

AGREEMENT
with the
University of Maryland Foundation and the
University of Maryland
for MEMBERSHIP in the
CENTER FOR ADVANCED LIFE CYCLE ENGINEERING (CALCE) CONSORTIA
UNIVERSITY OF MARYLAND

This Agreement, effective as of the date of execution by the last party to sign this Agreement (Effective Date), is entered into by and between _____ ('Company') a corporation registered under the laws of _____ and having an address of _____; the University of Maryland Foundation ('Foundation'), a private non-profit corporation chartered under the laws of the State of Maryland and located at the Wilson H. Elkins Building, 3300 Metzert Road, Adelphi, Maryland 20783, and the University of Maryland, a public agency and instrumentality of the State of Maryland, located at College Park, Maryland 20742 ('University'), acting on behalf of the Center of Advanced Life Cycle Engineering (CALCE) Consortia.

Whereas, CALCE, operating within the University's Clark School of Engineering, has founded Consortia whose membership represents avionics, automotive, computer, telecommunications, and electronic manufacturers (collectively, 'Corporations'), government agencies, and academic leaders; and

Whereas, by agreement with the University, the Foundation serves as the financial administrator of the CALCE Consortia and is authorized to receive and commit membership payments on behalf of the University and the CALCE Consortia; and

Whereas, CALCE administers all other aspects and performs all other activities of the CALCE Consortia; and

Whereas, Company wishes to become a member of the CALCE CONSORTIA and thereby obtain the benefits of membership and University and Foundation desire to accept Company as a member of the CALCE CONSORTIA,

Now, therefore, for the mutual benefits and considerations each to the other, the parties hereto agree to the following terms and conditions:

1. Definitions

- 1.1 'Designated Site(s)' means the location(s) identified in Exhibit 1 for a Designated Site option.
- 1.2 'Designated Users' means those individuals that Company authorizes to access and use Materials for the benefit of Company.
- 1.3 "Materials" means Software, documentation, manuals, reports, papers and other information licensed or otherwise furnished or made accessible to Company by the University under the terms of this Agreement.
- 1.4 "Software" means the "Run Time" versions of the computer software

identified on Exhibit 3 and any modifications of or updates to such software that are created by or on behalf of the University and made available to Company pursuant to the terms of this Agreement.

2. Administration of CALCE CONSORTIA

- 2.1 CALCE CONSORTIA is financially administered by the Foundation. All other CALCE CONSORTIA administrative and research functions are performed by CALCE. The administration of the CALCE CONSORTIA is described in Exhibit 2 to this Agreement.
- 2.2 CALCE CONSORTIA is supported by the State of Maryland, the University, CALCE CONSORTIA membership fees, and other charitable gifts.

3. CALCE CONSORTIA Memberships and Benefits

- 3.1 The types and levels of CALCE CONSORTIA memberships and the corresponding fee structures are described in Exhibit 1. Membership benefits are described in Exhibit 3.
- 3.2 All Membership fee payments are dedicated to CALCE and its program of research, support, and education and shall not include any overhead charges.
- 3.3 If Company elects a membership that requires payment of an Initiation Fee, the Initiation Fee will be due simultaneously with Company's submission of this executed Membership Agreement.
- 3.4 The first Annual Membership Fee shall be due within thirty (30) days from the date Company executes this Agreement and, if applicable, remits the Initiation Fee payment, unless otherwise defined in Exhibit 1. Unless otherwise agreed upon, subsequent payments of the Annual Membership Fee shall be due on or before start date of the selected consortium listed in Exhibit 3.
- 3.5 All payments due hereunder shall be made payable to the University of Maryland Foundation, Inc. and sent to:

Center for Advanced Life Cycle Engineering
University of Maryland
Room 1103, Engineering Laboratory Building 89
College Park, MD 20742 - USA
ATTN: Erin Chen - CALCE CONSORTIA Membership.
- 3.6 The rights and benefits of membership shall accrue to Company only upon University's receipt of an executed Membership Agreement and the Annual Membership Fee from Company.

