapid technological change. Most of the Company's competitors are substantially larger and have greater financial, technical, marketing and other resources than the Company. Many of such large competitors are in a better position to withstand any significant reduction in capital spending by cable television operators. In addition, many of the Company's competitors have more long standing and established relationships with domestic and foreign cable television operators than does the Company. There can be no assurance that the Company will be able to compete successfully in the future or that competition will not have a material adverse effect on the Company's business and operating results.

#### Rapid Technological Change

The market for the Company's products is relatively new, making it difficult to accurately predict the market's future growth rate, size and technological direction. In view of the evolving nature of this market, there can be no assurance that cable television operators, telephone companies or other suppliers of broadband services will not decide to adopt alternative architectures or technologies that are incompatible with the Company's products, which would have a material adverse effect on the Company's business and operating results.

The broadband communications markets are characterized by continuing technological advancement. To compete successfully, the Company must design, develop, manufacture and sell new products that provide increasingly higher levels of performance and reliability. As new markets for broadband communications equipment continue to develop, the Company must successfully develop new products for these markets in order to remain competitive. For example, to compete successfully in the future, the Company believes that it must successfully develop and introduce products that will facilitate the processing and transmission of digital signals over optical networks. While the Company has commenced shipment of products for digital applications, there can be no assurance that the Company will successfully complete development of, or successfully introduce, products for digital applications, or that such products will achieve commercial acceptance. In addition, in order to successfully develop and market its planned products for digital applications, the Company may be required to enter into technology development or licensing agreements with third parties. Although many companies are often willing to enter into such technology development or licensing agreements, there can be no assurance that such agreements will be negotiated on terms acceptable to the Company, or at all. The failure to enter into technology development or licensing agreements, when necessary, could limit the Company's ability to develop and market new products and could have a material adverse effect on the Company's business and operating results.

The failure of the Company to successfully develop and introduce new products that address the changing needs of the broadband communications market could have a material adverse effect on the Company's business and operating results. In addition, there can be no assurance that the successful introduction by the Company of new products will not have an adverse effect on the sales of the Company's existing products. For instance, an emerging trend in the domestic market toward narrowcasting (targeted delivery of advanced services to small groups of subscribers) is causing changes in the network architectures of some cable operators. This may have the effect of changing the Company's product mix toward lower price transmitters, which could adversely affect the Company's gross margins.

other resources. Through its acquisition of NMC in January 1998, the Company increased the scope of its product line to include broadband, high-speed data delivery software and hardware and increased the scope of its international operations in Israel. The acquisition of NMC involves numerous risks and challenges, including: difficulties in the assimilation of operations, research and development efforts, products, personnel and cultures of Harmonic and NMC; the potential adverse effects of the acquisition on relationships with customers, distributors, suppliers and other business partners of the two companies; the dependence on the evolution and growth of the market for wireless and satellite broadband services; regulatory developments; rapid technological change; the highly competitive nature of the telecommunications industry; the Company's ability to successfully develop, manufacture and gain market acceptance of the products of NMC; the ability to manage geographically remote units; the integration of NMC's management information systems with those of the Company; potential adverse short-term effects on the Company's operating results; the amortization of acquired intangible assets; the risk of entering emerging markets in which the Company has limited or no direct experience; and the potential loss of key employees of NMC. The Company's future operating results will be significantly affected by its ability to successfully integrate NMC, to implement operating, manufacturing and financial procedures and controls, to improve coordination among different operating functions, to strengthen management information and telecommunications systems and to continue to attract, train and motivate additional qualified personnel in all areas. There can be no assurance that the Company will be able to manage these activities and implement these additional systems and controls successfully, and any failure to do so could have a materially adverse effect upon the Company's operating results. The Company expects that the inclusion of NMC's operations, combined with seasonally low sales to both domestic and international cable customers, will result in an operating loss for the Company in the first quarter of 1998. In addition, the acquisition of NMC has resulted in significant additional working capital requirements. While the Company believes that it currently has sufficient funds to finance its operations for at least the next twelve months, to the extent that such funds are insufficient to fund the Company's activities, including any potential acquisitions, the Company may need to raise additional funds through public or private equity or debt financing from other sources. The sale of additional equity or convertible debt may result in additional dilution to the Company's stockholders and such securities may have rights, preferences or privileges senior to those of the Common Stock. There can be no assurance that additional equity or debt financing will be available or that if available it can be obtained on terms favorable to the Company or its stockholders.

#### Sole or Limited Sources of Supply

Certain components and subassemblies necessary for the manufacture of the Company's products are obtained from a sole supplier or a limited group of suppliers. The reliance on sole or limited suppliers and the Company's increasing reliance on subcontractors involve several risks, including a potential inability to obtain an adequate supply of required components or subassemblies and reduced control over pricing, quality and timely delivery of components or subassemblies. The Company does not maintain long-term agreements with any of its suppliers or subcontractors. An inability to obtain adequate deliveries or any other circumstance that would require the Company to seek alternative sources of supply could affect the Company's ability to ship its products on a timely basis, which could damage relationships with current and prospective customers and could have a material adverse effect on the Company's business and operating results. The Company believes that investment in inventories will continue to constitute a significant portion of its working capital in the future. As a result of such investment in inventories, the Company may be subject to an increasing risk of inventory obsolescence in the future, which could materially and adversely affect its business and operating results.

#### Risks of International Operations

Sales to customers outside of the United States in 1997, 1996 and 1995 represented 59%, 57% and 65% of net sales, respectively, and the Company expects that international sales will continue to represent a substantial portion of its net sales for the foreseeable future. In addition, the Company has two Israeli subsidiaries, NMC and a subsidiary that engages primarily in research and development. International operations are subject to a number of risks, including changes in foreign government regulations and telecommunications standards, export license requirements, tariffs and

taxes, other trade barriers, fluctuations in currency exchange rates, difficulty in collecting accounts receivable, difficulty in staffing and managing foreign operations and political and economic instability. While international sales are typically denominated in U.S. dollars, fluctuations in currency exchange rates could cause the Company's products to become relatively more expensive to customers in a particular country, leading to a reduction in sales or profitability in that country. Payment cycles for international customers are typically longer than those for customers in the United States. There can be no assurance that foreign markets will continue to develop or that the Company will receive additional orders to supply its products for use in foreign broadband systems. In recent months, certain Asian currencies have devalued significantly in relation to the U.S. dollar. The Company is currently evaluating the effect of recent developments in Asia on the Company's business, and there can be no assurance that the Company's sales in Asia will not be materially adversely affected by such developments.

#### Risks of Information Systems

The Company has commenced, for all its information systems, a Year 2000 date conversion project to address all necessary changes to be Year 2000 compliant. The Company is expensing the costs of addressing the "Year 2000 issue" as incurred. The Company does not expect that Year 2000 issues from its own information systems will have a material adverse impact on its financial position or results of operations. However, the Company could be adversely impacted by Year 2000 issues faced by major customers and suppliers and other organizations with which the Company interacts. The Company is in the process of determining the impact that third parties who are not Year 2000 compliant may have on the operations of the Company.

#### EMPLOYEES

As of December 31, 1997, the Company employed a total of 253 people, including 95 in manufacturing operations, 75 in research and development, 54 in sales and marketing and 29 in a general and administrative capacity. The Company also employs a number of temporary employees and consultants on a contract basis. None of the Company's employees is represented by a labor union with respect to his or her employment by the Company. The Company has not experienced any work stoppages and considers its relations with its employees to be good. The Company's future success will depend, in part, upon its ability to attract and retain qualified personnel. Competition for qualified personnel in the communications industry and in the Company's immediate geographic area is intense, and there can be no assurance that the Company will be successful in retaining its key employees or that it will be able to attract skilled personnel as the Company grows.

#### EXECUTIVE OFFICERS OF THE REGISTRANT

The following table sets forth certain information regarding the executive officers of the Company and their ages as of March 1, 1998:

NAME ----	AGE ---	POSITION -----
Anthony J. Ley	59	Chairman of the Board of Directors, President and Chief Executive Officer
Moshe Nazarathy	46	Senior Vice President, General Manager of Israel R&D Center, and Director
Robin N. Dickson	50	Chief Financial Officer
Michael Yost	54	Vice President, Operations
John E. Dahlquist	51	Vice President, Marketing

Anthony J. Ley has served as the Company's President and Chief Executive Officer since November 1988. Mr. Ley was elected Chairman of the Board of Directors in February 1995. From 1963 to 1987, Mr. Ley was employed at Schlumberger, both in Europe and the United States, holding various senior business management and research and development positions, most recently as Vice President, Research and Engineering at Fairchild Semiconductor/Schlumberger in Palo Alto,

California. Mr. Ley holds an M.A. in mechanical sciences from the

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University of Cambridge and an S.M.E.E. from the Massachusetts Institute of Technology, is named as an inventor on 29 patents and is a Fellow of the I.E.E. (U.K.) and a senior member of the I.E.E.E.

Moshe Nazarathy, a founder of the Company, has served as Senior Vice President, General Manager of Israel R&D Center, since December 1993, as a director of the Company since the Company's inception and as Vice President, Research, from the Company's inception through December 1993. From 1985 to 1988, Dr. Nazarathy was employed in the Photonics and Instruments Laboratory of Hewlett-Packard Company, most recently serving as Principal Scientist from 1987 to 1988. From 1982 to 1984, Dr. Nazarathy held post-doctoral and adjunct professor positions at Stanford University. Dr. Nazarathy holds a B.S. and a Ph.D. in electrical engineering from Technion-Israel Institute of Technology and is named as an inventor on twelve patents.

Robin N. Dickson joined the Company in April 1992 as Chief Financial Officer. From 1989 to March 1992, Mr. Dickson was corporate controller of Vitelic Corporation, a semiconductor manufacturer. From 1976 to 1989, Mr. Dickson held various positions at Raychem Corporation, a materials science company, including regional financial officer of the Asia-Pacific Division of the International Group. Prior to joining Raychem Corporation, Mr. Dickson worked with the accounting firm of Deloitte, Haskins & Sells in Brussels, Belgium. Mr. Dickson holds a Bachelor of Laws from the University of Edinburgh and is a member of the Institute of Chartered Accountants of Scotland.

Michael Yost joined the Company in September 1991 as Vice President, Operations. From 1983 until December 1990, Mr. Yost was employed at Vitalink Communications, a satellite communications systems manufacturer, holding various senior management positions, most recently as Vice President, Operations. Mr. Yost holds a B.S. in management from San Jose State University.

John E. Dahlquist joined the Company in November 1993 as Vice President Marketing. From September 1990 to October 1993, Mr. Dahlquist served as Vice President, Marketing at Philips Broadband Networks, Inc. From 1967 to August 1990, Mr. Dahlquist was employed at the Jerrold Division of General Instrument Corporation, where he held various engineering and marketing management positions, including Director International Business Programs from 1989 to 1990 and Director of European Cable Operations, U.K. from 1984 to 1989. Mr. Dahlquist holds a B.S.E.E. and an M.B.A. from Drexel University.

## ITEM 2. PROPERTIES

The Company's principal operations are located at its corporate headquarters in Sunnyvale, California. The lease on its headquarters building, of approximately 110,000 square feet, expires in July 2006. The Company has subleased approximately 25,000 square feet of its headquarters through July 1998. The Company also has several sales offices in the United States, a sales and support center in the United Kingdom and two subsidiaries, N.M. New Media Communication Ltd., and a research and development facility in Israel. The Company believes that its existing facilities will be adequate to meet its needs in the foreseeable future.

## ITEM 3. LEGAL PROCEEDINGS

There are no material pending legal proceedings to which the Company is a party or to which any of its properties is subject.

## ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

None.

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ITEM 5. MARKET FOR THE REGISTRANT'S COMMON STOCK AND RELATED SECURITY HOLDER MATTERS

The information required by this Item is set forth on page 16 of the 1997 Annual Report to Stockholders under the caption "Selected Financial Data" and is incorporated herein by reference. At December 31, 1997, there were 171 holders of record of the Company's Common Stock.

ITEM 6. SELECTED FINANCIAL DATA

A summary of selected financial data for the Company for each of the last five fiscal years appears on page 16 of the 1997 Annual Report to Stockholders under the caption "Selected Financial Data" and is incorporated herein by reference.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

"Management's Discussion and Analysis of Financial Condition and Results of Operations" appears on pages 17 - 22 of the 1997 Annual Report to Stockholders and is incorporated herein by reference.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The information required by this Item is incorporated herein by reference to pages 23 - 34 of the 1997 Annual Report to Stockholders filed as Exhibit 13.1 to this Annual Report on Form 10-K. Selected quarterly financial data for the Company appear on page 16 of the 1997 Annual Report to Stockholders under the caption "Selected Financial Data" and are incorporated herein by reference.

ITEM 9. CHANGES IN AND DISAGREEMENTS ON ACCOUNTING AND FINANCIAL DISCLOSURES

Not applicable.

PART III

Certain information required by Part III is omitted from this Report on Form 10-K in that the Registrant will file its definitive Proxy Statement for its Annual Meeting of Stockholders to be held on April 29, 1998, pursuant to Regulation 14A of the Securities Exchange Act of 1934, as amended (the "1998 Proxy Statement"), not later than 120 days after the end of the fiscal year covered by this Report, and certain information included in the Proxy Statement is incorporated herein by reference.

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

- (a) Executive Officers - See the section entitled "Executive Officers" in Part I, Item 1 hereof.
- (b) Directors - The information required by this Item is incorporated by reference to the section entitled "Election of Directors" in the 1998 Proxy Statement.

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ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item is included in the 1998 Proxy Statement under the caption "Executive Compensation" and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

Information related to security ownership of certain beneficial owners and security ownership of management is set forth in the 1998 Proxy Statement under the caption "Security Ownership of Certain Beneficial Owners and Management" and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND TRANSACTIONS

Not applicable.

PART IV

ITEM 14. EXHIBITS, FINANCIAL STATEMENT SCHEDULES AND REPORTS ON FORM 8-K

(a) (1) Financial Statements

The following consolidated financial statements of the Company and subsidiaries and Report of Independent Accountants are included in the 1997 Annual Report to Stockholders filed herewith as Exhibit 13.1 and are incorporated herein by reference:

	1997 Annual Report Page -----
Consolidated Balance Sheets as at December 31, 1997, and 1996	23
Consolidated Statement of Operations for the years ended, December 31, 1997, 1996 and 1995	24
Consolidated Statement of Stockholders' Equity (Deficit) for the years ended December 31, 1997, 1996, and 1995	25
Consolidated Statement of Cash Flows for the years ended December 31, 1997, 1996, and 1995	26
Notes to Consolidated Financial Statements	27 - 34
Report of Independent Accountants	34

(a) (2) Financial Statement Schedules

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Schedules have been omitted because they are inapplicable, because the required information has been included in the financial statements or notes thereto, or the amounts are immaterial.

(a) (3) Exhibits

The documents listed on the Exhibit Index appearing at page 18 of this Report are filed herewith. The 1997 Annual Report to Stockholders and 1998 Proxy Statement shall be deemed to have been "filed" with the Securities and Exchange Commission only to the extent portions thereof are expressly incorporated herein by reference. Copies of the exhibits listed in the Exhibit Index will be furnished, upon request, to holders or beneficial owners of the Company's Common Stock.

(b) Reports on Form 8-K

A report on Form 8-K was filed on September 16, 1997. As reported in such report, the Registrant, N.M. New Media Communication Ltd., a corporation organized under the laws of Israel ("NMC"), and each shareholder of NMC (collectively, the "Sellers"), entered into a Stock Purchase Agreement (the "Purchase Agreement"), whereby, among other things, the Sellers agreed to sell, and the

Registrant agreed to purchase, all of the issued outstanding securities of NMC (the "Acquisition") and NMC was to become a wholly-owned subsidiary of the Registrant.

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SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant, Harmonic Lightwaves, Inc., a Delaware corporation, has duly caused this Report on Form 10-K to be signed on its behalf by the undersigned, hereunto duly authorized, in the City of Sunnyvale, State of California, on March 27, 1998.

HARMONIC LIGHTWAVES, INC.

By: /s/Anthony J. Ley

-----  
Anthony J. Ley, Chairman of the Board,  
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENT, that each person whose signature appears below constitutes and appoints Anthony J. Ley and Robin N. Dickson, jointly and severally, his attorneys-in-fact, each with the power of substitution, for him in any and all capacities, to sign any amendments to this Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorney-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities and Exchange Act of 1934, this registration statement has been signed by the following persons in the capacities and on the date indicated.

SIGNATURE -----	TITLE -----	DATE ----
/s/Anthony J. Ley ----- (Anthony J. Ley)	Chairman of the Board, President and Chief Executive Officer (Principal Executive Officer)	March 27, 1998
/s/Robin N. Dickson ----- (Robin N. Dickson)	Chief Financial Officer (Principal Financial and Accounting Officer)	March 27, 1998
/s/Barry Lemieux ----- (Barry Lemieux)	Director	March 27, 1998
/s/E. Floyd Kvamme ----- (E. Floyd Kvamme)	Director	March 27, 1998
/s/David A. Lane ----- (David A. Lane)	Director	March 27, 1998
/s/Moshe Nazarathy ----- (Moshe Nazarathy)	Director	March 27, 1998
/s/Michel L. Vaillaud ----- (Michel L. Vaillaud)	Director	March 27, 1998

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EXHIBIT INDEX

The following Exhibits to this report are filed herewith, or if marked with a (i), (ii), (iii), (iv), (v), (vi), or a (vii) are incorporated herein by reference.



Exhibit Number		Description
- - - - -		- - - - -
3.1	(i)	Certificate of Incorporation of Registrant
3.2	(i)	Form of Restated Certificate of Incorporation of Registrant
3.3	(i)	Bylaws of Registrant
4.1	(i)	Form of Common Stock Certificate
10.1	(i)+	Form of Indemnification Agreement
10.2	(i)+	1988 Stock Option Plan and form of Stock Option Agreement
10.3	(i)+	1995 Stock Plan and form of Stock Option Agreement
10.4	(i)+	1995 Employee Stock Purchase Plan and form of Subscription Agreement
10.5	(i)+	1995 Director Option Plan and form of Director Option Agreement
10.6	(i)	Registration and Participation Rights and Modification Agreement dated as of July 22, 1994 among Registrant and certain holders of Registrant's Common Stock
10.7	(i)	Distributor Agreement dated June 15, 1994 by and between Registrant and Scientific-Atlanta, Inc.
10.8	(i)	Warrant to purchase Common Stock of Registrant issued to Scientific-Atlanta, Inc. on June 15, 1994
10.10	(i)	Warrant to purchase Series D Preferred Stock of Registrant issued to Comdisco, Inc. on February 10, 1993
10.14	(ii)	Business Loan Agreement, Commercial Security Agreement and Promissory Note dated August 26, 1993, as amended on September 14, 1995, between Registrant and Silicon Valley Bank
10.15	(ii)	Facility lease dated as of January 12, 1996 by and between Eastrich No. 137 Corporation and Company
10.16		Amended and Restated Loan and Security Agreement dated December 24, 1997 between Registrant and Silicon Valley Bank
10.17	(iii)+	Change of Control Severance Agreement dated March 27, 1997 between Registrant and Anthony J. Ley
10.18	(iii)+	Form of Change of Control Severance Agreement between Registrant and certain executive officers of Registrant
10.19	(iv)	Stock Purchase Agreement, dated September 16, 1997 among Registrant, N.M. New Media Communication Ltd., ("NMC") and Sellers of NMC.
10.20	(v)	First Amendment to Stock Purchase Agreement, dated November 25, 1997 among Registrant, N. M. New Media Communication Ltd., ("NMC") and Sellers of NMC.
10.21	(vi)	Registration Rights Agreement dated as of January 5, 1998 by and among the Registrant and the persons and entities listed in Schedule A thereto (the "NMC Shareholders").
10.22	(vii)	1997 Nonstatutory Stock Option Plan.
13.1		1997 Annual Report (to be deemed filed with the Securities and Exchange Commission only to the extent required by the instruction to exhibits for reports on Form 10-K)
21.1		Subsidiaries of Registrant
23.1		Consent of Independent Accountants
24.1		Power of Attorney
27.17		Financial Data Schedule
	(i)	Previously filed as an Exhibit to the Company's Registration Statement on Form S-1 No. 33-90752.
	(ii)	Previously filed as an Exhibit to the Company's 10-K for the year ended December 31, 1995.
	(iii)	Previously filed as an Exhibit to the Company's 10-K for the year ended December 31, 1996.
	(iv)	Previously filed as an Exhibit to the Company's Current Report on 8-K dated September 29, 1997.
	(v)	Previously filed as an Exhibit to the Company's Current Report on 8-K dated January 6, 1998.
	(vi)	Previously filed as an Exhibit to the Company's Registration Statement on Form S-3 dated January 8, 1998.

(vii) Previously filed as an exhibit to the Company's Registration Statement on Form S-8 dated January 14, 1998.

+ Management Contract or Compensatory Plan or Arrangement required to be filed as an exhibit to this report on Form 10-K.

## AMENDED AND RESTATED LOAN AND SECURITY AGREEMENT

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THIS AMENDED AND RESTATED LOAN AND SECURITY AGREEMENT is dated December 24, 1997, between SILICON VALLEY BANK ("Bank"), whose address is 3003 Tasman Drive, Santa Clara, CA 95054 and HARMONIC LIGHTWAVES, INC. ("Borrower"), whose address is 549 Baltic Way, Sunnyvale, California 94089.

