IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

OCEAN SEMICONDUCTOR LLC, *Plaintiff,* vs. MEDIATEK INC., ET AL., *Defendant.*	Case No. 6:20-cv-01210-ADA
OCEAN SEMICONDUCTOR LLC, *Plaintiff,* vs. NVIDIA CORPORATION, *Defendant.*	Case No. 6:20-cv-01211-ADA
OCEAN SEMICONDUCTOR LLC, *Plaintiff,* vs. NXP SEMICONDUCTORS NV, ET AL., *Defendant.*	Case No. 6:20-cv-01212-ADA
OCEAN SEMICONDUCTOR LLC, *Plaintiff,* vs. RENESAS ELECTRONICS CORPORATION, ET AL., *Defendant.*	Case No. 6:20-cv-01213-ADA
OCEAN SEMICONDUCTOR LLC, *Plaintiff,* vs. SILICON LABORATORIES INC., *Defendant.*	Case No. 6:20-cv-01214-ADA
OCEAN SEMICONDUCTOR LLC, *Plaintiff,* vs. STMICROELECTRONICS INC., *Defendant.*	Case No. 6:20-cv-01215-ADA
OCEAN SEMICONDUCTOR LLC, *Plaintiff,* vs. WESTERN DIGITAL TECHNOLOGIES, INC., *Defendant.*	Case No. 6:20-cv-01216-ADA

DECLARATION OF COSTAS SPANOS, PH.D.

I, Costas Spanos, Ph.D., declare as follows:

I. INTRODUCTION

1. I have been retained by counsel for Defendants MediaTek Inc.; MediaTek USA Inc.; NVIDIA Corporation; NXP USA, Inc.; Renesas Electronics Corporation; Renesas Electronics America, Inc.; Silicon Laboratories Inc.; STMicroelectronics, Inc.; and Western Digital Technologies, Inc. as an expert to analyze and explain certain claim terms in U.S. Patent Nos. 6,660,651 ("the '651 patent"), 8,676,538 ("the '538 patent"), and 6,420,097 ("the '097 patent").

2. In rendering my opinions, I considered the items discussed or listed herein, as well as my own experiences in the field of semiconductor manufacturing technology. I have also reviewed the parties' lists of claim terms for construction as well as the parties' proposed constructions.

3. I reserve the right to amend or supplement my opinions in light of further documents, depositions, or discovery disclosures.

4. I am being compensated at my usual hourly rate of $750 and I am being separately reimbursed for any out-of-pocket expenses. My compensation does not depend in any way on the outcome of this case, my particular testimony, or the opinions that I express.

II. QUALIFICATIONS & EXPERIENCE

5. I have attached my Curriculum Vitae as Exhibit 1.

6. I am a Professor of Electrical Engineering and Computer Sciences at the University of California in Berkeley, California.

7. I graduated from the National Technical University of Athens, Greece in 1980 with a five-year diploma in in Electrical Engineering, specialized in Electronics. I then graduated from

Carnegie Mellon University in 1981 with a M.S. in Electrical Engineering, specialized in Computer-Aided Design of Integrated Circuits (ICs), and in 1985 with a Ph.D. in Electrical Engineering, specialized in Computer-Aided Fabrication of ICs.

8. In the course of my professional and academic career, I have taught courses in semiconductor technology and semiconductor manufacturing at both the undergraduate and graduate levels, and I have also presented multiple short courses on the subjects of statistical process control and experimental design in semiconductor manufacturing to industrial audiences.

9. I have published more than 300 peer-reviewed publications on all these subjects and co-authored a well-cited textbook. I have also been involved in co-founding two successful companies. The first, Timbre Technologies, specialized in sub-nm metrology for ultra-fine patterns that need to be produced and controlled during advanced semiconductor processing. The second, OnWafer Technologies, specialized in wireless, in-situ monitoring of critical steps during photolithography and plasma operations. Timbre Technologies was acquired by Tokyo Electron, and OnWafer Technologies was acquired by KLA-Tencor. The technologies Timbre Technologies and OnWafer Technologies were based on are widely in use today across the semiconductor industry.

10. In addition to my academic and commercial work, I have been at times retained as an expert witness in several patent disputes relating to semiconductor manufacturing technology, where I have provided expert opinions and testimony.

III. LEVEL OF ORDINARY SKILL IN THE ART

11. The ’651 patent relates to an adjustable wafer stage on which a process operation is performed on a wafer. ’651 patent at 1:6-11, 2:26-57, 3:9-14, 5:3-29, 7:28-34. The ’538 patent relates to determining a relationship between processing parameters such as temperature or pressure and “faults” (undesired parameter values) detected during processing and adjusting the

weighting of parameters before performing subsequent fault detection algorithms. '538 patent at 1:9-12, 5:28-59.

12. For each of the '651 and '538 patents, a person of ordinary skill in the art at the time of the alleged invention would have had at least a B.S. in mechanical engineering, electrical engineering, materials science engineering, or a related field. A person of ordinary skill in the art at the time of the alleged invention also would have had experience with the technological area relating to the patents at issue. In the case of the '651 patent, in addition to the educational requirement described above, a person of ordinary skill in the art at the time of the alleged invention would have had four years of experience designing and developing semiconductor fabrication processes and tooling. For the '538 patent, in addition to the educational requirement described above, a person of ordinary skill in the art at the time of the alleged invention would have had four years of experience working with semiconductor fabrication processes, including computer programming and data analysis. If someone had an M.S. or Ph.D. in mechanical engineering, electrical engineering, materials science engineering, or a related field, then less experience would have been necessary to qualify that person as a person of ordinary skill in the art at the time of the alleged invention for each of the '651, and '538 patents.

13. The '097 patent relates to trimming or reducing the linewidth of a hardmask layer in a semiconductor film stack in order to achieve linewidths of circuit structures (like transistor gates), formed using a hardmask, that are narrower than the linewidths generated by conventional lithography tools at the time of the alleged invention. '097 patent at 1:4-9, 1:57-63.

14. For the '097 patent, a person of ordinary skill in the art at the time of the alleged invention would have had a B.S. in chemical engineering, materials science, electrical engineering, physics, chemistry, or a similar field, and three or four years of work experience in integrated

circuit fabrication or related fields. If someone had an M.S. or Ph.D. in chemical engineering, materials science, electrical engineering, physics, chemistry, or a similar field, then less experience would have been necessary to qualify that person as a person of ordinary skill in the art at the time of the alleged invention for purposes of the '097 patent.

15. I meet the qualifications of a person of ordinary skill in the art for each of the '651, '538, and '097 patents. I have a Ph.D. in Electrical Engineering and several years of experience researching issues and developing solutions in each of the technology areas relating to the patents at issues.

IV. LEGAL STANDARDS

A. Claim Construction

16. I am informed on the law regarding claim construction and patent claims, and understand that a patent may include two types of claims, independent claims and dependent claims. An independent claim stands alone and includes only the limitations it recites. A dependent claim can depend on an independent claim or another dependent claim. I understand that a dependent claim includes all the limitations that it recites in addition to all the limitations recited in the claim or claims from which it depends.

17. I understand that claim construction is a matter of law for the Court to decide. Claim terms should be given their ordinary and customary meaning within the context of the patent in which the terms are used, *i.e.*, the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention in light of what the patent teaches.

18. I understand that to determine how a person of ordinary skill would understand a claim term, one should look to those sources available that show what a person of skill in the art would have understood disputed claim language to mean. Such sources include the words of the claims themselves, the remainder of the patent's specification, the prosecution history of the patent

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