4. License

- 4.1 This Agreement grants Company a nonexclusive, royalty-free, nontransferable right and license to access and use Materials during Company's term of Membership provided Company satisfies all responsibilities and obligations under this Agreement.
- 4.2 The license granted under Section 4.1 is subject to the following terms and conditions:

- 4.2.1 Materials may be used only by Designated Users, as specified in Exhibit 1, in Company facilities, at their homes, and during short business trips.
- 4.2.2 Company is authorized to use in Company products the results of analyses conducted using Materials.
- 4.2.3 Company shall not (a) sell, license, sublicense or otherwise distribute Materials, in whole or in part, to third parties; (b) publicly post or display Materials, in whole or in part, or (c) use or cause Materials to be used, in whole or in part, to provide services to third parties, without first obtaining a commercial license from University.
- 4.2.4 Network use of Software is authorized as long as adequate precautions are taken to avoid unauthorized use of Materials.
- 4.2.5 Company may make one (1) copy of Materials as necessary for authorized use and backup.
- 4.2.6 Company shall not modify, hide or interfere with any proprietary and restrictive legends and notices that may be incorporated in Materials as furnished to Company. In the event University adopts modified legends or notices which it furnishes to Company, Company shall incorporate the modified legends or notices into Materials in accordance with reasonable programming practices.
- 4.2.7 Company shall not mirror/duplicate Materials in whole or in part on internal company computer systems without written permission from CALCE.

5. Support and Operation of Materials

- 5.1 Company is solely responsible for the installation of the Software and any fixes and updates that may be issued.
- 5.2 University support for Materials shall be limited to providing reasonable efforts to design and implement programming changes to correct verifiable and reproducible errors about which the University has received notice in the most current released version of Software.
- 5.3 University shall not be responsible for correcting any error attributable to Company's misuse or improper use of Software or for maintaining computer program code which has been modified or enhanced from the version delivered or made available under this Agreement.
- 5.4 Company may E-mail reported problems and request assistance on use of Software to software@calce.umd.edu, or such other E-mail address as University may designate on the CALCE Web site.

6. Ownership of Materials and Use of Trademarks

- 6.1 University shall own all rights, title, and interest in and to Materials.
- 6.2 Company's rights in Materials are limited to those rights expressly granted under this Agreement. Company shall have no title to or ownership interest in Materials and shall not cause any claims, liens, or encumbrances to attach to Materials.

- 6.3 Company shall own data files, designs, analyses, and similar works that result from Company's use of Materials.
- 6.4 Neither party shall use the name or trademarks of the other party or names of employees of the other party for commercial purposes without the prior written approval of the other party. Notwithstanding the preceding statement, each party is free to publicize the fact and nature of this Agreement.
- 6.5 The provisions of this Section 6 shall survive termination or expiration of this Agreement.

7. Proprietary and Confidential Information and Publications

- 7.1 Confidential and Proprietary Information means Materials furnished to Company and other information disclosed by one party to the other hereunder (whether in written, oral, graphic, electronic or physical form), including but not limited to scientific knowledge, know-how, processes, inventions, techniques, formulae, products, data, plans and software, that is not generally known to the public and which, if disclosed in a tangible form, is clearly identified as Proprietary and Confidential Information at the time of disclosure and which, if disclosed orally, is summarized and identified as Proprietary and Confidential Information in a writing submitted to the receiving party within ten (10) days of initial disclosure. Proprietary and Confidential Information does not include information that:
 - 7.1.1 Is developed by the receiving party independently and without the benefit of information disclosed hereunder by disclosing party;
 - 7.1.2 Is lawfully obtained by the receiving party from a third party without restriction;
 - 7.1.3 Is or becomes publicly available through no wrongful act of the receiving party;
 - 7.1.4 Is known to the receiving party prior to its receipt from the disclosing party;
 - 7.1.5 The receiving party is obligated to produce to comply with applicable laws or regulations, including the Maryland Public Information Act (Md. Anno. Code, State Government Article, Title 10, Subtitle 6, Part III) or pursuant to an order of a court of competent jurisdiction or a valid administrative or congressional subpoena, provided the receiving party promptly notifies the disclosing party of such order so that the disclosing party may take appropriate action to protect against the disclosure of such information. Company acknowledges that University, as a public agency, is subject to state and federal laws regarding access to public information; or
 - 7.1.6 The disclosing party fails to designate as Proprietary and Confidential Information in accordance with 7.1.
- 7.2 Each party shall take reasonable steps to protect against the unauthorized disclosure and use of Proprietary and Confidential Information and shall use at least the same degree of care to protect Proprietary and Confidential Information received under this Agreement as it uses to protect similar information of its own.