RECITALS

A. Bank and Borrower are parties to that certain Business Loan Agreement and Promissory Note each dated August 26, 1993, as amended (collectively, the "Original Agreement").

B. Borrower and Bank desire in this Agreement to set forth their agreement with respect to a working capital loan and to amend and restate in its entirety without novation the Original Agreement in accordance with the provisions herein.

AGREEMENT

The parties agree as follows:

1. ACCOUNTING AND OTHER TERMS

Accounting terms not defined in this Agreement will be construed following GAAP Calculations and determinations must be made following GAAP. The term "financial statements" includes the notes and schedules. The terms "including" and "includes" always mean "including (or includes) without limitation," in this or any Loan Document. This Agreement shall be construed to impart upon Bank a duty to act reasonably at all times.

2. LOAN AND TERMS OF PAYMENT

2.1 CREDIT EXTENSIONS.

Borrower will pay Bank the unpaid principal amount of all Credit Extensions and interest on the unpaid principal amount of the Credit Extensions as set forth below in this Section 2.

2.1.1 REVOLVING ADVANCES.

(a) Bank will make Advances not exceeding (i) the lesser of (A) the Committed Revolving Line or (B) the Borrowing Base, minus (ii) the amount of all outstanding letters of credit (including drawn but unreimbursed letters of credit), and minus (iii) the Foreign Exchange Reserve. Advances may be repaid and reborrowed during the term of this Agreement.

(b) To obtain an Advance, Borrower must notify Bank by facsimile or telephone by 3:00 p.m. Pacific time on the Business Day the Advance is to be made. Borrower must promptly confirm the notification by delivering to Bank the Payment/Advance Form attached as Exhibit A. Bank will credit Advances to Borrower's deposit account. Bank may make Advances under this Agreement based on instructions from a Responsible Officer or his or her designee or without instructions if the Advances are necessary to meet Obligations which have become due. Bank may rely on any telephone notice given by a person whom Bank believes is a Responsible Officer or designee. Borrower will indemnify Bank for any loss Bank suffers due to reliance.

(c) The Committed Revolving Line terminates on the Revolving Maturity Date, when all Advances and other amounts due under this Agreement are immediately payable.

## 2.1.2 LETTERS OF CREDIT.

Bank will issue or have issued letters of credit for Borrower's account not exceeding (i) the lesser of the Committed Revolving Line or the Borrowing Base minus (ii) the outstanding principal balance of the Advances minus the Foreign Exchange Reserve; however, the face amount of outstanding letters of credit (including drawn but unreimbursed letters of credit and any Letter of Credit Reserve) may not exceed \$4,000,000. Each letter of credit will have an expiration date of no later than 180 days after the Revolving Maturity Date, but Borrower's reimbursement obligation will be secured by cash on terms acceptable to Bank at any time after the Revolving Maturity Date if the term of this Agreement is not extended by Bank.

## 2.1.3 FOREIGN EXCHANGE CONTRACT; FOREIGN EXCHANGE SETTLEMENTS.

Borrower may enter foreign exchange contracts (the "Exchange Contracts") not exceeding an aggregate amount of \$4,000,000 (the "Contract Limit"), under which Bank will sell to or purchase from Borrower foreign currency on a spot or future basis. Borrower may not request any Exchange Contracts if it is out of compliance with any provision of this Agreement. Exchange Contracts must provide for delivery of settlement on or before the Revolving Maturity Date. The amount available under the Committed Revolving Line is reduced by the following (the "Foreign Exchange Reserve") on any given day (the "Determination Date"): (i) on all outstanding Exchange Contracts on which delivery is to be effected or settlement allowed more than two business days after the Determination Date, 10% of the gross amount of the Exchange Contracts; plus (ii) on all outstanding Exchange Contracts on which delivery is to be effected or settlement allowed within two business days after the Determination Date, 100% of the gross amount of the Exchange Contracts.

Bank may terminate the Exchange Contracts if (a) an Event of Default has occurred and is continuing or (b) there is not sufficient availability under the Committed Revolving Line and Borrower does not have available funds in its deposit account for the Foreign Exchange Reserve. If Bank terminates the Exchange Contracts, Borrower will reimburse Bank for all fees, costs and expenses in connection with the Exchange Contracts.

Borrower may not permit the total of all Exchange Contracts on which delivery is to be effected and settlement allowed in any two business day period to be more than \$4,000,000 (the "Settlement Limit") nor may Borrower permit the total of all Exchange Contracts outstanding at any one time, to exceed the Contract Limit. However, the amount which may be settled in any 2 business day period may be increased above the Settlement Limit up to, but not above the Contract Limit if:

(i) there is sufficient availability under the Committed Revolving Line in the amount of the Foreign Exchange Reserve for each Determination Date, provided that Bank in advance shall reserve the full amount of the Foreign Exchange Reserve against the Committed Revolving Line; or

(ii) there is insufficient availability under the Committed Revolving Line for settlements within any 2 business day period, but Bank: (A) verifies good funds overseas before crediting Borrower's deposit account (if Borrower sells foreign currency); or (B) debits Borrower's deposit account before delivering foreign currency overseas (if Borrower purchases foreign currency).

If Borrower purchases foreign currency, Borrower in advance must instruct Bank either to treat the settlement as an advance under the Committed Revolving Line, or to debit Borrower's account for the amount settled.

Borrower will execute all Bank's standard applications and agreements in connection with the Exchange Contracts which are consistent with the terms of this Agreement and pay all Bank's standard fees and charges.

## 2.1.4 EQUIPMENT ADVANCES.

(a) Through December 23, 1998 (the "Equipment Availability End Date"), Bank will make advances ("Equipment Advance" and, collectively, "Equipment Advances") not exceeding the Committed Equipment Line. The Equipment Advances may only be used to finance Equipment purchased on or after 90 days before the

date of this Agreement and may not exceed one hundred percent (100%) of the equipment invoice excluding taxes, shipping, warranty charges, freight discounts and installation expense. Software and used Equipment may constitute up to 25% of the Committed Equipment Line. Each Equipment Advance must be for a minimum of \$50,000. Notwithstanding the foregoing, \$500,000 under the Committed Equipment Line shall be available to finance the purchase of Foreign Equipment. No invoice will be required for such purpose.

(b) Interest accrues from the date of each Equipment Advance at the rate in Section 2.3((a)) and is payable monthly until the Equipment Availability End Date occurs. Equipment Advances outstanding on June 23, 1998 (the "First Term Date"), are payable in 36 equal monthly installments of principal, plus accrued interest, beginning on July 23, 1998 and all subsequent payments of principal plus interest are due on the same day of each month after that. Additionally, Equipment Advances outstanding on the Equipment Availability End Date (the "Second Term Date") are payable in 36 equal monthly installments of principal plus accrued interest, beginning on the twenty-third (23rd) day of the month following the Equipment Availability End Date. The final payment for all Equipment Advances will be due on December 23, 2001 (the "Equipment Loan Maturity Date"). Equipment Advances when repaid may not be reborrowed.

(c) To obtain an Equipment Advance, Borrower must notify Bank (the notice is irrevocable) by facsimile no later than 3:00 p.m. Pacific time 1 Business Day before the day on which the Equipment Advance is to be made. The notice in the form of Exhibit B (Payment/Advance Form) must be signed by a Responsible Officer or designee and include a copy of the invoice for the Equipment being financed.

## 2.2 OVERADVANCES.

If Borrower's Obligations under Section 2.1.1, 2.1.2 and 2.1.3 exceed the lesser of either (i) the Committed Revolving Line or (ii) the Borrowing Base, Borrower must immediately pay Bank the excess.

## 2.3 INTEREST RATE, PAYMENTS.

(a) Interest Rate. (1) Advances accrue interest on the outstanding principal balance at a per annum rate equal to (i) the Prime Rate or (ii) 2 percentage points above the LIBOR Rate as described in Exhibit D; and (2) Equipment Advances accrue interest on the outstanding principal balance at a per annum rate equal to 0.5 percentage points above the Prime Rate. At the First Term Date and the Second Term Date, Borrower may elect a fixed rate on the then outstanding Equipment Advances equal to the Treasury Rate then in effect. If Borrower elects such fixed rate option, the Prepayment Fee will apply. After an Event of Default, Obligations accrue interest at 5 percent above the rate effective immediately before the Event of Default. The interest rate increases or decreases when the Prime Rate changes. Interest is computed on a 360 day year for the actual number of days elapsed.

(b) Payments. Interest due on the Committed Revolving Line is payable on the 23rd day of each month. Interest due on the Equipment Advances is payable on the 23rd day of each month. Bank may debit any of Borrower's deposit accounts including Account Number \_\_\_\_\_ for principal and interest payments or any amounts Borrower owes Bank under this Agreement or any other Loan Document. Bank will notify Borrower when it debits Borrower's accounts. These debits are not a set-off. Payments received after 12:00 noon Pacific time are considered received at the opening of business on the next Business Day. When a payment is due on a day that is not a Business Day, the payment is due the next Business Day and additional fees or interest accrue.

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## 7 2.4 FEES.

Borrower will pay:

(a) Facility Fee. A fully earned, non-refundable Facility Fee of \$18,000 for the Committed Revolving Line and \$10,000 for the Committed Equipment Line due on the Closing Date; and

(b) Bank Expenses. All Bank Expenses (including reasonable attorneys' fees and expenses) incurred through and after the date of this Agreement, are payable when due.

3. CONDITIONS OF LOANS

3.1 CONDITIONS PRECEDENT TO INITIAL CREDIT EXTENSION.

Bank's obligation to make the initial Credit Extension is subject to the condition precedent that it receive the agreements, documents and fees it requires.

3.2 CONDITIONS PRECEDENT TO ALL CREDIT EXTENSIONS.

Bank's obligations to make each Credit Extension, including the initial Credit Extension, is subject to the following:

(a) timely receipt of any Payment/Advance Form; and

(b) the representations and warranties in Section must be materially true on the date of the Payment/Advance Form and on the effective date of each Credit Extension and no Event of Default may have occurred and be continuing, or result from the Credit Extension. Each Credit Extension is Borrower's representation and warranty on that date that the representations and warranties of Section remain true.

(c) As a condition to each Equipment Advance, Borrower will deliver to Bank an executed UCC Financing Statement against the Equipment purchased from proceeds of such Equipment Advance and any and all other documentation required to perfect Bank's interest in the Collateral.

4. CREATION OF SECURITY INTEREST

4.1 GRANT OF SECURITY INTEREST.

Borrower grants Bank a continuing security interest in all presently existing and later acquired Collateral to secure all Obligations under Section 2.1.4 entitled "Equipment Advances" and performance of each of Borrower's duties under the Loan Documents. Subject to Permitted Liens, any security interest will be a first priority security interest in the Collateral. Borrower will execute any and all documents, including UCC Financing Statements, to perfect Bank's interest in the Collateral.

5. REPRESENTATIONS AND WARRANTIES

Borrower represents and warrants as follows:

5.1 DUE ORGANIZATION AND AUTHORIZATION.

Borrower and each Subsidiary is duly existing and in good standing in its state of formation and qualified and licensed to do business in, and in good standing in, any state in which the conduct of its business or its ownership of property requires that it be qualified, except where the failure to do so could not reasonably be expected to cause a Material Adverse Change.

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The execution, delivery and performance of the Loan Documents have been duly authorized, and do not conflict with Borrower's formation documents, nor constitute an event of default under any material agreement by which Borrower is bound. Borrower is not in default under any agreement to which or by which it is bound in which the default could cause a Material Adverse Change.

5.2 COLLATERAL.

Borrower has good title to the Collateral, free of Liens, except Permitted Liens.

5.3 LITIGATION.

Except as shown in the Schedule, there are no actions or proceedings pending or, to Borrower's knowledge, threatened by or against Borrower or any Subsidiary in which an adverse decision could reasonably be expected to cause a Material Adverse Change.

5.4 NO MATERIAL ADVERSE CHANGE IN FINANCIAL STATEMENTS.

All consolidated financial statements for Borrower, and any Subsidiary,

delivered to Bank fairly present in all material respects Borrower's consolidated financial condition and Borrower's consolidated results of operations. There has not been any material deterioration in Borrower's consolidated financial condition since the date of the most recent financial statements submitted to Bank.

5.5 SOLVENCY.

The fair salable value of Borrower's assets (including goodwill minus disposition costs) exceeds the fair value of its liabilities; the Borrower is not left with unreasonably small capital after the transactions in this Agreement; and Borrower is able to pay its debts (including trade debts) as they mature.

5.6 REGULATORY COMPLIANCE.

Borrower is not an "investment company" or a company "controlled" by an "investment company" under the Investment Company Act. Borrower is not engaged as one of its important activities in extending credit for margin stock (under Regulations G, T and U of the Federal Reserve Board of Governors). Borrower has complied in all material respects with the Federal Fair Labor Standards Act. Borrower has not violated any laws, ordinances or rules, the violation of which could cause a Material Adverse Change. None of Borrower's or any Subsidiary's properties or assets has been used by Borrower or any Subsidiary or, to the best of Borrower's knowledge, by previous Persons, in disposing, producing, storing, treating, or transporting any hazardous substance other than legally. Borrower and each Subsidiary has timely filed all required tax returns and paid, or made adequate provision to pay, all taxes, except those being contested in good faith with adequate reserves under GAAP. Borrower and each Subsidiary has obtained all consents, approvals and authorizations of, made all declarations or filings with, and given all notices to, all government authorities that are necessary to continue its business as currently conducted, except where the failure to do so could not reasonably be expected to cause a Material Adverse Change.

5.7 SUBSIDIARIES.

Borrower does not own any stock, partnership interest or other equity securities except for Permitted Investments.

5.8 FULL DISCLOSURE.

No representation, warranty or other statement of Borrower in any certificate or written statement given to Bank contains any untrue statement of a material fact or omits to state a material fact necessary to make the statements contained in the certificates or statements misleading (it being recognized by Bank that the projections

and forecasts provided by Borrower are not to be viewed as facts and that actual results during the period or periods covered by any such projections and forecasts may differ from the projected or forecasted results).

6. AFFIRMATIVE COVENANTS

Borrower will do all of the following:

6.1 GOVERNMENT COMPLIANCE.

Borrower will maintain its and all Subsidiaries' legal existence and good standing in its jurisdiction of formation and maintain qualification in each jurisdiction in which the failure to so qualify could have a material adverse effect on Borrower's business or operations. Borrower will comply, and have each Subsidiary comply, with all laws, ordinances and regulations to which it is subject, noncompliance with which could have a material adverse effect on Borrower's business or operations or cause a Material Adverse Change.

6.2 FINANCIAL STATEMENTS, REPORTS, CERTIFICATES.

(a) Borrower will deliver to Bank: (i) as soon as available, but no later than 45 days after the last day of each quarter, a company prepared consolidated balance sheet and income statement covering Borrower's consolidated



operations during the period, in a form and certified by a Responsible Officer acceptable to Bank; (ii) within 5 days of filing, copies of all statements, reports and notices made available to Borrower's security holders or to any holders of Subordinated Debt and all reports on Form 10-K, 10-Q and 8-K filed with the Securities and Exchange Commission; (iii) a prompt report of any legal actions pending or threatened against Borrower or any Subsidiary that could result in damages or costs to Borrower or any Subsidiary of \$100,000 or more; and (iv) budgets, sales projections, operating plans or other financial information Bank requests.

(b) Within 45 days after the last day of each quarter, Borrower will deliver to Bank with the quarterly financial statements a Compliance Certificate signed by a Responsible Officer in the form of Exhibit B.

(c) At such times as the aggregate outstanding Advances under the Committed Revolving Line exceed \$5,000,000, Borrower will deliver to Bank a Borrowing Base Certificate signed by a Responsible Officer in the form of Exhibit C, with aged listings of accounts receivable and accounts payable, within 20 days after the last day of each month.

(d) Bank has the right to audit Borrower's Accounts at Borrower's expense, but the audits will be conducted no more often than every six months unless an Event of Default has occurred and is continuing.

#### 6.3 TAXES.

Borrower will make, and cause each Subsidiary to make, timely payment of all material federal, state, and local taxes or assessments and will deliver to Bank, on demand, appropriate certificates attesting to the payment.

#### 6.4 INSURANCE.

Borrower will keep its business and the Collateral insured for risks and in amounts, as Bank reasonably requests. Insurance policies will be in a form, with companies, and in amounts that are reasonably satisfactory to Bank. All property policies will have a lender's loss payable endorsement showing Bank as an additional loss payee and all liability policies will show the Bank as an additional insured and provide that the insurer must give Bank at least 20 days notice before canceling its policy. At Bank's request, Borrower will deliver certified copies of policies and evidence of all premium payments. Proceeds payable under any casualty policy will, at Borrower's option if no Event of Default has occurred and is continuing, be payable to Borrower to replace the property subject to the claim.

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If an Event of Default has occurred and is continuing, then at Bank's option, proceeds will be payable to Bank on account of the Obligations.

#### 6.5 PRIMARY ACCOUNTS.

Borrower will maintain its primary depository and operating accounts with Bank.

#### 6.6 FINANCIAL COVENANTS.

Borrower will maintain as of the last day of each quarter:

(i) DEBT/TANGIBLE NET WORTH RATIO. A ratio of Total Liabilities less Subordinated Debt to Tangible Net Worth plus Subordinated Debt of not more than 0.75 to 1.00.

(ii) TANGIBLE NET WORTH. A Tangible Net Worth of at least \$48,000,000 plus 75% of quarterly profits (excluding losses) beginning October 1, 1997 plus 100% of net new equity.

(iii) QUICK RATIO. A ratio of Quick Assets to Current Liabilities of at least 2.00 to 1.00.

(iv) PROFITABILITY. Borrower will be profitable each quarter, except that Borrower may suffer a one quarterly loss in each fiscal year not to exceed \$500,000, provided, however that Bank shall allow a loss of greater than \$500,000 for the fiscal quarter ending March 31, 1998 as a result of Borrower's acquisition of New Media Communications, Ltd.

(v) DEBT SERVICE COVERAGE. A ratio of net income plus depreciation, amortization and interest expense, less unfunded capital expenditures, divided by interest expense and scheduled principal payments, all calculated on a quarterly basis, of at least 1.50 to 1.00.

6.7 FURTHER ASSURANCES.

Borrower will execute any further instruments and take further action as Bank reasonably requests to perfect or continue Bank's security interest in the Collateral or to effect the purposes of this Agreement.

7. NEGATIVE COVENANTS

Borrower will not do any of the following:

7.1 DISPOSITIONS.

Convey, sell, lease, transfer or otherwise dispose of (collectively "Transfer"), or permit any of its Subsidiaries to Transfer, all or any part of its business or property, other than Transfers (i) of Inventory in the ordinary course of business, (ii) of non-exclusive licenses and similar arrangements for the use of the property of Borrower or its Subsidiaries in the ordinary course of business, or (iii) of worn-out or obsolete Equipment, and (iv) other Transfers which in the aggregate do not exceed \$100,000 in any fiscal year.

7.2 CHANGES IN BUSINESS, OWNERSHIP, MANAGEMENT OR BUSINESS LOCATIONS.

Engage in or permit any of its Subsidiaries to engage in any business other than the businesses currently engaged in by Borrower or reasonably related thereto, or have a material change in its ownership of greater than 40%. Borrower will not, without at least 30 days prior written notice, relocate its chief executive office or add any new offices or business locations.

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7.3 MERGERS OR ACQUISITIONS.

Merge or consolidate, or permit any of its Subsidiaries to merge or consolidate, with any other Person, or acquire, or permit any of its Subsidiaries to acquire, all or substantially all of the capital stock or property of another Person, except if no Event of Default has occurred and is continuing or would exist after giving effect to the action (i) transactions that do not in the aggregate exceed \$10,000,000 with a maximum of \$5,000,000 in cash allowed to be used for such transactions, or (ii) a Subsidiary may merge or consolidate into another Subsidiary or into Borrower. Notwithstanding the terms and conditions contained in this Section, Bank consents to Borrower's acquisition of New Media Communications, Ltd.

7.4 INDEBTEDNESS.

Create, incur, assume, or be liable for any Indebtedness, or permit any Subsidiary to do so, other than Permitted Indebtedness.

7.5 ENCUMBRANCE.

Create, incur, or allow any Lien on any of its property, or assign or convey any right to receive income, including the sale of any Accounts, or permit any of its Subsidiaries to do so, except for Permitted Liens, or permit any Collateral not to be subject to the first priority security interest granted herein subject only to Permitted Liens.

7.6 DISTRIBUTIONS; INVESTMENTS.

Directly or indirectly acquire or own any Person, or make any Investment in any Person, other than Permitted Investments, or permit any of its Subsidiaries to do so. Pay any dividends or make any distribution or payment or redeem, retire or purchase any capital stock.

7.7 TRANSACTIONS WITH AFFILIATES.

Directly or indirectly enter or permit any material transaction with any Affiliate except transactions that are in the ordinary course of Borrower's business, on terms less favorable to Borrower than would be obtained in an arm's

length transaction with a non-affiliated Person.

#### 7.8 SUBORDINATED DEBT.

Make or permit any payment on any Subordinated Debt, except under the terms of the Subordinated Debt, or amend any provision in any document relating to the Subordinated Debt without Bank's prior written consent.