- 7.3 Specifically, a party shall:
- 7.3.1 not disclose Proprietary and Confidential Information to any third party without the prior written permission of the disclosing party; and
 - 7.3.2 limit disclosure of Proprietary and Confidential Information received from a disclosing party to those of the receiving party's officers, employees, agents, and representatives who have a need to access Proprietary and Confidential Information and advise and obtain the agreement of such persons to comply with the confidentiality obligations under this Section 7.
- 7.4 Nothing in this Section 7 is intended to interfere with the University's right to publish, present or otherwise disseminate papers and information related to or arising out of CALCE CONSORTIA activities. In the event University wishes to make any publication which may disclose Company Proprietary and Confidential Information, University shall provide copies of any abstracts, papers or manuscripts to Company ninety (90) days in advance of any proposed publication date for Company to review solely for the purpose of determining if it contains Company Proprietary and Confidential Information. Company shall notify University, in writing, of any Company Proprietary and Confidential Information it identifies in the publication and may request the deletion of said information from the publication or a delay in publication of no more than ninety (90) additional days so that Company may take appropriate steps to protect said information. The author shall have the final right to determine the scope and content of any paper, subject only to Company's limited right of review.
- 7.5 The obligations set forth in this Section 7 shall last for a period of five (5) years from the termination or expiration of this Agreement or until the Proprietary and Confidential Information ceases to be confidential, whichever occurs first.

8. Export Control Laws

- 8.1 The parties are subject to and agree to abide by United States laws and regulations (e.g., the Arms Export Control Act, the Export Administration Act) that govern the export of specific technical data and technologies, including software, prototypes and other intellectual property, to foreign countries and foreign nationals ('Export Control Laws').

9. Disclaimer and Limitation of Warranty

- 9.1 MATERIALS ARE MADE AVAILABLE ON AN "AS IS" BASIS. THE FOUNDATION AND UNIVERSITY DISCLAIM ANY AND ALL PROMISES, REPRESENTATIONS AND WARRANTIES – WHETHER EXPRESS OR IMPLIED, ORAL OR IN WRITING, IN FACT OR ARISING BY OPERATION OF LAW–WITH RESPECT TO ANY MATERIALS AND SERVICES PROVIDED HEREUNDER, INCLUDING THEIR CONDITION, CONFORMITY TO ANY REPRESENTATION OR DESCRIPTION, THE EXISTENCE OF ANY LATENT OR PATENT DEFECTS THEREIN, AND/OR THEIR MERCHANTABILITY OR

FITNESS FOR A PARTICULAR USE OR PURPOSE.

- 9.2 WITHOUT LIMITING THE FOREGOING, IN NO EVENT SHALL THE FOUNDATION, THE STATE OF MARYLAND OR THE UNIVERSITY BE LIABLE TO COMPANY FOR ANY BUSINESS EXPENSE OR INTERRUPTION; LOSS OF PROFITS, AND/OR ANY INCIDENTAL, SPECIAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES OF ANY KIND, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH CLAIMS OR DEMANDS, HOWEVER CAUSED, ARISING IN CONNECTION WITH OR OUT OF THE FURNISHING, USE OR PERFORMANCE OF MATERIALS OR SERVICES PROVIDED HEREUNDER. THIS LIMITATION UPON DAMAGES AND CLAIMS IS INTENDED TO APPLY WITHOUT REGARD TO WHETHER OTHER PROVISIONS OF THIS AGREEMENT HAVE BEEN BREACHED OR HAVE PROVEN INEFFECTIVE.
- 9.3 The provisions of this Section 9 shall survive termination or expiration of this Agreement.