#### 7.9 COMPLIANCE.

Become an "investment company" or a company controlled by an "investment company," under the Investment Company Act of 1940 or undertake as one of its important activities extending credit to purchase or carry margin stock, or use the proceeds of any Advance for that purpose; fail to meet the minimum funding requirements of ERISA, permit a Reportable Event or Prohibited Transaction, as defined in ERISA, to occur; fail to comply with the Federal Fair Labor Standards Act or violate any other law or regulation, if the violation could have a material adverse effect on Borrower's business or operations or cause a Material Adverse Change, or permit any of its Subsidiaries to do so.

#### 8. EVENTS OF DEFAULT

Any one of the following is an Event of Default:

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#### 8.1 PAYMENT DEFAULT.

If Borrower fails to pay any of the Obligations;

#### 8.2 COVENANT DEFAULT.

If Borrower does not perform any obligation in Section 6 or violates any covenant in Section 7 or does not perform or observe any other material term, condition or covenant in this Agreement, any Loan Documents, or in any agreement between Borrower and Bank and as to any default under a term, condition or covenant that can be cured, has not cured the default within 10 days after it occurs, or if the default cannot be cured within 10 days or cannot be cured after Borrower's attempts within 10 day period, and the default may be cured within a reasonable time, then Borrower has an additional period (of not more than 30 days) to attempt to cure the default. During the additional time, the failure to cure the default is not an Event of Default (but no Credit Extensions will be made during the cure period);

#### 8.3 MATERIAL ADVERSE CHANGE.

(i) If there occurs a material impairment in the perfection or priority of the Bank's security interest in the Collateral or in the value of such Collateral which is not covered by adequate insurance or (ii) if the Bank determines, based upon information available to it and in the exercise of its reasonable judgment, that there is a reasonable likelihood that Borrower will fail to comply with one or more of the financial covenants set forth in Section during the next succeeding financial reporting period.

#### 8.4 ATTACHMENT.

If any material portion of Borrower's assets is attached, seized, levied on, or comes into possession of a trustee or receiver and the attachment, seizure or levy is not removed in 10 days, or if Borrower is enjoined, restrained, or prevented by court order from conducting a material part of its business or if a judgment or other claim becomes a Lien on a material portion of Borrower's assets, or if a notice of lien, levy, or assessment is filed against any of Borrower's assets by any government agency and not paid within 10 days after Borrower receives notice. These are not Events of Default if stayed or if a bond is posted pending contest by Borrower (but no Credit Extensions will be made during the cure period);

#### 8.5 INSOLVENCY.

If Borrower becomes insolvent or if Borrower begins an Insolvency Proceeding or an Insolvency Proceeding is begun against Borrower and not dismissed or stayed within 30 days (but no Credit Extensions will be made before any Insolvency Proceeding is dismissed);

8.6 OTHER AGREEMENTS.

If there is a default in any agreement between Borrower and a third party that gives the third party the right to accelerate any Indebtedness exceeding \$100,000;

8.7 JUDGMENTS.

If a money judgment(s) in the aggregate of at least \$100,000 is rendered against Borrower and is unsatisfied and unstayed for 30 days (but no Credit Extensions will be made before the judgment is stayed or satisfied); or

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8.8 MISREPRESENTATIONS.

If Borrower or any Person acting for Borrower makes any material misrepresentation or material misstatement now or later in any warranty or representation in this Agreement or in any writing delivered to Bank or to induce Bank to enter this Agreement or any Loan Document.

9. BANK'S RIGHTS AND REMEDIES

9.1 RIGHTS AND REMEDIES.

When an Event of Default occurs and continues Bank may, without notice or demand, do any or all of the following:

(a) Declare all Obligations immediately due and payable (but if an Event of Default described in Section occurs all Obligations are immediately due and payable without any action by Bank);

(b) Stop advancing money or extending credit for Borrower's benefit under this Agreement or under any other agreement between Borrower and Bank;

(c) Settle or adjust disputes and claims directly with account debtors for amounts, on terms and in any order that Bank considers advisable;

(d) Make any payments and do any acts it considers necessary or reasonable to protect its security interest in the Collateral. Borrower will assemble the Collateral if Bank requires and make it available as Bank designates. Bank may enter premises where the Collateral is located, take and maintain possession of any part of the Collateral, and pay, purchase, contest, or compromise any Lien which appears to be prior or superior to its security interest and pay all expenses incurred. Borrower grants Bank a license to enter and occupy any of its premises, without charge, to exercise any of Bank's rights or remedies;

(e) Apply to the Obligations any (i) balances and deposits of Borrower it holds, or (ii) any amount held by Bank owing to or for the credit or the account of Borrower;

(f) Ship, reclaim, recover, store, finish, maintain, repair, prepare for sale, advertise for sale, and sell the Collateral; and

(g) Dispose of the Collateral according to the Code.

9.2 POWER OF ATTORNEY.

Effective only when an Event of Default occurs and continues, Borrower irrevocably appoints Bank as its lawful attorney to: (i) make, settle, and adjust all claims under Borrower's insurance policies; and (ii) transfer the Collateral into the name of Bank or a third party as the Code permits. Bank may exercise the power of attorney to sign Borrower's name on any documents necessary to perfect or continue the perfection of any security interest regardless of whether an Event of Default has occurred. Bank's appointment as Borrower's attorney in fact, and all of Bank's rights and powers, coupled with an interest, are irrevocable until all Obligations have been fully repaid and performed and Bank's obligation to provide Credit Extensions terminates.

9.3 BANK EXPENSES.

If Borrower fails to pay any amount or furnish any required proof of payment to third persons Bank may make all or part of the payment or obtain

insurance policies required in Section , and take any action under the policies Bank reasonably deems prudent. Any reasonable amounts paid by Bank are Bank Expenses and immediately due and payable, bearing interest at the then applicable rate and secured by the Collateral. No

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payments by Bank are deemed an agreement to make similar payments in the future or Bank's waiver of any Event of Default.

9.4 BANK'S LIABILITY FOR COLLATERAL.

If Bank complies with reasonable banking practices and section 9-207 of the Code it is not liable for: (a) the safekeeping of the Collateral; (b) any loss or damage to the Collateral; (c) any diminution in the value of the Collateral; or (d) any act or default of any carrier, warehouseman, bailee, or other person.

Borrower bears all risk of loss, damage or destruction of the Collateral.

9.5 REMEDIES CUMULATIVE.

Bank's rights and remedies under this Agreement, the Loan Documents, and all other agreements are cumulative. Bank has all rights and remedies provided under the Code, by law, or in equity. Bank's exercise of one right or remedy is not an election, and Bank's waiver of any Event of Default is not a continuing waiver. Bank's delay is not a waiver, election, or acquiescence. No waiver is effective unless signed by Bank and then is only effective for the specific instance and purpose for which it was given.

9.6 DEMAND WAIVER.

Borrower waives demand, notice of default or dishonor, notice of payment and nonpayment, notice of any default, nonpayment at maturity, release, compromise, settlement, extension, or renewal of accounts, documents, instruments, chattel paper, and guarantees held by Bank on which Borrower is liable.

10. NOTICES

All notices or demands by any party about this Agreement or any other related agreement must be in writing and be personally delivered or sent by an overnight delivery service, by certified mail, postage prepaid, return receipt requested, or by telefacsimile to the addresses set forth at the beginning of this Agreement. A Party may change its notice address by giving the other Party written notice.

11. CHOICE OF LAW, VENUE AND JURY TRIAL WAIVER

California law governs the Loan Documents without regard to principles of conflicts of law. Borrower and Bank each submit to the exclusive jurisdiction of the State and Federal courts in Santa Clara County, California.

BORROWER AND BANK EACH WAIVE THEIR RIGHT TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION ARISING OUT OF ANY OF THE LOAN DOCUMENTS OR ANY CONTEMPLATED TRANSACTION, INCLUDING CONTRACT, TORT, BREACH OF DUTY AND ALL OTHER CLAIMS. THIS WAIVER IS A MATERIAL INDUCEMENT FOR BOTH PARTIES TO ENTER INTO THIS AGREEMENT. EACH PARTY HAS REVIEWED THIS WAIVER WITH ITS COUNSEL.

12. GENERAL PROVISIONS

12.1 SUCCESSORS AND ASSIGNS.

This Agreement binds and is for the benefit of the successors and permitted assigns of each party. Borrower may not assign this Agreement or any rights under it without Bank's prior written consent which may be granted or withheld in Bank's discretion. Bank has the right, without the consent of or notice to Borrower, to sell, transfer, negotiate, or grant participation in all or any part of, or any interest in, Bank's obligations, rights and benefits under this Agreement.

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12.2 INDEMNIFICATION.

Borrower will indemnify, defend and hold harmless Bank and its officers, employees, and agents against: (a) all obligations, demands, claims, and liabilities asserted by any other party in connection with the transactions contemplated by the Loan Documents; and (b) all losses or Bank Expenses incurred, or paid by Bank from, following, or consequential to transactions between Bank and Borrower (including reasonable attorneys fees and expenses), except for losses caused by Bank's gross negligence or willful misconduct.

12.3 TIME OF ESSENCE.

Time is of the essence for the performance of all obligations in this Agreement.

12.4 SEVERABILITY OF PROVISION.

Each provision of this Agreement is severable from every other provision in determining the enforceability of any provision.

12.5 AMENDMENTS IN WRITING, INTEGRATION.

All amendments to this Agreement must be in writing. This Agreement represents the entire agreement about this subject matter, and supersedes prior negotiations or agreements. All prior agreements, understandings, representations, warranties, and negotiations between the parties about the subject matter of this Agreement merge into this Agreement and the Loan Documents.

12.6 COUNTERPARTS.

This Agreement may be executed in any number of counterparts and by different parties on separate counterparts, each of which, when executed and delivered, are an original, and all taken together, constitute one Agreement.

12.7 SURVIVAL.

All covenants, representations and warranties made in this Agreement continue in full force while any Obligations remain outstanding. The obligations of Borrower in Section to indemnify Bank will survive until all statutes of limitations for actions that may be brought against Bank have run.

12.8 CONFIDENTIALITY.

In handling any confidential information, Bank will exercise the same degree of care that it exercises for its own proprietary information, but disclosure of information may be made (i) to Bank's subsidiaries or affiliates in connection with their business with Borrower, (ii) to prospective transferees or purchasers of any interest in the Loans, (iii) as required by law, regulation, subpoena, or other order, (iv) as required in connection with Bank's examination or audit and (v) as Bank considers appropriate exercising remedies under this Agreement. Confidential information does not include information that either: (a) is in the public domain or in Bank's possession when disclosed to Bank, or becomes part of the public domain after disclosure to Bank; or (b) is disclosed to Bank by a third party, if Bank does not know that the third party is prohibited from disclosing the information.

12.9 EFFECT OF AMENDMENT AND RESTATEMENT.

This Agreement is intended to and does completely amend and restate, without novation, the Original Agreement. All credit extensions or loans outstanding under the Original Agreement are and shall continue to be outstanding under this Agreement. All security interests granted under the Original Agreement are hereby confirmed and ratified and shall continue to secure all Obligations under this Agreement.

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13. DEFINITIONS

13.1 DEFINITIONS.

In this Agreement:

"ACCOUNTS" are all existing and later arising accounts, contract

rights, and other obligations owed Borrower in connection with its sale or lease of goods (including licensing software and other technology) or provision of services, all credit insurance, guaranties, other security and all merchandise returned or reclaimed by Borrower and Borrower's Books relating to any of the foregoing.

"ADVANCE" or "ADVANCES" is a loan advance under the Committed Revolving Line.

"AFFILIATE" of a Person is a Person that owns or controls directly or indirectly the Person, any Person that controls or is controlled by or is under common control with the Person, and each of that Person's senior executive officers, directors, partners and, for any Person that is a limited liability company, that Person's managers and members.

"BANK EXPENSES" are all reasonable audit fees and expenses and reasonable costs or expenses (including reasonable attorneys' fees and expenses) for preparing, negotiating, administering, defending and enforcing the Loan Documents (including appeals or Insolvency Proceedings).

"BORROWER'S BOOKS" are all Borrower's books and records including ledgers, records regarding Borrower's assets or liabilities, the Collateral, business operations or financial condition and all computer programs or discs or any equipment containing the information.

"BORROWING BASE" means, when Advances exceed \$5,000,000, then (i) 80% of Eligible Accounts plus (ii) 80% of Pre-Approved Eligible Foreign Accounts plus (iii) 100% of Eligible Foreign Accounts as determined by Bank from Borrower's most recent Borrowing Base Certificate.

"BUSINESS DAY" is any day that is not a Saturday, Sunday or a day on which the Bank is closed.

"CAPITALIZED PRODUCT DEVELOPMENT COSTS" are all costs associated with the development of Borrower's product, including, but not limited to software, that are not recorded as an expense and have been classified as an asset account.

"CLOSING DATE" is the date of this Agreement.

"CODE" is the California Uniform Commercial Code.

"COLLATERAL" is the Equipment purchased by Borrower, excluding Foreign Equipment, from Equipment Advance proceeds.

"COMMITTED EQUIPMENT LINE" is a Credit Extension of up to \$3,000,000.

"COMMITTED REVOLVING LINE" is a Credit Extension of up to \$12,000,000.

"CONTINGENT OBLIGATION" is, for any Person, any direct or indirect liability, contingent or not, of that Person for (i) any indebtedness, lease, dividend, letter of credit or other obligation of another such as an obligation directly or indirectly guaranteed, endorsed, co-made, discounted or sold with recourse by that Person, or for which that Person is directly or indirectly liable; (ii) any obligations for undrawn letters of credit for the account of that Person; and (iii) all obligations from any interest rate, currency or commodity swap agreement, interest rate cap or collar agreement, or other agreement or arrangement designated to protect a Person against fluctuation in interest

rates, currency exchange rates or commodity prices; but "Contingent Obligation" does not include endorsements in the ordinary course of business. The amount of a Contingent Obligation is the stated or determined amount of the primary obligation for which the Contingent Obligation is made or, if not determinable, the maximum reasonably anticipated liability for it determined by the Person in good faith; but the amount may not exceed the maximum of the obligations under the guarantee or other support arrangement.

"CREDIT EXTENSION" is each Advance, Equipment Advance, letter of credit, Exchange Contract, or any other extension of credit by Bank for Borrower's benefit.

"CURRENT LIABILITIES" is, as of any applicable date, all amounts that should, in accordance with GAAP, be included as current liabilities on the consolidated balance sheet of Borrower and its Subsidiaries, as at such date, plus, to the extent not already included therein, all outstanding Credit Extensions made under this Agreement, including all Indebtedness that is payable upon demand or within one year from the date of determination thereof unless such Indebtedness is renewable or extendible at the option of Borrower or any Subsidiary to a date more than one year from the date of determination, but excluding Subordinated Debt.

"ELIGIBLE ACCOUNTS" are Accounts in the ordinary course of Borrower's business that meet all Borrower's representations and warranties in Section 5.2; but Bank may change eligibility standards by giving Borrower 30 days prior written notice. Unless Bank agrees otherwise in writing, Eligible Accounts will not include:

(a) Accounts that the account debtor has not paid within 90 days of invoice date;

(b) Accounts for an account debtor, 50% or more of whose Accounts have not been paid within 90 days of invoice date;

(c) Credit balances over 90 days from invoice date;

(d) Accounts for an account debtor, including Affiliates, whose total obligations to Borrower exceed 25% of all Accounts, for the amounts that exceed that percentage, unless Bank approves in writing;

(e) Accounts for which the account debtor does not have its principal place of business in the United States (other than Eligible Foreign Accounts and Pre-Approved Eligible Foreign Accounts);

(f) Accounts for which the account debtor is a federal, state or local government entity or any department, agency, or instrumentality;

(g) Accounts for which Borrower owes the account debtor, but only up to the amount owed (sometimes called "contra" accounts, accounts payable, customer deposits or credit accounts);

(h) Accounts for demonstration or promotional equipment, or in which goods are consigned, sales guaranteed, sale or return, sale on approval, bill and hold, or other terms if account debtor's payment may be conditional;

(i) Accounts for which the account debtor is Borrower's Affiliate, officer, employee, or agent;

(j) Accounts in which the account debtor disputes liability or makes any claim and Bank believes there may be a basis for dispute (but only up to the disputed or claimed amount), or if the Account Debtor is subject to an Insolvency Proceeding, or becomes insolvent, or goes out of business;

(k) Accounts for which Bank reasonably determines collection to be doubtful.

"ELIGIBLE FOREIGN ACCOUNTS" are Accounts for which the account debtor does not have its principal place of business in the United States but are supported by letter(s) of credit acceptable to Bank.

"EQUIPMENT" is all present and future machinery, equipment, tenant improvements, software, furniture, fixtures, vehicles, tools, parts and attachments in which Borrower has any interest.

"EQUIPMENT ADVANCE" is defined in Section 2.1.4.

"EQUIPMENT AVAILABILITY END DATE" is defined in Section 2.1.4.

"EQUIPMENT MATURITY DATE" is defined in Section 2.1.4.

"ERISA" is the Employment Retirement Income Security Act of 1974, and its regulations.

"EXCHANGE CONTRACT" is defined in Section 2.1.3.



"FOREIGN EQUIPMENT" is (i) Equipment used for Borrower's foreign subsidiaries' purposes and (ii) is not a part of Borrower's Collateral. Equipment Advances to purchase Foreign Equipment shall be under the Committed Equipment Line.

"GAAP" is generally accepted accounting principles.

"INDEBTEDNESS" is (a) indebtedness for borrowed money or the deferred price of property or services, such as reimbursement and other obligations for surety bonds and letters of credit, (b) obligations evidenced by notes, bonds, debentures or similar instruments, (c) capital lease obligations and (d) Contingent Obligations.

"INSOLVENCY PROCEEDING" are proceedings by or against any Person under the United States Bankruptcy Code, or any other bankruptcy or insolvency law, including assignments for the benefit of creditors, compositions, extensions generally with its creditors, or proceedings seeking reorganization, arrangement, or other relief.

"INVENTORY" is present and future inventory in which Borrower has any interest, including merchandise, raw materials, parts, supplies, packing and shipping materials, work in process and finished products intended for sale or lease or to be furnished under a contract of service, of every kind and description now or later owned by or in the custody or possession, actual or constructive, of Borrower, including inventory temporarily out of its custody or possession or in transit and including returns on any accounts or other proceeds (including insurance proceeds) from the sale or disposition of any of the foregoing and any documents of title.

"INVESTMENT" is any beneficial ownership of (including stock, partnership interest or other securities) any Person, or any loan, advance or capital contribution to any Person.

"LIBOR" is defined in Exhibit "D".

"LIEN" is a mortgage, lien, deed of trust, charge, pledge, security interest or other encumbrance.

"LOAN DOCUMENTS" are, collectively, this Agreement, any note, or notes or guaranties executed by Borrower or Guarantor, and any other present or future agreement between Borrower and/or for the benefit of Bank in connection with this Agreement, all as amended, extended or restated.

"MATERIAL ADVERSE CHANGE" is defined in Section 8.3.

"OBLIGATIONS" are debts, principal, interest, Bank Expenses and other amounts Borrower owes Bank now or later, including letters of credit and Exchange Contracts and including interest accruing after Insolvency Proceedings begin and debts, liabilities, or obligations of Borrower assigned to Bank.

"ORIGINAL AGREEMENT" has the meaning set forth in recital paragraph A.

"PERMITTED INDEBTEDNESS" is:

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(a) Borrower's indebtedness to Bank under this Agreement or any other Loan Document;

(b) Indebtedness existing on the Closing Date and shown on the Schedule;

(c) Subordinated Debt;

(d) Indebtedness to trade creditors and with respect to surety bonds and similar obligations incurred in the ordinary course of business;

(e) Indebtedness secured by Permitted Liens.

(f) Indebtedness of Borrower to any Subsidiary and Contingent Obligations of any Subsidiary with respect to obligations of Borrower (provided that the primary obligations are not prohibited hereby), and Indebtedness of any Subsidiary to any other Subsidiary and Contingent Obligations of any Subsidiary

with respect to obligations of any other Subsidiary (provided that the primary obligations are not prohibited hereby);

(g) Other Indebtedness not otherwise permitted by Section 7.4 not exceeding One Hundred Thousand Dollars (\$100,000) in the aggregate outstanding at any time; and

(h) Extensions, refinancings, modifications, amendments and restatements of any of items of Permitted Indebtedness (a) through (f) above, provided that the principal amount thereof is not increased or the terms thereof are not modified to impose more burdensome terms upon Borrower or its Subsidiary, as the case may be.

"PERMITTED INVESTMENTS" are:

(a) Investments shown on the Schedule and existing on the Closing Date;

(b) (i) marketable direct obligations issued or unconditionally guaranteed by the United States or its agency or any State maturing within 1 year from its acquisition, (ii) commercial paper maturing no more than 1 year after its creation and having the highest rating from either Standard & Poor's Corporation or Moody's Investors Service, Inc., (iii) Bank's certificates of deposit issued maturing no more than 1 year after issue, and (iv) any Investments permitted by Borrower's investment policy, as amended from time to time, provided that such investment policy (any such amendment thereto) has been approved by Bank;

(c) Investments consisting of the endorsement of negotiable instruments for deposit or collection or similar transactions in the ordinary course of business;

(d) Investments accepted in connection with Transfers permitted by Section 7.1;

(e) Investments of Subsidiaries in or to other Subsidiaries or Borrower and Investments by Borrower in Subsidiaries not to exceed 10% of Tangible Net Worth;

(f) Investments consisting of (i) travel advances and employee relocation loans and other employee loans and advances in the ordinary course of business, and (ii) loans to employees, officers or directors relating to the purchase of equity securities of Borrower or its Subsidiaries pursuant to employee stock purchase plans or agreements approved by Borrower's Board of Directors;

(g) Investments (including debt obligations) received in connection with the bankruptcy or reorganization of customers or suppliers and in settlement of delinquent obligations of, and other disputes with, customers or suppliers arising in the ordinary course of business;

(h) Investments consisting of notes receivable of, or prepaid royalties and other credit extensions, to customers and suppliers who are not Affiliates, in the ordinary course of business; provided that this paragraph (h) shall not apply to Investments of Borrower in any Subsidiary;

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(i) Deposit accounts of Borrower in which Bank has a Lien prior to any other lien; and

(j) Other Investments not otherwise permitted by Section 7.7 not exceeding One Hundred Thousand Dollars (\$100,000) in the aggregate outstanding at any time.