10. Term, Termination and Renewal

- 10.1 The initial term of this Agreement shall commence upon the University's timely receipt of the Membership Fee set forth in Exhibit 1. Thereafter, this Agreement shall renew automatically upon payment of the Annual Membership Fee for successive one-year terms commencing on the membership cycle of the selected consortium defined in Exhibit 3.
- 10.2 If Company elects not to renew this Agreement after the initial term or any subsequent term, it shall notify the University, in writing, thirty (30) days prior to the start of the next membership cycle as defined in Exhibit 3.
- 10.3 University and/or Foundation may terminate this Agreement thirty-one (31) days after Company's receipt of written notice from University or Foundation of Company's breach of Sections 3, 4 or 6 through 8 inclusive of this Agreement if Company fails to rectify the breach in a satisfactory manner within thirty (30) days of its receipt of such notice. Company shall comply with any directive in the notice issued by University or Foundation to Company to suspend all use of Materials during the thirty (30) day cure period.
- 10.4 University may terminate this Agreement effective upon the expiration of any term of this Agreement, upon written notice to Company.
- 10.5 This Agreement may be terminated at any time upon mutual written agreement of the parties.
- 10.6 Upon the termination or expiration of this Agreement for any reason, Company, upon the University's request, shall return to University or destroy all Materials in Company's possession, including copies and portions thereof and updates and enhancements thereto in any form, including electronic versions contained on storage devices. Termination or expiration of this Agreement shall not affect Company's right to continue use of data files, designs, and similar works that it created with the use of Materials prior to the date of expiration or termination.

11. Miscellaneous

- 11.1 The parties are and shall remain independent contractors and nothing herein shall be construed to create a partnership, agency, joint venture, or teaming agreement between or among the parties. Nothing herein shall be construed as implying that the employees of one party are employees of another party.
- 11.2 This Agreement shall be binding upon and inure to the benefit of the parties. This Agreement shall not be assigned or transferred by Company, in whole or in part, except by way of sale of substantially all of Company's assets by merger or consolidation, to any third party without the prior written consent of University and the Foundation, which consent shall not be unreasonably withheld; any attempted assignment in violation of this section shall be void.
- 11.3 Notwithstanding anything to the contrary herein, each party shall abide by the other's applicable policies, rules, and regulations with respect to use of another party's facilities hereunder, provided the visiting party received notice of such policies, rules and regulations.
- 11.4 Any notice required to be given hereunder shall be in writing and shall be deemed effective upon personal delivery or upon transmission by certified mail, postage prepaid, return receipt requested, to the following addresses:
- 11.4.1 Company:
- 11.4.2 Foundation: University of Maryland Foundation, Inc.
Wilson H. Elkins Building
3300 Metzert Road
Adelphi, MD 20783
ATTN: CALCE CONSORTIA Membership
- 11.4.3 University: Dr. Michael Pecht, Director and Professor
Center of Advanced Life Cycle Engineering
Room 1103, Building 89 (Engineering Laboratory Building)
University of Maryland
College Park, MD 20742
- 11.5 Company designates the person identified in Exhibit 1 to this Agreement as Company's contact with the University on technical matters.
- 11.6 This Agreement shall be governed by and construed in accordance with the laws of the State of Maryland excluding the Maryland Computer Information Transactions Act, Md Code Ann. [Commercial Law] Sections 21-101 through 21-816 (2000). In accordance with that Act, the parties hereby mutually agree to opt out of its application to this Agreement.
- 11.7 Any disputes arising between the Parties arising under this Agreement shall in the first instance be attempted to be settled in good faith negotiations between the respective Parties.
- 11.8 With respect to any claim related to or arising out of the performance or

nonperformance of University or Company under this Agreement, Company consents to the exclusive jurisdiction and venue of the United States District Court for the District of Maryland or, if federal jurisdiction is lacking, to the Circuit Court of the State of Maryland, and agrees to waive its right to assert that either forum lacks personal jurisdiction over Company or is an inconvenient forum for resolving the underlying dispute.

- 11.9 In the event any portion of this Agreement shall be deemed by a court of competent jurisdiction to be overly broad in scope, duration or area of applicability, the court shall have the power, and is hereby authorized and directed, to modify and enforce the same as modified. Subject to the foregoing, in the event any provision of this Agreement shall be held to be invalid, illegal or unenforceable for any reason, such invalidity or illegality shall attach only to such provision and shall not affect or render invalid or unenforceable the remaining provisions of this Agreement.
- 11.10 No failure or delay by a party in exercising any of its rights or remedies hereunder will operate as a waiver thereof, nor will any single or partial exercise of any such right or remedy preclude any other or further exercise thereof or the exercise of any other right or remedy.
- 11.11 Headings and section numbers in this Agreement are used only for convenience.
- 11.12 Modifications to this Agreement shall become effective only upon written agreement of the parties.
- 11.13 This Agreement, together with Exhibits 1, 2 and 3, constitutes the entire Agreement between the parties with respect to the subject matter hereof and supersedes all prior agreements and understandings, whether oral or written.

Before executing the Agreement on the Signature Page, please complete Exhibit 1 to:

1. Designate your membership level
2. Designate administrative contact.
3. Select membership option (Designate Site or Designated User)
4. Identify Designated Site(s) and contacts
5. Sign two copies and send the copies to:

Center of Advanced Life Cycle Engineering
University of Maryland
Room 1103, Building 89 (Engineering Laboratory Building)
College Park, MD 20742
Attn: Joan Lee–Membership agreement

SIGNATURE PAGE

AGREED TO BY:		APPROVED AND AGREED TO BY:	
Company:		University of Maryland Foundation	
Typed Name:		Typed Name:	Joyce Marx
Title:		Title:	Vice President
Date:		Date:	
Signature:		Signature:	
		University of Maryland	
		Typed Name:	Dr. Michael Pecht
		Title:	Professor and Director
		Date:	
		Signature:	
ACKNOWLEDGED BY:			
		Typed Name:	Dr. Nariman Farvardin
		Title:	Dean, Clark School of Engineering
		Date:	
		Signature:	

EXHIBIT 1

Please complete both parts of this Exhibit.

I. Membership Selection: Please select membership option.

EPSC Super Membership: Annual Membership Fee of \$125,000*

EPSC Full Membership: Annual Membership Fee of \$65,000*

EPSC Associate Membership: Annual Membership fee of \$30,000 (Only for companies having fewer than 250 employees)*

PHMC Membership: Annual Membership fee of \$35,000

EPSC Software Membership: Annual fee of \$15,000

Long-Term Pb-free Reliability Study: Phase I: \$15,000 and Phase I \$30,000

Long-Term Pb-free Contamination Study: \$15,000

Long-Term Mixed Solder Study: \$15,000

Additional EPSC Site Membership: Annual Membership fee of \$15,000

(Available only to existing Full Members)

**all new EPSC members are required to pay a one-time initiation fee of \$25,000.*

First Annual Membership Fee Payment for membership commencement of membership year to _____ will be _____ (including one time initiation fee of \$25,000 for new member).

Assign a company membership contact responsible for day-to-day interaction with CALCE membership.

Membership Contact:	(contact name, email, phone)
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II. Designated Site Identification:

Please identify Designated Site(s) and contacts (Super, Full, Associate, and Site Memberships). All employees of the Company at the Designated Site may be considered as Designated Users.