"PERMITTED LIENS" are:

(a) Liens existing on the Closing Date and shown on the Schedule or arising under this Agreement or other Loan Documents;

(b) Liens for taxes, fees, assessments or other government charges or levies, either not delinquent or being contested in good faith and for which Borrower maintains adequate reserves on its Books, if they have no priority over any of Bank's security interests;

(c) Purchase money Liens (i) on Equipment acquired or held by Borrower or its Subsidiaries incurred for financing the acquisition of the Equipment, or (ii) existing on equipment when acquired, if the Lien is confined to the property and improvements and the proceeds of the equipment;

(d) Leases or subleases and licenses or sublicenses granted in the ordinary course of Borrower's business and any interest or title of a lessor, licensor or under any lease or license;

(e) Liens incurred in the extension, renewal or refinancing of the indebtedness secured by Liens described in (a) through (c), but any extension, renewal or replacement Lien must be limited to the property encumbered by the existing Lien and the principal amount of the indebtedness may not increase;

(f) Liens arising from judgments, decrees or attachments in circumstances not constituting an Event of Default under Section 8.7;

(g) Statutory Liens of landlords and Liens of carriers, warehousemen, mechanics and materialmen and other Liens imposed by law incurred in the ordinary course of business securing obligations that are not yet delinquent or are being contested in good faith and for which appropriate reserves have been made in accordance with GAAP;

(h) Easements, reservations, rights-of-way, restrictions, minor defects or irregularities in title and other similar charges or encumbrances affecting real property not constituting a Material Adverse Change;

(i) Liens in favor of customs and revenue authorities arising as a matter of law to secure payments of customs duties in connection with the importation of goods; and

(j) Liens on insurance proceeds in favor of insurance companies granted solely as security for financed premiums.

"PERSON" is any individual, sole proprietorship, partnership, limited liability company, joint venture, company association, trust, unincorporated organization, association, corporation, institution, public benefit corporation, firm, joint stock company, estate, entity or government agency.

"PRE-APPROVED ELIGIBLE FOREIGN ACCOUNTS" are Accounts for which the account debtor does not have its principal place of business in the United States but are pre-approved, in writing, by Bank on a case by case basis.

"PREPAYMENT FEE" is a fee on any portion of the Obligations with a fixed interest rate (the "Fixed Obligations") paid before the payment due date. "Base Interest Rate" means Bank's initial cost of funding the Fixed Obligations. The Prepayment Fee is calculated as follows: First, Bank determines a "Current Market Rate" based on what the Bank would receive if it loaned the amount on the prepayment date in a wholesale funding market matching maturity, principal amount and principal and interest payment dates (the aggregate payments received are

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the "Current Market Rate Amount"). Bank may select any wholesale funding market rate as the Current Market Rate. Second, Bank will take the prepayment amount and calculate the present value of each principal and interest payment which, without prepayment, the Bank would have received during the term of the Fixed Obligations using the Base Interest Rate. The sum of the present value calculations is the "Mark to Market Amount." Third, the Bank will subtract the Mark to Market Amount from the Current Market Rate Amount. Any amount greater than zero is the Prepayment Fee.

"PRIME RATE" is Bank's most recently announced "prime rate," even if it is not Bank's lowest rate.

"QUICK ASSETS" is, on any date, the Borrower's consolidated, unrestricted cash, cash equivalents, net billed accounts receivable and investments with maturities of 12 months or less determined according to GAAP.

"RESPONSIBLE OFFICER" is each of the Chief Executive Officer, the President, the Chief Financial Officer and the Controller of Borrower.

"REVOLVING MATURITY DATE" is December 23, 1998.

"SCHEDULE" is any attached schedule of exceptions.

"SUBORDINATED DEBT" is debt incurred by Borrower subordinated to Borrower's debt to Bank (and identified as subordinated by Borrower and Bank).

"SUBSIDIARY" is for any Person, or any other business entity of which more than 50% of the voting stock or other equity interests is owned or controlled, directly or indirectly, by the Person or one or more Affiliates of the Person.

"TANGIBLE NET WORTH" is, on any date, the consolidated total assets of Borrower and its Subsidiaries minus, (i) any amounts attributable to (a) goodwill, (b) intangible items such as unamortized debt discount and expense, Patents, trade and service marks and names, Copyrights and research and development expenses except prepaid expenses, and (c) reserves not already deducted from assets, and (ii) Total Liabilities plus Subordinated Debt.

"TOTAL LIABILITIES" is on any day, obligations that should, under GAAP, be classified as liabilities on Borrower's consolidated balance sheet, including all Indebtedness, and current portion Subordinated Debt allowed to be paid, but excluding all other Subordinated Debt.

"TREASURY RATE" is the Treasury Yield Percentage plus 350 basis points. Treasury Yield Percentage is the average weekly yield (of the week ending figures) in the most recent Federal Reserve Statistical Release on actively traded U.S. Treasury obligations of similar maturity to the principal being repaid or if a Statistical Release is not published, the arithmetic average (to the nearest .01%) of the per annum yields to maturity for each Business Day during the week (ending at least two Business Days before the determination is made) of all actively traded marketable United States Treasury fixed interest rate securities with a constant maturity of, or not more than 30 days longer or shorter than the average life of the principal and interest payments that are being prepaid (excluding securities that can be surrendered at face value to pay Federal estate tax, or which provide for tax benefits to the holder).

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BORROWER:

HARMONIC LIGHTWAVES, INC.

By: /s/ ROBIN N. DICKSON  
-----

Title: Chief Financial Officer

BANK:

SILICON VALLEY BANK

By: /s/ JENNIFER FRYHOFF  
-----

Title: /s/ Assistant Vice President  
-----

EXHIBIT A

LOAN PAYMENT/ADVANCE TELEPHONE REQUEST FORM

DEADLINE FOR SAME DAY PROCESSING IS 3:00 P.M., P.S.T.

TO: CENTRAL CLIENT SERVICE DIVISION                      DATE: \_\_\_\_\_

FAX#: (408) 496-2426    TIME: \_\_\_\_\_

FROM: Harmonic Lightwaves, Inc.

---

CLIENT NAME (BORROWER)

REQUESTED BY: \_\_\_\_\_  
AUTHORIZED SIGNER'S NAME

AUTHORIZED SIGNATURE: \_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

FROM ACCOUNT # \_\_\_\_\_ TO ACCOUNT # \_\_\_\_\_

REQUESTED TRANSACTION TYPE	REQUESTED DOLLAR AMOUNT
PRINCIPAL INCREASE (ADVANCE)	\$ _____
PRINCIPAL PAYMENT (ONLY)	\$ _____
INTEREST PAYMENT (ONLY)	\$ _____
PRINCIPAL AND INTEREST (PAYMENT)	\$ _____

OTHER INSTRUCTIONS: \_\_\_\_\_  
\_\_\_\_\_

All Borrower's representations and warranties in the Loan and Security Agreement are true, correct and complete in all material respects on the date of the telephone request for and Advance confirmed by this Borrowing Certificate; but those representations and warranties expressly referring to another date shall be true, correct and complete in all material respects as of that date.

BANK USE ONLY

TELEPHONE REQUEST:

The following person is authorized to request the loan payment transfer/loan advance on the advance designated account and is known to me.

\_\_\_\_\_  
Authorized Requester Phone #

\_\_\_\_\_  
Received By (Bank) Phone #

\_\_\_\_\_  
Authorized Signature (Bank)

EXHIBIT B

COMPLIANCE CERTIFICATE

TO: SILICON VALLEY BANK  
3003 Tasman Drive  
Santa Clara, CA 95054

FROM: HARMONIC LIGHTWAVES, INC.

The undersigned authorized officer of Harmonic Lightwaves, Inc. certifies that under the terms and conditions of the Amended and Restated Loan and Security Agreement between Borrower and Bank (the "Agreement"), (i) Borrower is in complete compliance for the period ending \_\_\_\_\_ with all required covenants except as noted below and (ii) all representations and warranties in the Agreement are true and correct in all material respects on this date. Attached are the required documents supporting the certification. The Officer certifies that these are prepared in accordance with Generally Accepted Accounting Principles (GAAP) consistently applied from one period to the next except as explained in an accompanying letter or footnotes. The Officer acknowledges that no borrowings may be requested at any time or date of determination that Borrower is not in compliance with any of the terms of the Agreement, and that compliance is determined not just at the date this certificate is delivered.

PLEASE INDICATE COMPLIANCE STATUS BY CIRCLING YES/NO UNDER "COMPLIES" COLUMN.

REPORTING COVENANT	REQUIRED	COMPLIES
Quarterly financial statements + CC	Quarterly within 45 days	Yes No
10-Q, 10-K and 8-K	Within 5 days after filing with SEC	Yes No
A/R, A/P Agings + BBC	Monthly within 20 days*	Yes No
*Only when outstanding balance under Committed Revolving Line is greater than \$5,000,000		

FINANCIAL COVENANT	REQUIRED	ACTUAL	COMPLIES
Maintain on a QUARTERLY Basis:			
Minimum Quick Ratio	2.00:1.00	_____:1.00	Yes No
Minimum Debt Service	1.50:1.00	_____:1.00	Yes No
Minimum Tangible Net Worth	\$48,000,000**	\$ _____	Yes No
Maximum Debt/Tangible Net Worth	0.75:1.00	_____:1.00	Yes No
**plus 75% of quarterly profits (excluding losses) beginning October 1, 1997 plus 100% of net new equity.			
Profitability:	Quarterly	\$ _____	Yes No
Losses not to exceed:	\$500,000 for one fiscal quarter in a fiscal year, provided, however that Bank shall allow a loss of greater than \$500,000 for the fiscal quarter ending March 31, 1998 as a result of Borrower's acquisition of New Media Communications, Ltd.		Yes No

Maintain on a Quarterly Basis

Minimum Debt Service Coverage\*\*\* 1.50:1.00 \_\_\_\_\_:1.00 Yes No  
 \*\*\*For calculation purposes Debt Service Coverage is net income plus depreciation, amortization and interest expense, less unfunded capital expenditures, divided by interest expense and scheduled principal payments, all calculated on a quarterly basis.

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BANK USE ONLY

Received by: \_\_\_\_\_  
 AUTHORIZED SIGNER

Date: \_\_\_\_\_

Verified: \_\_\_\_\_  
 AUTHORIZED SIGNER

Date: \_\_\_\_\_

Compliance Status: Yes No

COMMENTS REGARDING EXCEPTIONS: See Attached.

Sincerely,

Harmonic Lightwaves, Inc.

\_\_\_\_\_  
 SIGNATURE

\_\_\_\_\_  
 TITLE

\_\_\_\_\_  
 DATE

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EXHIBIT C

BORROWING BASE CERTIFICATE

Borrower: HARMONIC LIGHTWAVES, INC. Lender: SILICON VALLEY BANK  
 3003 Tasman Drive  
 Santa Clara, CA 95054

Commitment Amount: \$12,000,000

ACCOUNTS RECEIVABLE

- Accounts Receivable Book Value as of \_\_\_\_\_ \$ \_\_\_\_\_
- Additions (please explain on reverse) \$ \_\_\_\_\_

3. TOTAL ACCOUNTS RECEIVABLE \$ \_\_\_\_\_

ACCOUNTS RECEIVABLE DEDUCTIONS (without duplication)

4.	Amounts over 90 days due	\$ _____	
5.	Balance of 50% over 90 day accounts	\$ _____	
6.	Credit Balances over 90 day	\$ _____	
7.	Concentration Limits	\$ _____	
8.	Foreign Accounts	\$ _____	
9.	Governmental Accounts	\$ _____	
10.	Contra Accounts	\$ _____	
11.	Promotion or Demo Accounts	\$ _____	
12.	Intercompany/Employee Accounts	\$ _____	
13.	Other (please explain on reverse)	\$ _____	
14.	TOTAL ACCOUNTS RECEIVABLE DEDUCTIONS		\$ _____
15.	Eligible Accounts (#3 minus #14)		\$ _____
16.	LOAN VALUE OF ACCOUNTS (80% of #15)		\$ _____

PRE-APPROVED FOREIGN ACCOUNTS RECEIVABLE DEDUCTIONS

17.	Accounts Receivable Book Value as of _____	\$ _____	
18.	Additions (please explain on reverse)	\$ _____	
19.	TOTAL FOREIGN ACCOUNTS RECEIVABLE		\$ _____
	a. Amounts over 90 days due	\$ _____	
	b. Balance of 50% over 90 day accounts	\$ _____	
	c. Concentration Limits	\$ _____	
	d. Governmental Accounts	\$ _____	
	e. Contra Accounts	\$ _____	
	f. Promotion of Demo Accounts	\$ _____	
	g. Intercompany/Employee Accounts	\$ _____	
	h. Other (please explain on reverse)	\$ _____	
20.	TOTAL FOREIGN ACCOUNTS RECEIVABLE		
	DEDUCTIONS	\$ _____	
21.	Eligible Accounts (#19 minus #20)		\$ _____
22.	LOAN VALUE OF FOREIGN ACCOUNTS (80% OF #21)		\$ _____

LC BACKED FOREIGN ACCOUNTS

23.	Total LC Backed Foreign Accounts	\$ _____	
24.	LOAN VALUE OF LC BACKED FOREIGN ACCOUNTS (100% OF #23)	\$ _____	

BALANCES

25.	Maximum Loan Amount	\$ _____	
26.	Total Funds Available		

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	[Lesser of #25 or (#16 plus #22 plus #24)]	\$ _____	
27.	Present balance owing on Line of Credit	\$ _____	
28.	Outstanding under Sublimits (LC or FX)	\$ _____	
29.	RESERVE POSITION (#26 minus #27 and #28)	\$ _____	

The undersigned represents and warrants that this is true, complete and correct, and that the information in this Borrowing Base Certificate complies with the representations and warranties in the Amended and Restated Loan and Security Agreement between the undersigned and Silicon Valley Bank.

COMMENTS

BANK USE ONLY

REC'D BY: \_\_\_\_\_  
AUTH. SIGNER

DATE: \_\_\_\_\_

VERIFIED: \_\_\_\_\_  
AUTH. SIGNER

DATE: \_\_\_\_\_





the effect of the foregoing, the Reserve Requirement shall

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reflect any other reserves required to be maintained by Bank by reason of any Regulatory Change against (i) any category of liabilities which includes deposits by reference to which the LIBOR Rate is to be determined as provided in the definition of "LIBOR Base Rate" or (ii) any category of extensions of credit or other assets which include Loans.

2. Requests for Loans; Confirmation of Initial Loans: Each LIBOR Rate Loan shall be made upon the irrevocable written request of Borrower received by Bank not later than 11:00 a.m. (Santa Clara, California time) on the Business Day three (3) Business days prior to the date such Loan is to be made. Each such notice shall specify the date such Loan is to be made, which day shall be a Business Day; the amount of such Loan, the Interest Period for such Loan, and comply with such other requirements as Bank determines are reasonable or desirable in connection therewith.

Each written request for a LIBOR Rate Loan shall be in the form of a LIBOR Rate Loan Borrowing Certificate as set forth on the LIBOR Rate Loan Borrowing Certificate, which shall be duly executed by the Borrower.

Each Prime Rate Loan shall be made upon the irrevocable written request of Borrower received by Bank not later than 3:00 p.m. (Santa Clara, California time) on the Business Day on which such Loan is to be made. Each such notice shall specify the date such Loan is to be made, day shall be a Business Day and the amount of such Loan, and comply with such other requirements as Bank determines are reasonable or desirable in connection therewith.

### 3. Conversion/Continuation of Loans.

(a) Borrower may from time to time submit in writing a request that Prime Rate Loans be converted to LIBOR Rate Loans or that any existing LIBOR Rate Loans continue for an additional Interest Period. Such request shall specify the amount of the Prime Rate Loans which will constitute LIBOR Rate Loans (subject to the limits set forth below) and the Interest Period to be applicable to such LIBOR Rate Loans. Each written request for a conversion to a LIBOR Rate Loan or a continuation of a LIBOR Rate Loan shall be substantially in the form of a LIBOR Rate Conversion/Continuation Certificate as set forth on LIBOR Rate Conversion/Continuation Certificate, which shall be duly executed by the Borrower. Subject to the terms and conditions contained herein, three (3) Business Days after Bank's receipt of such a request from Borrower, such Prime Rate Loans shall be converted to LIBOR Rate Loans or such LIBOR Rate Loans shall continue, as the case may be provided that:

(i) no Event of Default or event which with notice or passage of time or both would constitute an Event of Default exists;

(ii) no party thereto shall have sent any notice of termination of this Supplement or of the Loan Agreement;

(iii) Borrower shall have complied with such customary procedures as Bank has established from time to time for Borrower's requests for LIBOR Rate Loans;

(iv) the amount of a LIBOR Rate Loan shall be \$500,000.00 or such greater amount which is an integral multiple of \$50,000; and

(v) Bank shall have determined that the Interest Period or LIBOR Rate is available to Bank which can be readily determined as of the date of the request for such LIBOR Rate Loan.

Any request by Borrower to convert Prime Rate Loans to LIBOR Rate Loans or continue any existing LIBOR Rate Loans shall be irrevocable. Notwithstanding anything to the contrary contained herein, Bank shall not be required to purchase United States Dollar deposits in the London interbank market or other applicable LIBOR Rate market to fund any LIBOR Rate Loans, but the provisions hereof shall be deemed to apply as if Bank had purchased such deposits to fund the LIBOR Rate Loans.

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(b) Any LIBOR Rate Loans shall automatically convert to Prime Rate Loans upon the last day of the applicable Interest Period, unless Bank has received and approved a complete and proper request to continue such LIBOR Rate Loans at least three (3) Business Days prior to such last day in accordance with

the terms hereof. Any LIBOR Rate Loans shall, at Bank's option, convert to Prime Rate Loans in the event that (i) an Event of Default, or event which with the notice or passage of time or both would constitute an Event of Default, shall exist, (ii) this Supplement or the Loan Agreement shall terminate, or (iii) the aggregate principal amount of the Prime Rate Loans which have previously been converted to LIBOR Rate Loans, or the aggregate principal amount of existing LIBOR Rate Loans continued, as the case may be, at the beginning of an Interest Period shall at any time during such Interest Period exceed either (A) the aggregate principal amount of the Loans then outstanding or (B) the Loans then available to Borrower hereunder. Borrower agrees to pay to Bank, upon demand by Bank (or Bank may, at its option, charge Borrower's loan account) any amounts required to compensate Bank for any loss (including loss of anticipated profits), cost or expense incurred by such person, as a result of the conversion of LIBOR Rate Loans to Prime Rate Loans pursuant to any of the foregoing.

(c) On all Loans, Interest shall be payable by Borrower to Bank monthly in arrears not later than the twenty-third (23rd) day of each calendar month at the applicable Interest Rate.

#### 4. Additional Requirements/Provisions Regarding LIBOR Rate Loans; Etc.

(a) If for any reason (including voluntary or mandatory prepayment or acceleration), Bank receives all or part of the principal amount of a LIBOR Rate Loan prior to the last day of the Interest Period for such Loan, Borrower shall immediately notify Borrower's account officer at Bank and, on demand by Bank, pay Bank the amount (if any) by which (i) the additional interest which would have been payable on the amount so received had it not been received until the last day of such Interest Period exceeds (ii) the interest which would have been recoverable by Bank by placing the amount so received on deposit in the certificate of deposit markets or the offshore currency interbank markets or United States Treasury investment products, as the case may be, for a period starting on the date on which it was so received and ending on the last day of such Interest Period at the interest rate determined by Bank in its reasonable discretion. Bank's determination as to such amount shall be conclusive absent manifest error.

(b) Borrower shall pay to Bank, upon demand by Bank, from time to time such amounts as Bank may determine to be necessary to compensate it for any costs incurred by Bank that Bank determines are attributable to its making or maintaining of any amount receivable by Bank hereunder in respect of any Loans relating thereto (such increases in costs and reductions in amounts receivable being herein called "Additional Costs"), in each case resulting from any Regulatory Change which:

(i) changes the basis of taxation of any amounts payable to Bank under this Supplement in respect of any Loans (other than changes with affect taxes measured by or imposed on the overall net income of Bank by the jurisdiction in which such Bank has its principal office); or

(ii) imposes or modifies any reserve, special deposit or similar requirements relating to any extensions of credit or other assets of, or any deposits with or other liabilities of Bank (including any Loans or any deposits referred to in the definition of "LIBOR Base Rate"); or

(iii) imposes any other condition affecting this Supplement (or any of such extensions of credit or liabilities).

Bank will notify Borrower of any event occurring after the date of the Loan Agreement which will entitle Bank to compensation pursuant to this section as promptly as practicable after it obtains knowledge thereof and determines to request such compensation. Bank will furnish Borrower with a statement setting forth the basis and amount of each request by Bank for compensation under this Section 4. Determinations and allocations by Bank for purposes of this Section 4 of the effect of any Regulatory Change on its costs of maintaining its obligations to make Loans or of making or maintaining Loans or on amounts receivable by it in respect of Loans, and of the additional amounts required to compensate Bank in respect of any Additional Costs, shall be conclusive absent manifest error.

(c) Borrower shall pay to Bank, upon the request of Bank, such amount or amounts as shall be sufficient (in the sole good faith opinion of such Bank) to compensate it for any loss, costs or expense incurred by it as a result of any failure by Borrower to borrow a Loan on the date for such borrowing specified in the relevant notice of borrowing hereunder.

(d) If Bank shall determine that the adoption or implementation of any applicable law, rule, regulation or treaty regarding capital adequacy, or any change herein, or any change in the interpretation or administration thereof by any governmental authority, central bank or comparable agency charged with the interpretation or administration thereof, or compliance by Bank (or its applicable lending office) with any respect or directive regarding capital adequacy (whether or not having the force of law) or any such authority, central bank or comparable agency, has or would have the effect of reducing the rate of return on capital of Bank or any person or entity controlling Bank (a "Parent") as a consequence of its obligations hereunder to a level below that which Bank (or its Parent) could have achieved but for such adoption, change or compliance (taking into consideration its policies with respect to capital adequacy) by an amount deemed by Bank to be material, then from time to time, within 15 days after demand by Bank, Borrower shall pay to Bank such additional amount or amounts as will compensate Bank for such reduction. A statement of Bank claiming compensation under this Section and setting forth the additional amount or amounts to be paid to it hereunder shall be conclusive absent manifest error.

(e) If at any time Bank, in its sole and absolute discretion, determines that: (i) the amount of the LIBOR Rate Loans for periods equal to the corresponding Interest Periods are not available to Bank in the offshore currency interbank markets, (ii) the LIBOR Rate does not accurately reflect the cost to Bank of lending the LIBOR Rate Loan, then Bank shall promptly give notice thereof to Borrower, and upon the giving of such notice Bank's obligation to make the LIBOR Rate Loans shall terminate, unless Bank and the Borrower agree in writing to a different interest rate applicable to LIBOR Rate Loans. If it shall become unlawful for Bank to continue to fund or maintain any Loans, or to perform its obligations hereunder, upon demand by Bank, Borrower shall repay the Loans in full with accrued interest thereon and all other amounts payable by Borrower hereunder (including, without limitation, any amount payable in connection with such prepayment pursuant to Section 4(a)).

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LIBOR RATE LOAN BORROWING CERTIFICATE

The undersigned hereby certifies as follows:

I, \_\_\_\_\_, am the duly elected and acting  
\_\_\_\_\_ of Harmonic Lightwaves, Inc. ("Borrower").

This certificate is delivered pursuant to Section 2 of that certain LIBOR Supplement together with the Amended and Restated Loan and Security Agreement, dated December 24, 1997 ("Loan Agreement"), between Borrower and Silicon Valley Bank ("Bank"). The terms used in this Borrowing Certificate which are defined in the Loan Agreement have the same meaning herein as ascribed to them therein.

Borrower hereby requests on \_\_\_\_\_, 19\_\_, a LIBOR Rate Loan (the "Loan") as follows:

(a) The date on which the Loan is to be made is \_\_\_\_\_,  
19\_\_.

(b) The amount of the Loan is to be \_\_\_\_\_  
(\$ \_\_\_\_\_), for an Interest Period of \_\_\_\_\_ month(s).

All representations and warranties of Borrower stated in the Loan Agreement are true, correct and complete in all material respects as of the date of this request for a loan; provided, however, that those representations and warranties expressly referring to another date shall be true, correct and complete in all material respects as of such date.

IN WITNESS WHEREOF, this Borrowing Base Certificate is executed by the undersigned as of this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_.

HARMONIC LIGHTWAVES, INC.

By: \_\_\_\_\_

Title: \_\_\_\_\_

-----  
LIBOR Pricing Date                      LIBOR Rate                      LIBOR Rate Variance                      Maturity Date  
-----  
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LIBOR RATE CONVERSION/CONTINUATION CERTIFICATE

The undersigned hereby certifies as follows:

I, \_\_\_\_\_, am the duly elected and acting  
\_\_\_\_\_ of Harmonic Lightwaves, Inc. ("Borrower").

This certificate is delivered pursuant to Section 2 of that certain LIBOR Supplement together with the Amended and Restated Loan and Security Agreement, dated December 24, 1997 ("Loan Agreement"), between Borrower and Silicon Valley Bank ("Bank"). The terms used in this LIBOR Rate Conversion/Continuation Certificate which are defined in the Loan Agreement have the same meaning herein as ascribed to them therein.

Borrower hereby requests on \_\_\_\_\_, 19\_\_ a LIBOR Rate Loan (the "Loan") as follows:

(a) \_\_\_\_\_ (i) A rate conversion of an existing Prime Rate Loan from a Prime Rate Loan to a LIBOR Rate Loan; or

\_\_\_\_\_ (ii) A continuation of an existing LIBOR Rate Loan as a LIBOR Rate Loan;

[Check (i) or (ii) above]

(b) The date on which the Loan is to be made is \_\_\_\_\_, 19\_\_.

(c) The amount of the Loan is to be \_\_\_\_\_ (\$\_\_\_\_\_),  
for an Interest Period of \_\_\_\_\_ month(s).

All representations and warranties of Borrower stated in the Loan Agreement are true, correct and complete in all material respects as of the date of this request for a loan; provided, however, that those representations and warranties expressly referring to another date shall be true, correct and complete in all material respects as of such date.

IN WITNESS WHEREOF, this LIBOR Rate Conversion/Continuation Certificate is executed by the undersigned as of this \_\_\_\_\_ day or \_\_\_\_\_, 19\_\_.

HARMONIC LIGHTWAVES, INC.

By: \_\_\_\_\_

Title: \_\_\_\_\_

FOR INTERNAL BANK USE ONLY

-----  
LIBOR Pricing Date                      LIBOR Rate                      LIBOR Rate Variance                      Maturity Date  
-----  
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DISBURSEMENT REQUEST AND AUTHORIZATION

Borrower: Harmonic Lightwaves, Inc.                      Bank: Silicon Valley Bank

LOAN TYPE. This is a Variable Rate, Revolving Line of Credit of a principal amount up to \$12,000,000 and a Variable Rate, Equipment Line of Credit of a principal amount of up to \$3,000,000.

PRIMARY PURPOSE OF LOAN. The primary purpose of this loan is for business.

SPECIFIC PURPOSE. The specific purpose of this loan is: Short term working capital and purchase of equipment.

DISBURSEMENT INSTRUCTIONS. Borrower understands that no loan proceeds will be disbursed until all of Bank's conditions for making the loan have been satisfied. Please disburse the loan proceeds as follows:

	Revolving Line -----	Equipment Line -----
Amount paid to Borrower directly:	\$ _____	\$ _____
Undisbursed Funds	\$ _____	\$ _____
Principal	\$12,000,000	\$3,000,000

CHARGES PAID IN CASH. Borrower has paid or will pay in cash as agreed the following charges:

Prepaid Finance Charges Paid in Cash:	\$ _____
\$28,000 Loan Fee	
\$ _____ Accounts Receivables Audit	
Other Charges Paid in Cash:	\$ _____
\$100 UCC Filing Fees	
\$TBD Outside Counsel Fees and Expenses (Estimate)	
Total Charges Paid in Cash	\$ _____

AUTOMATIC PAYMENTS. Borrower hereby authorizes Bank automatically to deduct from Borrower's account numbered \_\_\_\_\_ the amount of any loan payment. If the funds in the account are insufficient to cover any payment, Bank shall not be obligated to advance funds to cover the payment.

FINANCIAL CONDITION. BY SIGNING THIS AUTHORIZATION, BORROWER REPRESENTS AND WARRANTS TO BANK THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND CORRECT AND THAT THERE HAS BEEN NO ADVERSE CHANGE IN BORROWER'S FINANCIAL CONDITION AS DISCLOSED IN BORROWER'S MOST RECENT FINANCIAL STATEMENT TO BANK. THIS AUTHORIZATION IS DATED AS OF DECEMBER 24, 1997.

BORROWER:

Harmonic Lightwaves, Inc.

\_\_\_\_\_  
Authorized Officer

AGREEMENT TO PROVIDE INSURANCE

GRANTOR: Harmonic Lightwaves, Inc.                      BANK: Silicon Valley Bank

INSURANCE REQUIREMENTS. Harmonic Lightwaves, Inc. ("Grantor") understands that insurance coverage is required in connection with the extending of a loan or the providing of other financial accommodations to Grantor by Bank. These requirements are set forth in the Loan Documents. The following minimum insurance coverages must be provided on the following described collateral (the "Collateral"):

- Collateral: All Inventory, Equipment and Fixtures.
- Type: All risks, including fire, theft and liability.
- Amount: Full insurable value.
  
- Basis: Replacement value.

Endorsements: Loss payable clause to Bank with stipulation that coverage will not be canceled or diminished without a minimum of twenty (20) days' prior written notice to Bank.

INSURANCE COMPANY. Grantor may obtain insurance from any insurance company Grantor may choose that is reasonably acceptable to Bank. Grantor understands that credit may not be denied solely because insurance was not purchased through Bank.

FAILURE TO PROVIDE INSURANCE. Grantor agrees to deliver to Bank, on or before closing, evidence of the required insurance as provided above, with an effective date of December 24, 1997, or earlier. Grantor acknowledges and agrees that if Grantor fails to provide any required insurance or fails to continue such insurance in force, Bank may do so at Grantor's expense as provided in the Loan and Security Agreement. The cost of such insurance, at the option of Bank, shall be payable on demand or shall be added to the indebtedness as provided in the security document. GRANTOR ACKNOWLEDGES THAT IF BANK SO PURCHASES ANY SUCH INSURANCE, THE INSURANCE WILL PROVIDE LIMITED PROTECTION AGAINST PHYSICAL DAMAGE TO THE COLLATERAL, UP TO THE BALANCE OF THE LOAN; HOWEVER, GRANTOR'S EQUITY IN THE COLLATERAL MAY NOT BE INSURED. IN ADDITION, THE INSURANCE MAY NOT PROVIDE ANY PUBLIC LIABILITY OR PROPERTY DAMAGE INDEMNIFICATION AND MAY NOT MEET THE REQUIREMENTS OF ANY FINANCIAL RESPONSIBILITY LAWS.

AUTHORIZATION. For purposes of insurance coverage on the Collateral, Grantor authorizes Bank to provide to any person (including any insurance agent or company) all information Bank deems appropriate, whether regarding the Collateral, the loan or other financial accommodations, or both.

GRANTOR ACKNOWLEDGES HAVING READ ALL THE PROVISIONS OF THIS AGREEMENT TO PROVIDE INSURANCE AND AGREES TO ITS TERMS. THIS AGREEMENT IS DATED DECEMBER 24, 1997.

GRANTOR:

Harmonic Lightwaves, Inc.

x \_\_\_\_\_  
Authorized Officer

FOR BANK USE ONLY

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INSURANCE VERIFICATION

DATE: \_\_\_\_\_ PHONE: \_\_\_\_\_  
AGENT'S NAME: \_\_\_\_\_  
INSURANCE COMPANY: \_\_\_\_\_  
POLICY NUMBER: \_\_\_\_\_  
EFFECTIVE DATES: \_\_\_\_\_  
COMMENTS: \_\_\_\_\_

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[SILICON VALLEY BANK LOGO]

SILICON VALLEY BANK

PRO FORMA INVOICE FOR LOAN CHARGES

BORROWER: HARMONIC LIGHTWAVES, INC.

LOAN OFFICER: PETER KIDDER

DATE: DECEMBER 24, 1997

REVOLVING LOAN FEE	\$18,000.00
EQUIPMENT LINE LOAN FEE	10,000.00
CREDIT REPORT	35.00
TOTAL FEE DUE	\$28,035.00

PLEASE INDICATE THE METHOD OF PAYMENT:

{ } A CHECK FOR THE TOTAL AMOUNT IS ATTACHED.



LETTERS OF CREDIT. To execute letter of credit applications and other related documents pertaining to Bank's issuance of letters of credit.

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FOREIGN EXCHANGE CONTRACTS. To execute and deliver foreign exchange contracts, either spot or forward, from time to time, in such amount as, in the judgment of the officer or officers herein authorized.

ISSUE WARRANTS. To issue warrants to purchase Borrower's capital stock, for such class, series and number, and on such terms, as an officer of Borrower shall deem appropriate.

FURTHER ACTS. In the case of lines of credit, to designate additional or alternate individuals as being authorized to request advances thereunder, and in all cases, to do and perform such other acts and things, to pay any and all fees and costs, and to execute and deliver such other documents and agreements, including agreements waiving the right to a trial by jury, as they may in their discretion deem reasonably necessary or proper in order to carry into effect the provisions of these Resolutions.

BE IT FURTHER RESOLVED, that any and all acts authorized pursuant to these Resolutions and performed prior to the passage of these resolutions are hereby ratified and approved, that these Resolutions shall remain in full force and effect and Bank may rely on these Resolutions until written notice of their revocation shall have been delivered to and received by Bank. Any such notice shall not affect any of Borrower's agreements or commitments in effect at the time notice is given.

I FURTHER CERTIFY that the persons named above are principal officers of the Borrower and occupy the positions set opposite their respective names; that the foregoing Resolutions now stand of record on the books of the Borrower; and that they are in full force and effect and have not been modified or revoked in any manner whatsoever.

IN WITNESS WHEREOF, I have hereunto set my hand on December 24, 1997 and attest that the signatures set opposite the names listed above are their genuine signatures.

CERTIFIED TO AND ATTESTED BY:

X \_\_\_\_\_  
\*Secretary or Assistant Secretary

X \_\_\_\_\_

\*NOTE: In case the Secretary or other certifying officer is designated by the foregoing resolutions as one of the signing officers, this resolution should also be signed by a second Officer or Director of Borrower.



HARMONIC LIGHTWAVES  
1997 ANNUAL REPORT

[GRAPHIC]

BREAKING THE BANDWIDTH BARRIER

PROFILE: MOVING MORE KINDS OF INFORMATION FASTER

HARMONIC LIGHTWAVES, INC. DESIGNS, MANUFACTURES AND MARKETS DIGITAL- AND LIGHTWAVE-BASED COMMUNICATIONS SYSTEMS THAT DELIVER VIDEO, AUDIO AND DATA OVER HYBRID FIBER/COAX (HFC), SATELLITE AND WIRELESS NETWORKS. HARMONIC'S ADVANCED SOLUTIONS ENABLE CABLE TELEVISION AND OTHER NETWORK OPERATORS TO PROVIDE A RANGE OF BROADCAST AND INTERACTIVE BROADBAND SERVICES THAT INCLUDE HIGH-SPEED INTERNET ACCESS AND VIDEO-ON-DEMAND.

HEADQUARTERED IN SUNNYVALE, CALIFORNIA, HARMONIC OPERATES ITS NEW MEDIA COMMUNICATION SUBSIDIARY AND AN R&D FACILITY IN ISRAEL, ALONG WITH A SALES AND SUPPORT CENTER IN THE UNITED KINGDOM. HARMONIC IS ISO 9001-CERTIFIED AND EMPLOYS MORE THAN 250 PEOPLE. THE COMPANY'S STOCK IS TRADED ON THE NASDAQ STOCK MARKET UNDER THE SYMBOL "HLIT."

FOR MORE INFORMATION, PLEASE VISIT THE COMPANY'S WEB SITE AT:  
[WWW.HARMONIC-LIGHTWAVES.COM](http://WWW.HARMONIC-LIGHTWAVES.COM)

This annual report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Actual results could differ materially from those projected in the forward-looking statements as a result of a number of factors, including those set forth under "Factors That May Affect Future Results of Operations" and elsewhere in this annual report.

TO OUR SHAREHOLDERS

WHILE 1997 WAS ANOTHER YEAR OF PROFITABLE GROWTH FOR HARMONIC LIGHTWAVES, IT WAS ALSO HIGHLIGHTED BY SIGNIFICANT EXPANSION ACTIVITIES DESIGNED TO OPEN UP NEW POSSIBILITIES FOR THE COMPANY.

We continued to solidify our leadership position in providing advanced fiber optic transmission products for cable service providers. Equally important, the combination of new product introductions, enhancements to existing product lines and a key acquisition enabled us to extend the horizons of Harmonic Lightwaves to encompass a much wider range of market opportunities in the rapidly evolving broadband communications arena.

For the year ended December 31, 1997, Harmonic reported revenues of \$74.4 million, a 22% increase compared to revenues of \$60.9 million in 1996. Net income for the year was \$4.9 million, or \$0.43 per share.

SOLID PROGRESS IN A GROWING MARKET

Harmonic's growth in 1997 underscored our leadership among the new wave of high technology companies serving the high-speed transmission needs of cable service providers. Our sales increased by 60% during the first half of the year, before slowing significantly during the second half due to soft market conditions in the industry worldwide. In spite of this downturn, we were ranked in the top 20 of the Silicon Valley Technology "Fast 50," an independent survey that

identifies the fastest-growing technology companies in the San Francisco Bay Area. Harmonic's market is a truly global one, as illustrated by the fact that international sales continued to account for more than half of our revenues. To better serve the needs of this worldwide customer base, we opened a new sales and technical support center in the United Kingdom during the year; plans call for the opening of additional international offices in 1998.

In the past year, Harmonic introduced a number of new products to support our fiber optic transmission-based core business. Two additions to our PWRBlazer(TM) family of optical node receivers -- the PWRBlazer Scaleable Node and the PWRBlazer Mini Node -- substantially expand the cost effectiveness, flexibility and upgradability options we offer cable operators and telecommunications companies. The groundbreaking PWRBlazer Scaleable Node is particularly important in that it represents the first fiber optic transmission product that enables operators to incrementally add bandwidth on demand.

We also extended the scope of Harmonic's MAXLink(TM) 1550 nm transmitters with the introduction of two new high-output family members. Similar enhancements to our PWRLink(TM) 1310 nm DFB transmitter family are now underway, with introductions slated for the first quarter of 1998. And Harmonic added to the element management capabilities we provide service operators using hybrid fiber/coax (HFC) networks by introducing the NETWatch(TM) Multiple Element Manager and the NETWatch Management Transponder. All of these enhancements to our existing HFC product lines provide customers with tremendous flexibility and price/performance options in designing and implementing their system solutions.

[GRAPH - NET SALES IN MILLIONS]

#### NEW BROADBAND HORIZONS

While the products just mentioned were important in solidifying Harmonic's leadership position in fiber optic transmission technology, perhaps the most compelling news of the year was related to our expansion into the extended reaches of broadband communications. This migration began with our introduction of the TRANsend(TM) family of video and audio digital compression products for the broadband network headend.

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[GRAPH - NET INCOME IN MILLIONS]

Although the lion's share of initial applications for the TRANsend family will be derived from sales to cable operators deploying HFC networks, Harmonic's new digital headend products enable us to cultivate new broadband communications customers, including multichannel, multipoint distribution system (MMDS) wireless cable service providers and direct broadcast satellite (DBS) communications suppliers. Our TRANsend QAM modulator became the first commercially available product of its kind to support the cable industry's Data Over Cable Service Interface Specification (DOCSIS). And we announced a new Cable Modem Partnership Program designed to ensure interoperability between our digital headend products and cable modems from partner companies such as Daewoo, Panasonic and Thomson. We were the first to demonstrate this interoperability between two independently developed products at the 1997 Western Cable Show.

Equally important to Harmonic's strategy is the recent acquisition of New Media Communication Ltd., a leader in broadband, high-speed data delivery software and hardware technology. The acquisition expands Harmonic's product portfolio by enabling cable, satellite and wireless operators to provide video, audio, high-speed Internet and other advanced services over today's networks. The narrative of this report explains the implications of our digital headend and New Media products and technologies in greater detail.

#### BROADBAND

##### BROAD OPPORTUNITIES

Harmonic's broadband communications activities represent a natural extension of our integrated systems and core technology, and come at a time of great change and opportunity in the industry. Microsoft -- which views the cable network as a highly effective interactive medium to home users -- made a substantial investment in the cable industry in 1997. Further evidence was supplied by interactive services provider @Home, whose initial public offering points to the

potential for a significant subscriber base willing to pay for the new wave of high-speed, interactive services. Throughout the industry, new standards are continuing to coalesce, and competition among service providers is continuing to intensify.

All of these service providers are seeking the greater bandwidth, superior price/performance, ease of use and comprehensive network management capabilities that Harmonic Lightwaves' products provide.

[GRAPH - NET SALES BY REGION]

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Combined with our world-class customer service and the continued integration and enhancement of all of our product lines to support the convergence of video, audio and data, these capabilities place the company in an excellent position to take advantage of future opportunities for growth.

#### MOVING FORWARD

In summary, 1997 was a year during which Harmonic Lightwaves continued to grow profitably while executing a strategy that opens up many new opportunities for the future. I want to extend my gratitude to all of Harmonic's people, whose dedication and hard work during the year were instrumental in enabling us to achieve our solid results.

On behalf of everyone at the company, I want to thank all of our shareholders, customers and partners for their support. The time has come to break down the bandwidth barrier. We look forward to tackling that challenge, and continuing to advance the frontiers of modern communications to bring people and information closer together than ever before.