Designated Site	(fill in company name and location)
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Please complete for each additional site you desire (Attach sheet containing information of all additional Designated Sites). Note, there is increased cost for additional sites for Full, Associate, and Site Members.

Additional Designated Site #1	(mailing address)
Site Contact	(name, phone, and email)

EXHIBIT 2
Administration of CALCE CONSORTIA

1. The Foundation shall serve as the financial administrator of the Membership fees.
2. The University shall appoint a University faculty member to serve as Director of the CALCE CONSORTIA.
3. The University shall administer all CALCE CONSORTIA programs and membership benefits.
4. The University shall determine the goals and missions of the CALCE CONSORTIA, in consultation the CALCE CONSORTIA Industrial Advisory Board (IAB).
5. The IAB will be comprised of one representative from each member of the consortium.
6. The IAB will review and provide advice, reflective of actual industry concerns, to the Director on CALCE CONSORTIA practices and research priorities; guide and oversee CALCE CONSORTIA research.
7. The IAB shall elect a chairperson from among the IAB representatives. The chairperson shall serve a one-year term. The chairperson will be responsible for running two IAB meeting which will be conducted as part of bi-annual technical reviews.

EXHIBIT 3 MEMBERSHIP BENEFITS

Electronics Products and Systems Consortium (EPSC)

The Electronic Products and Systems Consortium (EPSC) provides a forum for *defining* fundamental research needs, *conducting* research, and *sharing* research findings among participating organizations. The research focus for the CALCE EPSC Consortium includes risk assessment, mitigation, and management of electronic products and systems. The CALCE EPSC operates on an annual membership cycle from October 15th to October 14th. The start date for the EPSC is October 15th.

EPSC Full Membership, Super Membership and Site Membership Are entitled to the benefits described below

I. MATERIALS

- Access to and use of University of Maryland CALCE Materials through the CALCE EPSC Web Site under the terms and conditions of the Agreement.
- Access to and use of information on CALCE EPSC Web Site under the terms and conditions of the Agreement.
- Access to and use of CALCE Simulation Assisted Reliability Assessment (SARA[™]) software under the terms and conditions of the Agreement.
- User support for Materials in accordance with the Agreement

II. RESEARCH

- Ability to influence the direction of CALCE EPSC research
- Ability to monitor ongoing research projects
- Ability to submit research proposals for CALCE EPSC core research agenda (limited to Full and Super Membership)
- Ability to delay public disclosure of the results up to 6 months from the date that the final research report is delivered
- Immediate access to results of CALCE EPSC core research projects through CALCE EPSC Web Site
- Immediate access to CALCE EPSC inventions through CALCE EPSC Web Site

III. EDUCATION

- Information on state-of-the-art trends
- Free attendance for limited number of Member employees to semi-annual technical meetings
- Priority enrollment for Member employees in short courses, workshops, and seminars. (Space considerations may limit the number of Member employees who may attend from any one Designated Site)
- Discounts on CALCE courses, workshops and seminars
- One day of on-site Software training and/or annual presentation of CALCE EPSC research activities each year, at a mutually agreeable time (Limited to Full and Super

membership)

IV. COOPERATIVE PROGRAMS

- Participation in cooperative programs with University
- Upon request, specially tailored programs to assist Member with recruiting University of Maryland students
- Representation on EPSC Industrial Advisory Board

EPSC Associate Membership is entitled to the benefits described below:

I. MATERIALS

- Access to and use of University of Maryland CALCE Materials through the CALCE EPSC Web Site under the terms and conditions of the Agreement.
- Access to and use of information on CALCE EPSC Web Site under the terms and conditions of the Agreement.
- Access to and use of CALCE Simulation Assisted Reliability Assessment (SARAtm) software under the terms and conditions of the Agreement.
- User support for Materials in accordance with the Agreement

II. RESEARCH

- Ability to influence the direction of CALCE EPS research
- Ability to monitor ongoing EPSC research projects
- Immediate access to results of CALCE EPSC core research projects through CALCE EPSC Web Site
- Immediate access to CALCE EPSC inventions through CALCE EPSC Web Site