Sincerely,

/s/ ANTHONY J. LEY

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ANTHONY J. LEY

PRESIDENT, CHIEF EXECUTIVE OFFICER,  
AND CHAIRMAN OF THE BOARD

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BREAKING  
THE BANDWIDTH  
BARRIER

HARMONIC LIGHTWAVES  
is about moving information  
in today's application-rich  
world

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MOVING DATA USED TO BE SIMPLE

BECAUSE THE DATA WAS SIMPLE

Moving more kinds of information, more kinds of ways. That's what modern communications is all about.

The Internet is everywhere. Networks of all kinds -- from the wide area to the local area, enterprise intranets to the desktop -- are ubiquitous. And with each year, the information they carry becomes more complex. Voice, data, graphics, video, audio -- all are competing for limited bandwidth in a multimedia age.

That's because all of this information is still largely transmitted through standard modems, over standard twisted-pair telephone lines, creating a classic bottleneck where the World Wide Web slows down to become the World Wide Wait.

The simplest way to understand the concept of bandwidth is to think of today's transmission media -- phone lines, cable, etc. -- as pipes. A small pipe can only let so much information through, with only so much speed, no matter how advanced the technology leading into or out of the pipe may be. The equation is simple: the bigger the pipe, the greater the potential bandwidth.

Today, many different companies from seemingly disparate corners of the communications industry are trying to find ways to widen the pipes and surmount the bandwidth barrier. From traditional telecommunications providers to cable operators, Internet service providers to direct broadcast satellite and wireless transmission companies -- all are looking for a competitive edge, a better way to provide bandwidth and interactive services to a market ready to embrace the benefits of what promises to be a truly interactive age.

AND THAT'S WHERE

HARMONIC LIGHTWAVES CAN HELP

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[GRAPHIC]

MOVING DATA TODAY IS MUCH MORE COMPLEX

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VOICE

AUDIO

DATA

VIDEO

[LOGO]

ALL COMPETING FOR LIMITED BANDWIDTH

AT THE SPEED OF LIGHT

Since its founding in 1988, Harmonic Lightwaves has established itself as the technology leader in providing advanced fiber optic transmission solutions to cable operators around the world. Over the years, our array of optical transmitters, nodes, receivers and element management hardware and software have enabled us to provide customers with better and faster ways of transmitting information, by harnessing the incredible speed of light within the framework of an electronic medium.

In the cable world, Harmonic leads the way. We've attained this position thanks to our proprietary leading-edge technology, our unique system and network management capabilities, the superior price/performance of our products, and -- perhaps most important of all for the future -- the return path capabilities we've pioneered to pave the way for interactive applications, for business and home users.

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But cable communications is just part of a much larger picture. Recently, Harmonic embarked on a strategy to integrate digital headend technology into our product lines. Today, that technology works hand in hand with our fiber optic transmission solutions to provide our traditional cable customers not only with better and faster ways to transmit information, but also with the means to exploit new business and application opportunities.

Even more important, Harmonic's new technology -- some of which we acquired in 1997 -- opens up much broader opportunities for us. From our roots as a provider

of fiber optic solutions for cable operators, we've now grown to become a supplier of integrated broadband systems for delivering video, audio and data -- not only over cable, but via wireless and satellite communications as well.

ACROSS THE STREET OR AROUND THE WORLD.

[GRAPHIC]

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[GRAPHIC]

SATELLITE OPTICS

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[GRAPHICS]

...more kinds of data moving in  
MORE KINDS OF WAYS

#### THE DIGITAL IMPERATIVE

Harmonic's first foray beyond our fiber optic roots occurred with the 1997 introduction of the TRANsend(TM) video and audio compression product family for the broadband network headend. The TRANsend family -- which includes a quadrature amplitude modulation (QAM) modulator, an MPEG (Motion Picture Experts Group)-2 program encoder, and a video transmission platform -- offers service providers enhanced picture quality and greater flexibility and reliability when adding advanced services that require digital compression.

Combined with Harmonic's fiber optic offerings, our TRANsend products provide a complete solution that will not only help our existing cable operator customer base to stay competitive, but will also open up new market opportunities for them. By the turn of the century, it's likely that digital compression technology will be deployed to millions of homes, providing subscribers with such advanced services as Internet access, video services, telecommunications and videoconferencing.

Because of their bandwidth, capacity and overall cost-effectiveness, broadband networks are ideally suited to provide all advanced data services into the home. Harmonic's TRANsend products, which integrate seamlessly with our fiber optic transmission and element management product lines, are positioned to anticipate this convergence. Equally important, the new digital headends enable Harmonic to move beyond the cable industry and serve the needs of satellite and wireless communications providers as well.

But the TRANsend family was merely the first of two important steps that helped Harmonic expand its horizons in 1997. The other was our first corporate acquisition: New Media Communication Ltd.

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#### NEW MEDIA: NEW POSSIBILITIES

Following the introduction of the TRANsend family, one of the most significant pieces of the digital puzzle that remained for Harmonic to solve was gaining expertise in high-speed data transmission technology. We accomplished this goal by acquiring New Media Communication Ltd., a company whose advanced digital headend software for managing and transmitting data supports multicasting and unicasting over broadband media. Complementing this innovative multimedia delivery software is New Media's range of extremely high-speed end user PCI receiver cards, which are compatible with cable, satellite and LMDS/MMDS wireless transmission technologies.

New Media is the only company offering commercially available, high-speed data solutions on all broadband platforms, and has become the first to deploy its technology in a commercial LMDS system. Such varied wireless and satellite customers as New York City's Cellularvision and Germany's KMS/Thyssen -- the

latter serving a huge market comprised of more than 25 million potential satellite and cable service subscribers -- expand our focus beyond our traditional customer base of cable operators. The acquisition now allows Harmonic to move more kinds of information, in more different ways, than ever before.

BUT BACK TO THE BANDWIDTH ISSUE. HOW FAST IS FAST?

FIG. A: HARMONIC LIGHTWAVES ENHANCED TRANSMISSION BANDWIDTH

[GRAPHIC]

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HARMONIC LIGHTWAVES IS MOVING  
THE FRONTIERS OF  
BROADBAND COMMUNICATIONS

SPEED MERCHANTS FOR THE INTERACTIVE AGE

To finally put the bandwidth issue into perspective, it's important to understand the magnitude of Harmonic's technology and products. A few comparisons are in order. Today, most standard modems transmit information over twisted-pair telephone lines at a rate of 28.8 Kbps (kilobits per second). ISDN lines, meanwhile, have the capability of transmitting data at speeds of up to 128 Kbps.

Cable modems, by comparison, up the ante to 10 Mbps (megabits per second) -- almost eighty times as fast as ISDN, and more than 300 times the speed of a standard telephone modem. Satellite communications today top out at 400 Kbps; wireless and DSL communications at 6-10 Mbps.

And now for the clincher. Harmonic's combined fiber optic, digital and New Media products support Internet content delivery and data broadcasting at speeds of up to 52 Mbps via cable and MMDS wireless. Our performance for satellite and LMDS wireless is just a shade behind, at 48 Mbps. By any measure, that's extremely fast.

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To be sure, a number of things have to happen across the industry and throughout today's communications infrastructures for this kind of bandwidth to be available for everyone; the process is just getting underway. But it's more than just a pipedream. It's happening now, and it's going to happen even faster tomorrow. And as it does, Harmonic intends to be there every step of the way. Which leaves one message for all those struggling to overcome the bandwidth barrier:

THE LINES ARE OPEN

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35. corporate information

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SELECTED FINANCIAL DATA

YEAR ENDED DECEMBER 31, 1997 1996 1995 1994 1993

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(IN THOUSANDS, EXCEPT PER SHARE DATA)

STATEMENT OF OPERATIONS DATA:

Net sales	\$74,442	\$60,894	\$39,180	\$ 18,224	\$ 6,714
Gross profit	34,605	27,731	17,851	6,467	1,458
Income (loss) from operations	4,506	5,204	3,761	(2,189)	(4,956)
Net income (loss)	4,929	5,918	4,121	(2,368)	(5,163)
Basic net income per share(1)	0.48	0.59	0.71	--	--
Diluted net income per share(1)	0.43	0.52	0.40	--	--

BALANCE SHEET DATA:

Cash and cash equivalents	\$13,670	\$16,410	\$22,126	\$ 1,743	\$ 4,699
Working capital	38,772	34,321	32,495	6,893	6,506
Total assets	58,887	54,633	41,817	14,578	11,093
Long term debt, including current portion	--	--	--	1,480	1,446
Mandatorily Redeemable Convertible Preferred Stock	--	--	--	29,215	26,454
Stockholders' equity (deficit)(2)	49,931	43,641	37,009	(20,717)	(18,600)

FISCAL YEARS BY QUARTER

1997

1996

-----  
(UNAUDITED, IN THOUSANDS,  
EXCEPT PER SHARE DATA)

QUARTERLY DATA:	4TH	3RD	2ND	1ST	4TH	3RD	2ND	1ST
Net sales	\$17,350	\$17,545	\$20,514	\$19,033	\$19,497	\$16,670	\$13,485	\$11,242
Gross profit	7,979	7,899	9,736	8,991	8,936	7,824	6,011	4,960
Income (loss) from operations	(97)	360	2,016	2,227	2,250	1,610	908	436
Net income	580	413	1,838	2,098	2,405	1,741	1,126	646
Basic net income per share	0.06	0.04	0.18	0.20	0.24	0.17	0.11	0.07
Diluted net income per share	0.05	0.04	0.16	0.18	0.21	0.15	0.10	0.06
Common stock price-high	\$ 16.50	\$ 20.88	\$ 20.75	\$ 25.22	\$ 23.50	\$ 26.00	\$ 23.50	\$ 14.63
Common stock price-low	10.75	15.63	12.00	13.38	15.38	15.38	11.25	9.00

The Company's Common Stock (Nasdaq symbol "HLIT") began trading publicly on the Nasdaq National Market System on May 22, 1995. Prior to that date, there was no public market for the Common Stock.

- (1) Net loss per share data for periods prior to the commencement of public trading of the Company's Common Stock on May 22, 1995 have not been presented as such presentation is not meaningful.

- (2) The Company has not paid and does not intend to pay dividends in the foreseeable future.

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MANAGEMENT'S DISCUSSION AND ANALYSIS OF  
FINANCIAL CONDITION AND RESULTS OF  
OPERATIONS

OVERVIEW

Harmonic Lightwaves, Inc. ("Harmonic" or the "Company") designs, manufactures and markets digital- and lightwave-based communications systems that deliver video, audio and data over hybrid fiber/coax ("HFC"), satellite and wireless networks. The Company's advanced solutions enable cable television and other network operators to provide a range of broadcast and interactive broadband services that include high-speed Internet access and video-on-demand. The Company offers a broad range of fiber optic transmission and digital headend products for HFC networks, and through its acquisition of New Media Communication Ltd. ("NMC") in January 1998, expanded its product offerings to include high-speed data delivery software and hardware.

This Annual Report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Actual results could differ materially from those projected in the forward-looking statements as a result of a number of factors, including those set forth under "Factors That May Affect Future Results of Operations" below and elsewhere in this annual report.

RESULTS OF OPERATIONS

The following table sets forth certain consolidated statement of operations data as a percentage of net sales for the periods indicated:

YEAR ENDED DECEMBER 31,	1997	1996	1995
-----			
Net sales	100%	100%	100%
Cost of sales	54	54	54
	----	----	----
Gross profit	46	46	46
Operating expenses:			
Research and development	16	15	16
Sales and marketing	18	16	15
General and administrative	6	6	5
	----	----	----
Total operating expenses	40	37	36
	----	----	----
Income from operations	6	9	10
Other income, net	1	1	1
	----	----	----
Income before income taxes	7	10	11
Provision for income taxes	--	--	--
	----	----	----
Net income	7%	10%	11%

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Net Sales

The Company's net sales increased by 22% to \$74.4 million in 1997. This growth in net sales was primarily attributable to higher unit sales of the Company's receiver and return path products and sales of the 1550 nm MAXLink transmission system, which began shipment during the second quarter of 1996. These factors were partially offset by lower unit sales of the YAGLink transmitters due in



part to the increasing acceptance of 1550 nm transmitters among cable operators for broadcast transmission. Net sales in the second half of 1997 were lower than in the first half of 1997 due principally to slowed capital spending in the cable television industry. The factors contributing to this slow capital spending include consolidation and system exchanges by domestic cable customers, which generally has had the effect of delaying certain system upgrades, uncertainty related to development of industry standards for digital transmission, evaluation by many cable customers of which advanced services and system architectures to provide and use, and emphasis on marketing and customer service strategies by certain international customers rather than continued construction of networks. The Company is unable to predict when cable television industry capital spending will increase. See "Factors That May Affect Future Results of Operations."

The Company's net sales increased by 55% to \$60.9 million in 1996 from \$39.2 million in 1995. This growth in net sales was primarily attributable to higher unit sales of the Company's existing products, particularly the PWRLink transmitter and return path products. In addition, the Company began shipment of its 1550 nm MAXLink transmission system during the second quarter of 1996. These factors were partially offset by lower unit sales of the YAGLink transmitters and lower selling prices for certain products.

Historically, the majority of Harmonic's net sales have been to relatively few customers, and Harmonic expects this customer concentration to continue in the foreseeable future. In 1997, sales to Capella (the Company's Canadian distributor) accounted for 17% of the Company's net sales. In 1996, sales to Tratec (the Company's former U.K. distributor), Capella and ANTEC Corporation ("ANTEC") accounted for 15%, 15% and 13%, respectively, of the Company's net sales. In 1995, sales to Tratec, ANTEC and Capella accounted for 22%, 15% and 15%, respectively, of the Company's net sales.

Harmonic has adopted a strategy of selling to major domestic customers through its own direct sales force; as a result, domestic OEM and distributor revenues were a smaller percentage of net sales in 1997 than they were in prior years. Sales to customers outside the United States represented 59%, 57% and 65% of net sales in 1997, 1996 and 1995, respectively. Harmonic expects international sales to continue to account for a substantial percentage of its net sales for the foreseeable future.

#### Gross Profit

Gross profit increased to \$34.6 million (46% of net sales) in 1997 from \$27.7 million (46% of net sales) in 1996. The increase in gross profit was principally due to higher unit sales volume and lower manufacturing costs, particularly for the Company's MAXLink products, which commenced shipment during the second quarter of 1996, and improved margins on return path products resulting from product design changes. These factors were partially offset by a less favorable product mix which included lower sales of transmitters as a percentage of net sales, and lower selling prices for certain products. Gross profit increased to \$27.7 million (46% of net sales) in 1996 from \$17.9 million (46% of net sales) in 1995. The increase in gross profit was principally due to higher unit sales volume which allowed the Company to improve fixed cost absorption and realize increasing economies of scale through higher production and purchasing volumes, partially offset by lower selling prices for certain products. A more favorable product mix, which included a higher percentage of transmitters, also contributed to the increase in gross profit in 1996.

#### Research and Development

Research and development expenses increased to \$11.7 million (16% of net sales) in 1997 from \$9.2 million (15% of net sales) in 1996. The increase in research and development expenses was principally due to increased headcount, particularly at the Company's Israeli subsidiary, which is developing Harmonic's digital headend products, and higher prototype material costs in connection with the node and digital development programs. Research and development expenses increased to \$9.2 million in 1996 from \$6.1 million in 1995, but decreased as a percentage of net sales from 16% to 15%, reflecting higher sales levels. The increase in spending related primarily to increased headcount, particularly at the Company's Israeli subsidiary, and increased use of outside subcontractors and consultants in Israel and in connection with the element management and 1550 nm MAXLink transmission system development programs. Research and development expenses for 1997, 1996 and 1995 are net of grants from the BIRD Foundation of approximately \$120,000, \$140,000 and \$300,000, respectively. The Company anticipates that research and development expenses will continue to increase significantly, although they may vary as a percentage of net sales.

### Sales and Marketing

Sales and marketing expenses increased to \$13.6 million (18% of net sales) in 1997 from \$9.8 million (16% of net sales) in 1996. The increase in sales and marketing expenses in 1997 was primarily due to higher headcount associated with expansion of the direct sales force, customer service and technical support organizations; expenses associated with establishing international sales offices, and higher promotional expenses. Sales and marketing expenses increased to \$9.8 million (16% of net sales) in 1996 from \$5.8 million (15% of net sales) in 1995. The increase in 1996 was primarily attributable to higher headcount, promotional expenses and commissions to international sales representatives. The Company expects that sales and marketing expenses will continue to increase significantly, although they may vary as a percentage of net sales.

### General and Administrative

General and administrative expenses increased to \$4.8 million in 1997 from \$3.5 million in 1996 but remained constant as a percentage of net sales at 6%. The increase in absolute expenses was principally attributable to costs of supporting the Company's growth in headcount and operations and providing for a higher accounts receivable reserve. General and administrative expenses increased to \$3.5 million (6% of net sales) in 1996 from \$2.2 million (5% of net sales) in 1995. The increase in expenses was primarily due to increased staffing and related costs of supporting the Company's growth, and to a lesser extent, to certain costs associated with being a public company. The Company expects to incur higher levels of general and administrative expenses in the future, although such expenses may vary as a percentage of net sales.

### Other Income

Interest and other income was \$0.7 million in 1997 compared to \$1.0 million in 1996. The decrease in 1997 was principally due to interest earned on lower average cash balances. Interest and other income was \$1.0 million in 1996 compared to \$0.6 million in 1995. The increase in 1996 compared to 1995 was principally attributable to interest earned on higher average cash balances in 1996 following the Company's initial public offering (the "IPO") in May 1995, and lower interest expense in 1996 as the Company repaid all capital leases and bank debt in 1995. The income in 1995 was principally attributable to interest earned on cash balances, following the Company's IPO, partially offset by interest expense.

### Income Taxes

The provision for income taxes for 1997, 1996 and 1995 was based on an estimated annual tax rate of 5% resulting from federal and state alternative minimum taxes. This rate reflects estimated realization of deferred tax assets, primarily net operating loss carryforwards. The Company had available federal net operating loss carryforwards of approximately \$0.8 million at December 31, 1997. Under current tax law, the Company's utilization of its net operating loss carryforwards has been limited and in the future may be limited or impaired in certain circumstances resulting from a change in ownership. The Company expects to have an effective annual tax rate of 10 - 15% in 1998, exclusive of consideration of the one-time, in-process technology charge associated with the NMC acquisition. The Company expects to have an effective annual tax rate beyond 1998 that approximates statutory rates.

### LIQUIDITY AND CAPITAL RESOURCES

The Company completed the IPO in May 1995, raising approximately \$24.2 million, net of offering costs. Prior to that, the Company satisfied its liquidity needs primarily from the net proceeds of private sales of Preferred Stock, and to a lesser extent, from capital equipment leases and bank borrowings.

Cash provided by operations was approximately \$2.0 million in 1997, \$0.3 million in 1996 and \$2.3 million in 1995. The increase in cash provided by operations in 1997 compared to 1996 was principally attributable to slower growth in receivables, inventory and prepaid expenses and other assets, partially offset by lower net income, accounts payable and accrued liabilities. The decrease in cash provided by operations in 1996 compared to 1995 was primarily due to higher

accounts receivable, inventory and prepaid expenses to support increases in sales and production volumes, and prepayment of rents and deposits of \$1.8 million in connection with the Company's new corporate headquarters, partially offset by higher net income, accounts payable and accrued liabilities.

Net working capital was approximately \$38.8 million at December 31, 1997, including \$13.7 million of cash and cash equivalents. During the fourth quarter of 1997, the Company renegotiated its bank line of credit, which now provides for up to \$12.0 million in borrowings and expires in December 1998. The line of credit bears interest at the bank's prime rate or LIBOR plus 2.0%. The bank has also extended a term loan facility not to exceed \$3.0 million to be used for the purchase of capital equipment. This loan facility expires in December 1998 and bears interest at the bank's prime rate plus 0.5%. There were no outstanding borrowings under either the bank line of credit or term loan during 1997.

Additions to property, plant and equipment were approximately \$4.8 million during 1997 compared to \$6.7 million and \$3.9 million in 1996 and 1995 respectively. The decrease in 1997 was due principally to nonrecurring expenditures in 1996 for leasehold improvements and furniture and fixtures for the Company's new headquarters. While the Company currently has no material commitments, it expects to spend approximately \$6.0 million on capital expenditures in 1998, primarily for manufacturing and test equipment.

The Company believes that its existing liquidity sources and anticipated funds from operations will satisfy its cash requirements for at least the next twelve months.

#### FACTORS THAT MAY AFFECT FUTURE RESULTS OF OPERATIONS

##### Potential Fluctuations in Future Operating Results

The Company's operating results have fluctuated and are likely to continue to fluctuate in the future, on an annual and a quarterly basis, as a result of a number of factors, many of which are outside of the Company's control. Such factors include the level of capital spending in the cable television industry, changes in the regulatory environment, changes in market demand, the timing of customer orders, competitive market conditions, lengthy sales cycles, new product introductions by the Company and its competitors, market acceptance of new or existing products, the cost and availability of components, the mix of the Company's customer base and sales channels, the mix of products sold, development of custom products, the level of international sales and general economic conditions. In addition, in each quarter of 1997 the Company recognized a substantial portion of its revenues in the last month of the quarter. The Company establishes its expenditure levels for product development and other operating expenses based on projected sales levels, and expenses are relatively fixed in the short term. Accordingly, variations in timing of sales can cause significant fluctuations in operating results. In addition, because a significant portion of the Company's business is derived from orders placed by a limited number of large customers, the timing of such orders can also cause significant fluctuations in the Company's operating results. If sales are below expectations in any given quarter, the adverse impact of the shortfall on the Company's operating results may be magnified by the Company's inability to adjust spending to compensate for the shortfall.

##### Dependence on Cable Television Industry Capital Spending

To date, substantially all of the Company's sales have been derived, directly or indirectly, from sales to cable television operators. Demand for the Company's products depends to a significant extent upon the magnitude and timing of capital spending by cable television operators for constructing, rebuilding or upgrading their systems. The capital spending patterns of cable television operators are dependent on a variety of factors, including access to financing, cable television operators' annual budget cycles, the status of federal, local and foreign government regulation of telecommunications and television broadcasting, overall demand for cable television services, competitive pressures (including the availability of alternative video delivery technologies such as satellite broadcasting), discretionary customer spending patterns and general economic conditions. The Company believes that the consolidation of ownership of domestic cable television systems, by acquisition and system exchanges, together with uncertainty over regulatory issues, particularly the

debate over the provisions of the Telecommunications Act of 1996, caused delays in capital spending by major domestic MSOs during the second half of 1995 and first quarter of 1996. Also, the Company's net sales in the second half of 1997 were adversely affected by a slow-down in spending by cable television operators. The factors contributing to this slow capital spending include consolidation and system exchanges by domestic cable customers, which generally has had the effect of delaying certain system upgrades, uncertainty related to development of industry standards for digital transmission, evaluation by many cable customers of which advanced services and system architectures to provide and use, and emphasis on marketing and customer service strategies by certain international customers rather than continued construction of networks. The Company is unable to predict when cable television industry capital spending will increase. In addition, cable television capital spending can be subject to the effects of seasonality, with fewer construction and upgrade projects typically occurring in winter months and otherwise being affected by inclement weather.

#### Dependence on Key Customers and End Users

Historically, a majority of the Company's sales have been to relatively few customers. Sales to the Company's ten largest customers in 1997, 1996 and 1995 accounted for approximately 56%, 72% and 80%, respectively, of its net sales. Due in part to the consolidation of ownership of domestic cable television systems, the Company expects that sales to relatively few customers will continue to account for a significant percentage of net sales for the foreseeable future. Harmonic has adopted a strategy to sell to major domestic customers through its

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own direct sales force and domestic OEM and distributor revenues were a smaller percentage of net sales in 1997 than they have been in prior years. Substantially all of the Company's sales are made on a purchase order basis, and none of the Company's customers has entered into a long-term agreement requiring it to purchase the Company's products. The loss of, or any reduction in orders from, a significant customer would have a material adverse effect on the Company's business and operating results.

#### Highly Competitive Industry

The market for cable television transmission equipment is extremely competitive and has been characterized by rapid technological change. Most of the Company's competitors are substantially larger and have greater financial, technical, marketing and other resources than the Company. Many of such large competitors are in a better position to withstand any significant reduction in capital spending by cable television operators. In addition, many of the Company's competitors have more long standing and established relationships with domestic and foreign cable television operators than does the Company. There can be no assurance that the Company will be able to compete successfully in the future or that competition will not have a material adverse effect on the Company's business and operating results.

#### Rapid Technological Change

The market for the Company's products is relatively new, making it difficult to accurately predict the market's future growth rate, size and technological direction. In view of the evolving nature of this market, there can be no assurance that cable television operators, telephone companies or other suppliers of broadband services will not decide to adopt alternative architectures or technologies that are incompatible with the Company's products, which would have a material adverse effect on the Company's business and operating results.

The broadband communications markets are characterized by continuing technological advancement. To compete successfully, the Company must design, develop, manufacture and sell new products that provide increasingly higher levels of performance and reliability. As new markets for broadband communications equipment continue to develop, the Company must successfully develop new products for these markets in order to remain competitive. For example, to compete successfully in the future, the Company believes that it must successfully develop and introduce products that will facilitate the processing and transmission of digital signals over optical networks. While the

Company has commenced shipment of products for digital applications, there can be no assurance that the Company will successfully complete development of, or successfully introduce, products for digital applications, or that such products will achieve commercial acceptance. In addition, in order to successfully develop and market its planned products for digital applications, the Company may be required to enter into technology development or licensing agreements with third parties. Although many companies are often willing to enter into such technology development or licensing agreements, there can be no assurance that such agreements will be negotiated on terms acceptable to the Company, or at all. The failure to enter into technology development or licensing agreements, when necessary, could limit the Company's ability to develop and market new products and could have a material adverse effect on the Company's business and operating results.

The failure of the Company to successfully develop and introduce new products that address the changing needs of the broadband communications market could have a material adverse effect on the Company's business and operating results. In addition, there can be no assurance that the successful introduction by the Company of new products will not have an adverse effect on the sales of the Company's existing products. For instance, an emerging trend in the domestic market toward narrowcasting (targeted delivery of advanced services to small groups of subscribers) is causing changes in the network architectures of some cable operators. This may have the effect of changing the Company's product mix toward lower price transmitters, which could adversely affect the Company's gross margins.

#### Risks Associated with the Acquisition of NMC

The growth in the Company's business has placed, and is expected to continue to place, a significant strain on the Company's limited personnel, management and other resources. Through its acquisition of NMC in January 1998, the Company increased the scope of its product line to include broadband, high-speed data delivery software and hardware and increased the scope of its international operations in Israel. The acquisition of NMC involves numerous risks and challenges, including: difficulties in the assimilation of operations, research and development efforts, products, personnel and cultures of Harmonic Lightwaves and NMC; the potential adverse effects of the acquisition on relationships with customers, distributors, suppliers and other business partners of the two companies; the dependence on the evolution and growth of the market for wireless and satellite broadband services; regulatory developments; rapid technological change; the highly competitive nature of the telecommunications industry; the Company's ability to successfully develop, manufacture and gain market acceptance of the products of NMC; the ability to manage geographically remote units; the integration of NMC's management information systems with those of the

Company; potential adverse short-term effects on the Company's operating results; the amortization of acquired intangible assets; the risk of entering emerging markets in which the Company has limited or no direct experience; and the potential loss of key employees of NMC. The Company's future operating results will be significantly affected by its ability to successfully integrate NMC, to implement operating, manufacturing and financial procedures and controls, to improve coordination among different operating functions, to strengthen management information and telecommunications systems and to continue to attract, train and motivate additional qualified personnel in all areas. There can be no assurance that the Company will be able to manage these activities and implement these additional systems and controls successfully, and any failure to do so could have a materially adverse effect upon the Company's operating results. The Company expects that the inclusion of NMC's operations, combined with seasonally low sales to domestic cable customers, will result in an operating loss for the Company in the first quarter of 1998. In addition, the acquisition of NMC has resulted in significant additional working capital requirements. While the Company believes that it currently has sufficient funds to finance its operations for at least the next twelve months, to the extent that such funds are insufficient to fund the Company's activities, including any potential acquisitions, the Company may need to raise additional funds through public or private equity or debt financing from other sources. The sale of additional equity or convertible debt may result in additional dilution to the Company's stockholders and such securities may have rights, preferences or privileges senior to those of the Common Stock. There can be no assurance that additional equity or debt financing will be available or that if available it

can be obtained on terms favorable to the Company or its stockholders.

#### Sole or Limited Sources of Supply

Certain components and subassemblies necessary for the manufacture of the Company's products are obtained from a sole supplier or a limited group of suppliers. The reliance on sole or limited suppliers and the Company's increasing reliance on subcontractors involve several risks, including a potential inability to obtain an adequate supply of required components or subassemblies and reduced control over pricing, quality and timely delivery of components or subassemblies. The Company does not maintain long-term agreements with any of its suppliers or subcontractors. An inability to obtain adequate deliveries or any other circumstance that would require the Company to seek alternative sources of supply could affect the Company's ability to ship its products on a timely basis, which could damage relationships with current and prospective customers and could have a material adverse effect on the Company's business and operating results. The Company believes that investment in inventories will continue to constitute a significant portion of its working capital in the future. As a result of such investment in inventories, the Company may be subject to an increasing risk of inventory obsolescence in the future, which could materially and adversely affect its business and operating results.

#### Risks of International Operations

Sales to customers outside of the United States in 1997, 1996 and 1995 represented 59%, 57% and 65% of net sales, respectively, and the Company expects that international sales will continue to represent a substantial portion of its net sales for the foreseeable future. In addition, the Company has two Israeli subsidiaries, NMC and a subsidiary that engages primarily in research and development. International operations are subject to a number of risks, including changes in foreign government regulations and telecommunications standards, export license requirements, tariffs and taxes, other trade barriers, fluctuations in currency exchange rates, difficulty in collecting accounts receivable, difficulty in staffing and managing foreign operations and political and economic instability. While international sales are typically denominated in U.S. dollars, fluctuations in currency exchange rates could cause the Company's products to become relatively more expensive to customers in a particular country, leading to a reduction in sales or profitability in that country. Payment cycles for international customers are typically longer than those for customers in the United States. There can be no assurance that foreign markets will continue to develop or that the Company will receive additional orders to supply its products for use in foreign broadband systems. In recent months, certain Asian currencies have devalued significantly in relation to the U.S. dollar. The Company is currently evaluating the effect of recent developments in Asia on the Company's business, and there can be no assurance that the Company's sales in Asia will not be materially adversely affected by such developments.

#### Risks of Information Systems

The Company has commenced, for all its information systems, a Year 2000 date conversion project to address all necessary changes to be Year 2000 compliant. The Company is expensing the costs of addressing the "Year 2000 issue" as incurred. The Company does not expect that Year 2000 issues from its own information systems will have a material adverse impact on its financial position or results of operations. However, the Company could be adversely impacted by Year 2000 issues faced by major customers and suppliers and other organizations with which the Company interacts. The Company is in the process of determining the impact that third parties who are not Year 2000 compliant may have on the operations of the Company.

#### CONSOLIDATED BALANCE SHEETS

DECEMBER 31,

1997

1996

(IN THOUSANDS, EXCEPT SHARE DATA)

ASSETS

Current assets:		
Cash and cash equivalents	\$ 13,670	\$ 16,410
Accounts receivable, net	16,458	12,643
Inventories	15,474	14,782
Prepaid expenses and other assets	1,774	1,315
	-----	-----
Total current assets	47,376	45,150
Notes receivable	1,300	--
Property and equipment, net	10,077	8,751
Other assets	134	732
	-----	-----
	\$ 58,887	\$ 54,633
	=====	=====
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 3,708	\$ 5,604
Accrued liabilities	4,896	5,225
	-----	-----
Total current liabilities	8,604	10,829
Other liabilities	352	163
Commitments (Notes 9 and 11)		
Stockholders' equity:		
Preferred Stock, \$.001 par value, 5,000,000 shares authorized; no shares issued or outstanding	--	--
Common Stock, \$.001 par value, 50,000,000 shares authorized; 10,414,297 and 10,160,876 shares issued and outstanding	10	10
Capital in excess of par value	55,917	54,579
Accumulated deficit	(6,019)	(10,948)
Currency translation	23	--
	-----	-----
Total stockholders' equity	49,931	43,641
	-----	-----
	\$ 58,887	\$ 54,633
	=====	=====

The accompanying notes are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF OPERATIONS

YEAR ENDED DECEMBER 31,	1997	1996	1995
-----			
(IN THOUSANDS, EXCEPT PER SHARE DATA)			
Net sales	\$ 74,442	\$ 60,894	\$ 39,180
Cost of sales	39,837	33,163	21,329
	-----	-----	-----
Gross profit	34,605	27,731	17,851
	-----	-----	-----
Operating expenses:			
Research and development	11,676	9,237	6,144
Sales and marketing	13,599	9,827	5,750
General and administrative	4,824	3,463	2,196
	-----	-----	-----
Total operating expenses	30,099	22,527	14,090
	-----	-----	-----
Income from operations	4,506	5,204	3,761
Interest and other income, net	682	1,025	577
	-----	-----	-----
Income before income taxes	5,188	6,229	4,338
Provision for income taxes	259	311	217
	-----	-----	-----
Net income	\$ 4,929	\$ 5,918	\$ 4,121
	=====	=====	=====

Basic net income per share	\$ 0.48	\$ 0.59	\$ 0.71
	=====	=====	=====
Diluted net income per share	\$ 0.43	\$ 0.52	\$ 0.40
	=====	=====	=====
Average number of shares outstanding	10,345	10,106	5,797
	=====	=====	=====
Average number of shares outstanding assuming dilution	11,523	11,474	10,382
	=====	=====	=====

The accompanying notes are an integral part of these consolidated financial statements.

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CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY (DEFICIT)

	COMMON STOCK		CAPITAL IN EXCESS OF PAR VALUE	ACCUMULATED DEFICIT	CURRENCY TRANSLATION	STOCKHOLDERS' EQUITY (DEFICIT)
	SHARES	AMOUNT				
(IN THOUSANDS)						
Balance at December 31, 1994	469	\$ 1	\$ 269	\$ (20,987)	\$ --	\$ (20,717)
Conversion of Mandatorily Redeemable Preferred Stock	7,095	7	29,208	--	--	29,215
Issuance of Common Stock in initial public offering, net	2,000	2	24,198	--	--	24,200
Exercise of stock options and warrants	340	--	190	--	--	190
Net income	--	--	--	4,121	--	4,121
Balance at December 31, 1995	9,904	10	53,865	(16,866)	--	37,009
Exercise of stock options and warrants	208	--	240	--	--	240
Issuance of Common Stock under Stock Purchase Plan	49	--	474	--	--	474
Net income	--	--	--	5,918	--	5,918
Balance at December 31, 1996	10,161	10	54,579	(10,948)	--	43,641
Exercise of stock options and warrants	185	--	612	--	--	612
Issuance of Common Stock under Stock Purchase Plan	68	--	726	--	--	726
Currency translation	23	23	--	--	--	--
Net income	--	--	--	4,929	--	4,929
Balance at December 31, 1997	10,414	\$ 10	\$55,917	\$ (6,019)	\$ 23	\$ 49,931

The accompanying notes are an integral part of these consolidated financial statements.

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CONSOLIDATED STATEMENT OF CASH FLOWS

YEAR ENDED DECEMBER 31,	1997	1996	1995
(IN THOUSANDS)			
Cash flows from operating activities:			
Net income	\$ 4,929	\$ 5,918	\$ 4,121
Adjustments to reconcile net income to net cash			



provided by operating activities:			
Depreciation and amortization	3,441	2,506	1,799
Changes in assets and liabilities:			
Accounts receivable	(3,815)	(6,841)	(1,246)
Inventories	(692)	(5,606)	(3,523)
Prepaid expenses and other assets	139	(1,848)	(15)
Accounts payable	(1,896)	3,403	2
Accrued and other liabilities	(140)	2,781	1,128
	-----	-----	-----
Net cash provided by operating activities	1,966	313	2,266
Cash flows used in investing activities:			
Acquisition of property and equipment	(4,767)	(6,743)	(3,119)
Advances to New Media Communication Ltd.	(1,300)	--	--
	-----	-----	-----
Net cash used in investing activities	(6,067)	(6,743)	(3,119)
Cash flows from financing activities:			
Repayment under bank line of credit	--	--	(922)
Proceeds from issuance of Common Stock, net	1,338	714	24,390
Repayments of long-term debt	--	--	(2,232)
	-----	-----	-----
Net cash provided by financing activities	1,338	714	21,236
Effect of exchange rate changes on cash and cash equivalents	23	--	--
	-----	-----	-----
Net (decrease) increase in cash and cash equivalents	(2,740)	(5,716)	20,383
Cash and cash equivalents at beginning of period	16,410	22,126	1,743
	-----	-----	-----
Cash and cash equivalents at end of period	\$ 13,670	\$ 16,410	\$ 22,126
	-----	-----	-----
Supplemental schedule of cash flow information and non-cash financing activities:			
Interest paid during the period	\$ --	\$ 21	\$ 193
Income taxes paid during the period	323	285	126
Acquisition of property and equipment under capital leases and equipment term loan	\$ --	\$ --	\$ 752
	=====	=====	=====

The accompanying notes are an integral part of these consolidated financial statements.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

### NOTE 1: ORGANIZATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Harmonic Lightwaves, Inc. (the "Company") designs, manufactures and markets digital and lightwave based communications systems that deliver video, audio and data over hybrid fiber/coax ("HFC"), satellite and wireless networks. The Company operates in one industry segment. See Note 10 for geographic information and information regarding sales to significant customers.

#### Reincorporation and Reverse Stock Split

The Company originally incorporated in California in June 1988. In May 1995, the Company reincorporated in Delaware. In conjunction with the reincorporation, all outstanding shares of the predecessor California company were exchanged into common stock of the Delaware company in a one-for-three reverse stock split.

#### Basis of Presentation

The consolidated financial statements of the Company include the financial statements of the Company and its wholly-owned subsidiaries. All intercompany accounts and balances have been eliminated. The Company's fiscal quarters end on the Friday nearest the calendar quarter end.

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts. Actual results could differ from these estimates.

#### Cash Equivalents

The Company considers all highly liquid investments purchased with an original maturity date of three months or less at the date of purchase to be cash equivalents. The Company's investments are classified as held-to-maturity.

#### Fair Value of Financial Instruments

The carrying value of the Company's financial instruments, including cash and cash equivalents, accounts receivable, accounts payable and accrued liabilities approximate fair value due to their short maturities.

## Revenue Recognition

Revenue is generally recognized upon shipment of product. A provision for the estimated cost of warranty is recorded at the time revenue is recognized.

## Inventories

Inventories are stated at the lower of cost, using the weighted average method, or market.

## Property and Equipment

Property and equipment are recorded at cost. Depreciation and amortization are computed using the straight-line method based upon the shorter of the estimated useful lives of the assets, which range from two to ten years, or the lease term of the respective assets, if applicable.

## Concentrations of Credit Risk

Financial instruments which subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents and accounts receivable. Cash and cash equivalents are maintained with high quality financial institutions and are invested in short-term, highly liquid investment grade obligations of government and commercial issuers, in accordance with the Company's investment policy. The investment policy limits the amount of credit exposure to any one financial institution or commercial issuer. The Company's accounts receivable are derived from sales to cable television operators and distributors as discussed in Note 10. The Company performs ongoing credit evaluations of its customers, and provides for expected losses but to date has not experienced any material losses. At December 31, 1997, receivables from one customer represented 25% of accounts receivable. At December 31, 1996, receivables from three customers represented 20%, 17% and 11%, respectively.

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## Currency Translation

The assets and liabilities of foreign subsidiaries are translated into U.S. dollars at year-end exchange rates, and revenues and expenses are translated at average exchange rates during the year. Cumulative currency translation adjustments are included in stockholders' equity. Realized gains and losses from currency exchange transactions have not been material.

## Income Taxes

Deferred tax assets and liabilities are recognized for the expected tax consequences of temporary differences between the tax bases of assets and liabilities and their financial statement reported amounts under the provisions of Statement on Financial Accounting Standards No. 109 ("SFAS 109"), which has been applied for all periods presented.

## Accounting for Stock-Based Compensation

The Company's stock-based compensation plans are accounted for in accordance with Accounting Principles Board Opinion No. 25, "Accounting for Stock Issued to Employees." In January 1996, the Company adopted the disclosure requirements of Statement of Financial Accounting Standards 123 ("SFAS 123").

## Reclassification

Certain amounts in prior years' financial statements and related notes have been reclassified to conform to the 1997 presentation. These reclassifications are not material.

## NOTE 2: CASH AND CASH EQUIVALENTS

At December 31, 1997 and 1996, the Company had the following amounts in cash and cash equivalents, with original maturity dates of three months or less at the date of purchase. Realized gains and losses for the years ended December 31, 1997 and 1996 and the difference between gross amortized cost and estimated fair value at December 31, 1997 and 1996 were immaterial.

DECEMBER 31,	1997	1996
-----		
(IN THOUSANDS)		
Commercial paper	\$ 7,956	\$ 15,964
Cash and money market accounts	5,714	446
	-----	-----
Total cash and cash equivalents	\$ 13,670	\$ 16,410
	=====	=====

NOTE 3: BALANCE SHEET DETAILS

DECEMBER 31,	1997	1996
-----		
(IN THOUSANDS)		
Accounts receivable:		
Gross accounts receivable	\$ 17,208	\$ 12,943
Less: allowance for doubtful accounts	(750)	(300)
	-----	-----
	\$ 16,458	\$ 12,643
	=====	=====
Inventories:		
Raw materials	\$ 4,356	\$ 3,104
Work-in-process	3,127	4,704
Finished goods	7,991	6,974
	-----	-----
	\$ 15,474	\$ 14,782
	=====	=====
Property and equipment:		
Furniture and fixtures	\$ 1,585	\$ 1,124
Machinery and equipment	15,692	12,183
Leasehold improvements	2,779	1,982
	20,056	15,289
Less: accumulated depreciation and amortization	(9,979)	(6,538)
	-----	-----
	\$ 10,077	\$ 8,751
	=====	=====
Accrued liabilities:		
Accrued compensation	\$ 1,837	\$ 2,166
Accrued warranties	626	733
Other	2,433	2,326
	-----	-----
	\$ 4,896	\$ 5,225
	=====	=====

NOTE 4: NET INCOME PER SHARE

During the quarter ended December 31, 1997, the Company adopted Statement of Financial Accounting Standards No. 128, "Earnings Per Share" ("SFAS 128"). SFAS 128 requires presentation of both Basic EPS and Diluted EPS on the face of the statement of operations. Basic EPS, which replaces primary EPS, is computed by dividing net income available to common stockholders (numerator) by the weighted average number of common shares outstanding (denominator) during the period. Unlike the computation of primary EPS, Basic EPS excludes the dilutive effect of stock options, warrants and Mandatorily Redeemable Convertible Preferred Stock. Diluted EPS replaces fully diluted EPS and gives effect to all dilutive potential common shares outstanding during a period. In computing Diluted EPS, the average price for the period is used in determining the number of shares assumed to be purchased from exercise of stock options and warrants rather than the higher of the average or ending price as used in the computation of fully

diluted EPS. Mandatorily Redeemable Convertible Preferred Stock is included in the net income per share calculation using the if-converted method when applicable. Net income per share for all prior periods presented has been restated to conform to the provisions of SFAS 128.