III. EDUCATION

- Information on state-of-the-art trends in electronic packaging
- Free attendance for limited number of Member employees to semi-annual technical meetings
- Priority enrollment for Member employees in short courses, workshops, and seminars. (Space considerations may limit the number of Member employees who may attend from any one Designated Site)
- Discounts on CALCE courses, workshops and seminars

IV. COOPERATIVE PROGRAMS

- Participation in cooperative programs with University
- Upon request, specially tailored programs to assist Member with recruiting University of Maryland students

EPSC Software Membership are entitled to the benefits described below:

- Access to and use of CALCE Simulation Assisted Reliability Assessment (SARA™) software under the terms and conditions of the Agreement.
- User support for Materials in accordance with of the Agreement,

Prognostics and Health Management Consortium (PHMC)

The Prognostics and Health Management Consortium (PHMC) focuses on research and development of the fundamental methodologies for electronics prognostics and health management. The goal of the Center is to provide means of measuring the state of health (reliability) of electronic products and systems in real-time, and to forecast the onset of failure in such systems. The CALCE PHMC operates on an annual membership cycle from March 23th to March 22th. The start date for PHMC is March 23rd.

PHMC Membership is entitled to the benefits described below:

I. MATERIALS

- Access to and use of University of Maryland CALCE Materials through the CALCE PHMC Web Site under the terms and conditions of the Agreement.
- Access to and use of information on CALCE PHMC Web Site under the terms and conditions of the Agreement.
- User support for Materials in accordance with the Agreement

II. RESEARCH

- Ability to influence the direction of CALCE PHMC research
- Ability to monitor ongoing PHMC research projects
- Immediate access to results of CALCE PHMC core research projects through CALCE PHMC Web Site
- Immediate access to CALCE PHMC inventions through CALCE PHMC Web Site

III. EDUCATION

- Free attendance for Member employees to semi-annual technical meetings (Space considerations may limit the number of Member employees who may attend from any one Designated Site)
- Priority enrollment for Member employees in short courses, workshops, and seminars. (Space considerations may limit the number of Member employees who may attend from any one Designated Site)
- Discounts on CALCE courses, workshops and seminars

IV. COOPERATIVE PROGRAMS

- Representation on the PHMC Industrial Advisory Board
- Participation in cooperative programs with University
- Upon request, specially tailored programs to assist Member with recruiting University of Maryland students

Long-term Pb-free Reliability Study

This study examines the long-term (>5 year) reliability of Pb-free assembled hardware. In particular, Pb-free (tin silver copper) soldered assemblies with select lead-free finishes will be compared to SnPb soldered assemblies with Pb-based HASL finish. Testing will include temperature cycling and vibration. In addition, micro-structural analysis of the Pb-free solder joints will be performed. Access to this study is not limited to a single designated site.

- Access to and use of University of Maryland CALCE Long-term Pb-free Reliability Study Materials through the CALCE Web Site under the terms and conditions of the Agreement.
- Attendance and participation in review meetings for the CALCE Long-term Pb-free Reliability Study.
- Phase I participants will only receive CALCE Long-term Pb-free Reliability Study results made available to participants as of March 2005.

Long-term Reliability of Lead-free in Contaminating Environments

This study examines the long-term reliability of lead-free electronic assemblies subject to contaminating and corroding environments. Access to this study is not limited to a single designated site.

- Access to material (reports and presentations) generated under this study through the CALCE Web Site.
- Attendance and participation in review meetings for this study

Long-term Mixed (Pb-free parts/ SnPb paste) Solder Reliability Study

This study makes a critical assessment of the reliability of solder joints formed with lead-free parts and Pb-based solder. This is particularly a concern for companies that are attempting to maintain Pb-based solder. Access to this study is not limited to a single designated site.

- Access to material (reports and presentations) generated under this study through the CALCE Web Site.
- Attendance and participation in review meetings for this study.