Following is a reconciliation of the numerators and denominators of the Basic and Diluted EPS computations for the periods presented below:

	1997	1996	1995
-----			
(in thousands, except per share data)			
Net income (numerator)	\$ 4,929	\$ 5,918	\$ 4,121
	=====	=====	=====
Shares calculation (denominator):			
Average shares outstanding -- basic	10,345	10,106	5,797
Effect of Dilutive Securities:			
Potential Common Stock			
Stock options and warrants	1,178	1,368	1,456
Mandatorily Redeemable Convertible Preferred Stock	--	--	3,129
	-----	-----	-----
Average shares outstanding -- diluted	11,523	11,474	10,382
	=====	=====	=====
Net income per share -- basic	\$ 0.48	\$ 0.59	\$ 0.71
	=====	=====	=====
Net income per share -- diluted	\$ 0.43	\$ 0.52	\$ 0.40
	=====	=====	=====

Options to purchase 514,150 shares of common stock at prices ranging from \$16.50 to \$22.75 per share were outstanding during 1997, but were not included in the computation of diluted EPS because either the option's exercise price was greater than the average market price of the common shares or inclusion of such options would have been antidilutive.

#### NOTE 5: BORROWING FACILITIES

The Company has a bank line of credit agreement, providing for borrowings of up to \$12,000,000. The agreement contains certain financial covenants and is available until December 1998. Borrowings pursuant to the agreement bear interest at the bank's prime rate or LIBOR plus 2%. The Company also has an equipment term loan (the "term loan") facility, providing for borrowings of up to \$3,000,000 on a secured basis. The term loan is available until December 1998 and bears interest at the bank's prime rate plus 0.5%, payable monthly. The outstanding balance is payable in monthly installments beginning June 1998 through December 2001. There were no outstanding borrowings at December 31, 1997 or 1996.

#### NOTE 6: CAPITAL STOCK

##### Initial Public Offering

In May 1995, the Company completed its initial public offering ("IPO") of 2,600,000 shares of common stock, 600,000 of which were sold by existing stockholders, at a price of \$13.50 per share. Net proceeds to the Company were approximately \$24.2 million, after underwriter commissions and associated costs. Upon the closing of the IPO, all outstanding shares of Mandatorily Redeemable Convertible Preferred Stock automatically converted into 7,094,748 shares of Common Stock. Also effective with the closing of the IPO, the Company was authorized to issue 5,000,000 shares of undesignated preferred stock, of which none were issued or outstanding at December 31, 1997 and 1996.

##### Common Stock Warrants

In June 1994, the Company entered into a distribution agreement, in connection with which it issued a warrant to purchase up to 798,748 shares of Common Stock at \$5.55 per share. The warrant had a fair value of \$200,000, which was charged to results of operations in the second quarter of 1994. The warrants will become exercisable in June 1999 and expire at the earlier of six years from the date of

issuance or the closing of a significant acquisition transaction, as defined in the warrant. The Company has reserved 798,748 shares of Common Stock for issuance upon exercise of this warrant.

In 1993, the Company issued a warrant to purchase up to 22,222 shares of the Company's Common Stock at an exercise price of \$4.50 per share in conjunction with an equipment lease line facility. The fair value of the warrant was nominal, and the warrant expires at the earlier of seven years from the date of issuance or the merger or sale of the Company meeting certain criteria. The Company has reserved 22,222 shares of Common Stock for issuance upon exercise of this warrant.

NOTE 7: BENEFIT AND COMPENSATION PLANS

Stock Option Plans

In 1988, the Company adopted an incentive and non-statutory stock option plan (the "1988 Plan") for which 1,125,917 shares have been reserved for issuance. Following adoption of the 1995 Stock Plan (the "1995 Plan") at the effectiveness of the Company's IPO, no further grants have been, or will be, made under the 1988 Plan. Options granted under the 1988 Plan and the 1995 Plan are for periods not to exceed ten years. Exercise prices of incentive stock option grants under both plans must be at least 100% of the fair market value of the stock at the date of grant and for nonstatutory stock options must be at least 85% of the fair market value of the stock at the date of grant. Under both plans, the options generally vest 25% at one year from date of grant, and an additional 1/48th per month thereafter. The Company has reserved 1,045,000 shares of Common Stock for issuance under the 1995 Plan.

Director Option Plan

Effective upon the IPO, the Company adopted the 1995 Director Option Plan (the "Director Plan") and reserved 50,000 shares of Common Stock for issuance thereunder. The Director Plan provides for the grant of nonstatutory stock options to certain nonemployee directors of the Company pursuant to an automatic, nondiscretionary grant mechanism.

The following table summarizes activities under the Plans:

	SHARES AVAILABLE FOR GRANT	STOCK OPTIONS OUTSTANDING	WEIGHTED AVERAGE EXERCISE PRICE
-----			
(IN THOUSANDS, EXCEPT EXERCISE PRICE)			
Balance at December 31, 1994	299	1,147	\$ 0.99
Shares authorized	401	--	--
Options granted	(278)	278	11.99
Options exercised	--	(252)	0.53
Options canceled	20	(20)	5.81
	-----	-----	-----
Balance at December 31, 1995	442	1,153	3.67
Options granted	(344)	344	12.72
Options exercised	--	(208)	0.98
Options canceled	7	(48)	5.75
	-----	-----	-----
Balance at December 31, 1996	105	1,241	6.56
Shares authorized	480	--	--
Options granted	(504)	504	18.08
Options exercised	--	(185)	3.31
Options canceled	154	(177)	14.26
	-----	-----	-----
Balance at December 31, 1997	235	1,383	\$10.22
	=====	=====	=====

The following table summarizes information regarding stock options outstanding

at December 31, 1997:

RANGE OF EXERCISE PRICES	STOCK OPTIONS OUTSTANDING			STOCK OPTIONS EXERCISABLE	
	NUMBER OUTSTANDING AT DEC. 31, 1997	WEIGHTED-AVERAGE CONTRACTUAL LIFE REMAINING (YEARS)	WEIGHTED-AVERAGE EXERCISE PRICE	NUMBER EXERCISABLE AT DEC. 31, 1997	WEIGHTED-AVERAGE EXERCISE PRICE
(IN THOUSANDS, EXCEPT EXERCISE PRICE AND LIFE)					
\$ 0.30 - 1.20	307	4.4	\$ 0.41	307	\$ 0.41
1.80 - 4.65	175	6.5	2.40	149	2.33
7.20 - 13.75	434	7.9	10.98	219	10.75
14.13 - 22.75	467	9.3	18.89	43	17.45
	1,383	7.4	\$10.22	718	\$ 4.98

Employee Stock Purchase Plan

Effective upon the IPO, the Company adopted the 1995 Employee Stock Purchase Plan (the "Purchase Plan") and reserved 200,000 shares of Common Stock for issuance thereunder. The Purchase Plan enables employees to purchase shares at 85% of the fair market value of the Common Stock at the beginning or end of each six month purchase period. The Purchase Plan is intended to qualify as an "employee stock purchase plan" under Section 423 of the Internal Revenue Code. 68,271, 48,977 and no shares were issued under the Purchase Plan during 1997, 1996 and 1995, respectively.

Fair Value Disclosures

The Company accounts for its stock-based compensation plans in accordance with the provisions of Accounting Principles Board Opinion No. 25. If compensation cost for the Company's stock-based compensation plans had been determined based on the fair market value at the grant dates, as prescribed in SFAS 123, the Company's net income and net income per share would have been as follows:

	1997	1996	1995
(IN THOUSANDS, EXCEPT PER SHARE DATA)			
Net income:			
As reported	\$4,929	\$5,918	\$4,121
Pro forma	3,209	4,474	3,610
Basic net income per share			
As reported	\$ 0.48	\$ 0.59	\$ 0.71
Pro Forma	0.31	0.44	0.62
Diluted net income per share:			
As reported	\$ 0.43	\$ 0.52	\$ 0.40
Pro forma	0.28	0.39	0.35

The fair value of each option grant under the 1988 Plan, 1995 Plan and Director Plan was estimated on the date of grant using the Black-Scholes option-pricing model with the following assumptions used for grants during 1997, 1996 and 1995: dividend yield of 0.0%; expected weighted average volatility of 55%, 47.5%, and 47.5%, respectively; and expected weighted average lives of four years, during each year; and risk-free interest rates of 5.6% to 6.7%, 5.2% to 6.5% and 5.4% to 7.1% for options granted during 1997, 1996 and 1995, respectively.

The fair value of the employees' purchase rights under the Employee Stock Purchase Plan was estimated using the Black-Scholes model with the following weighted average assumptions for 1997, 1996 and 1995: dividend yield of 0.0%; expected volatility of 55%, 47.5%, and 47.5%, respectively; expected lives of two years during each year; and risk-free interest rates of 5.1% to 6.3% for 1997 and, 5.7% and 5.3% for 1996 and 1995, respectively.

Retirement/Savings Plan

Effective April 1, 1992, the Company implemented a retirement/savings plan which qualifies as a thrift plan under Section 401(k) of the Internal Revenue Code.

This plan allows participants to contribute up to 20% of total compensation, subject to applicable Internal Revenue Service limitations. Effective April 1, 1997, the Company began to make discretionary contributions to the plan of \$0.25 per dollar contributed by eligible participants up to a maximum contribution per participant of \$750 per year.

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NOTE 8: INCOME TAXES

The Company incurred net operating losses in each year through December 31, 1994. Foreign income (losses) were not significant for all years presented. The provision for income taxes for the year ended December 31, 1997 consists of the following:

DECEMBER 31,	1997	1996	1995
-----			
(IN THOUSANDS)			
Current:			
Federal	\$168	\$246	\$174
Foreign	90	41	16
State	1	24	27
	----	----	----
	\$259	\$311	\$217
	=====	=====	=====

The income tax provision reconciles to the provision at the federal statutory rate as follows:

DECEMBER 31,	1997	1996	1995
-----			
(IN THOUSANDS)			
Provision at statutory rate	\$ 1,764	\$ 2,118	\$ 1,475
Differential in rates on foreign earnings	(111)	--	--
State taxes, net of federal benefit	1	16	18
Foreign sales corporation benefit	(176)	--	--
Utilization of net operating loss carryovers	(1,661)	(2,490)	(2,052)
Future benefits not currently recognized	364	429	567
Alternative minimum tax	51	162	116
Other	27	76	93
	-----	-----	-----
	\$ 259	\$ 311	\$ 217
	=====	=====	=====

Deferred tax assets comprise the following:

DECEMBER 31,	1997	1996	1995
-----			
(IN THOUSANDS)			
Net operating loss carryovers	\$ 303	\$ 1,964	\$ 3,960
Research and development carryovers	2,452	2,112	1,396
Capitalized research and development costs	234	254	931
Reserves not currently deductible	1,657	1,187	574
Other	96	12	746
	-----	-----	-----
Total deferred tax assets	4,742	5,529	7,607
Valuation allowance	(4,742)	(5,529)	(7,607)
	-----	-----	-----
Net deferred assets	\$ --	\$ --	\$ --

The deferred tax assets valuation allowance at December 31, 1997, 1996 and 1995 is attributed to federal and state deferred tax assets. Management believes that sufficient uncertainty exists regarding the realizability of these items such that a full valuation allowance has been recorded.

At December 31, 1997, the Company had approximately \$800,000 of net operating loss carryovers for federal tax reporting purposes available to offset future taxable income; such carryovers expire through 2009. The net operating loss carryovers do not include approximately \$1,200,000 resulting from disqualifying dispositions or exercises of non-incentive stock options, the tax benefit of which, when realized, will be accounted for as an addition to capital in excess of par value, rather than as a reduction of the provision for income taxes.

Under the Tax Reform Act of 1986, the amounts of and the benefit from net operating losses and research and development credits that can be carried forward may be impaired or limited in certain circumstances. Events which may cause changes in the Company's net operating loss and research and development credit carryovers include, but are not limited to, a cumulative stock ownership change of greater than 50%, as defined, over a three year period.

NOTE 9: RESEARCH AND DEVELOPMENT GRANTS

In accordance with separate agreements signed with the Israel - U.S. Binational Industrial Research and Development Foundation ("BIRD") in December 1994 and December 1997, the Company obtained grants for research and development projects amounting to 50% of the actual expenditures incurred on each of the two projects subject to a maximum of \$560,000 and \$845,000, respectively. The Company is not obligated to repay the grants regardless of the outcome of its development efforts; however, it is obligated to pay the BIRD royalties at the rate of 2.5% - 5% of sales of any products or development resulting from such research, but not in excess of 150% of each grant. Under the first grant the Company earned approximately \$120,000, \$140,000, and \$300,000 during 1997, 1996 and 1995, respectively, which were offset against research and development expenses for the same period. The Company did not receive any funding and did not incur any significant expenditures on the new project during 1997.

NOTE 10: GEOGRAPHIC INFORMATION AND SIGNIFICANT CUSTOMERS

Sales and purchase transactions are denominated in U.S. dollars. The Company has one manufacturing facility located in the U.S. The Company has no significant assets located outside of the U.S.

International net sales were as follows:

YEAR ENDED DECEMBER 31,	1997	1996	1995
-----			
(IN THOUSANDS)			
Americas (excluding U.S.)	\$18,045	\$12,216	\$ 8,281
Asia	15,406	10,342	7,331
Europe	10,339	12,214	9,819
	-----	-----	-----
	\$43,790	\$34,772	\$25,431
	=====	=====	=====

The Company sells to a significant number of its end users through distributors. In 1997, sales to one distributor represented 17% of total net sales. In 1996, sales to three distributors represented 15%, 15% and 13% of total net sales, respectively. In 1995, sales to three distributors accounted for 22%, 15% and 15% of total net sales, respectively.

NOTE 11: COMMITMENTS AND CONTINGENCIES



## Commitments

The Company leases its facilities under noncancelable operating leases which expire at various dates through 2006. Total rent expense related to these operating leases were \$1,413,000, \$828,000, and \$555,000, for 1997, 1996 and 1995, respectively. Future minimum lease payments under noncancelable operating leases at December 31, 1997, were as follows:

(IN THOUSANDS)

1998	\$ 650
1999	1,344
2000	1,398
2001	1,415
2002	1,290
Thereafter	4,880
	-----
	\$10,977
	=====

At December 31, 1997, the Company had prepaid approximately \$655,000 of rents and deposits under the terms of its 10 year lease agreement for its corporate headquarters in Sunnyvale, California, which it occupied in August 1996. The Company has subleased a portion of its headquarters through July 1998. Under the terms of the sublease, the sublessee is required to make payments aggregating \$223,000 for 1998.

## Contingencies

The Company is a party to certain litigation matters and claims which are normal in the course of its operations and, while the results of litigation and claims cannot be predicted with certainty, management believes that the final outcome of such matters will not have a materially adverse effect on the Company's consolidated financial position or results of operations.

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## NOTE 12: SUBSEQUENT EVENTS (UNAUDITED)

In January 1998, the Company acquired New Media Communication Ltd. ("NMC"), a privately held supplier of broadband, high-speed data delivery software and hardware, in exchange for the issuance of 1,037,911 shares of Harmonic common stock and the assumption of all outstanding NMC stock options. The acquisition will be accounted for using the purchase method of accounting with the purchase price of approximately \$17.6 million being allocated to the acquired assets, in-process technology and goodwill. Approximately \$14.0 million of the purchase price will be charged to in-process technology as a one-time charge in the first quarter of 1998. Goodwill of approximately \$1.5 million will be amortized over the estimated useful life of five years. NMC has been a development stage company since its founding in 1996 and its revenues to date have not been material in relation to those of the Company. NMC had a net loss of approximately \$2.6 million for 1997. The Company made advances to NMC starting in September 1997 which totaled \$1.3 million at December 31, 1997.

## REPORT OF INDEPENDENT ACCOUNTANTS

To the Board of Directors & Shareholders of Harmonic Lightwaves, Inc.,

In our opinion, the accompanying consolidated balance sheet and the related consolidated statements of operations, of stockholders' equity (deficit) and of cash flows present fairly, in all material respects, the financial position of Harmonic Lightwaves, Inc. and its subsidiaries at December 31, 1997, 1996 and 1995, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1997, in conformity with generally

accepted accounting principles. These financial statements are the responsibility of the Company's management; our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements in accordance with generally accepted auditing standards which require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for the opinion expressed above.

/s/ PRICE WATERHOUSE, LLP  
-----  
San Jose, California  
January 20, 1998

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[LOGO]

HARMONIC LIGHTWAVES, INC.  
549 BALTIC WAY  
SUNNYVALE, CALIFORNIA 94089  
TELEPHONE: (408) 542-2500  
FACSIMILE: (408) 542-2511

WWW.HARMONIC-LIGHTWAVES.COM

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#### CORPORATE INFORMATION

##### BOARD OF DIRECTORS

Anthony J. Ley  
Chairman, President and  
Chief Executive Officer  
Harmonic Lightwaves, Inc.

Moshe Nazarathy  
Senior Vice President  
Harmonic Lightwaves, Inc.

E. Floyd Kvamme\*+  
General Partner  
Kleiner Perkins Caufield & Byers

David A. Lane  
General Partner  
Alpine Technology Ventures

Barry D. Lemieux\*  
Former President  
American Cablesystems Corporation

Michel L. Vaillaud+  
Former Chairman and  
Chief Executive Officer  
Schlumberger Limited

\*Member, Compensation Committee  
+Member, Audit Committee

##### EXECUTIVE OFFICERS

Anthony J. Ley  
Chairman, President and  
Chief Executive Officer

Moshe Nazarathy

Senior Vice President,  
General Manager,  
Israel R&D Center

Robin N. Dickson  
Chief Financial Officer

John E. Dahlquist  
Vice President, Marketing

Michael Yost  
Vice President, Operations

#### LEGAL COUNSEL

Wilson, Sonsini, Goodrich & Rosati  
Palo Alto, California

#### INDEPENDENT ACCOUNTANTS

Price Waterhouse LLP  
San Jose, California

#### TRANSFER AGENT/REGISTRAR

ChaseMellon Shareholder  
Services, LLC  
Overpeck Centre  
85 Challenger Road  
Ridgefield Park, NJ 07660  
(800) 777-3694  
www.chasemellon.com

#### SHAREHOLDER INFORMATION

Harmonic Lightwaves welcomes inquiries from shareholders and other interested investors. Additional copies of this report and/or the Form 10-K, filed with the Securities and Exchange Commission, may be obtained without charge by contacting Investor Relations at (408) 542-2760 or via e-mail at investor@harmonic-lightwaves.com.

#### ANNUAL MEETING

Shareholders are invited to attend Harmonic Lightwaves' annual meeting at 8:00 a.m. on April 29, 1998 at The Westin - Santa Clara, 101 Great America Parkway, Santa Clara, California 95054.  
(408) 986-0700

#### STOCK LISTING

Stock traded on the Nasdaq National Market System under the symbol HLIT.

#### CORPORATE HEADQUARTERS

Harmonic Lightwaves, Inc.  
549 Baltic Way  
Sunnyvale, California 94089  
Telephone: (408) 542-2500  
Facsimile: (408) 542-2511

#### SUBSIDIARIES

Harmonic Lightwaves (Israel) Ltd.  
19 Alon Hatavor St. - Zone 3  
P.O. Box 3600  
Caesarea Industrial Park  
Pardes Hana, Israel 38900

Harmonic Lightwaves, Ltd.  
Unit #17, Alban Park, Hatfield Rd.  
St. Albans, Herts AL140JJ  
United Kingdom

New Media Communication, Ltd.  
10 Beit Shamai St.

Tel Aviv, Israel 67018

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HARMONIC LIGHTWAVES, INC. AND SUBSIDIARIES  
SUBSIDIARIES OF THE REGISTRANT

The following table shows certain information with respect to the active significant subsidiaries of the Company as of December 31, 1997.

NAME -----	STATE OR OTHER JURISDICTION OF INCORPORATION -----	PERCENT OF VOTING SECURITIES OWNED BY HARMONIC -----
Harmonic Lightwaves (Israel), Ltd.	Israel	100%
Harmonic Lightwaves Ltd.	United Kingdom	100%

## CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in the Prospectus constituting part of the Registration Statement on Form (S-3 No. 333-43903) and the Registration Statements on Form S-8 (Nos. 33-94138, 333-38025 and 333-44265) of Harmonic Lightwaves, Inc. of our report dated January 20, 1998, appearing on page 34 of the Annual Report to Shareholders which is incorporated by reference in this Annual Report on Form 10-K.

/s/ Price Waterhouse LLP

PRICE WATERHOUSE LLP  
San Jose, California  
March 30, 1998

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</FN>		