

Exhibit E

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

ELM 3DS INNOVATIONS LLC,)
)
Plaintiff,)
)

v.)

SAMSUNG ELECTRONICS CO., LTD.,)
)
SAMSUNG SEMICONDUCTOR, INC.,)
)
SAMSUNG ELECTRONICS AMERICA,)
)
INC., SAMSUNG)
)
TELECOMMUNICATIONS AMERICA,)
)
LLC, and SAMSUNG AUSTIN)
)
SEMICONDUCTOR, LLC)
Defendants.)

Civ. No. 14-cv-01430-LPS-CJB

Jury Trial Demanded

ELM 3DS INNOVATIONS LLC,)
)
Plaintiff,)

v.)

MICRON TECHNOLOGY, INC.; MICRON)
)
SEMICONDUCTOR PRODUCTS, INC.; and)
)
MICRON CONSUMER PRODUCTS)
)
GROUP, INC.)
)
Defendants.)

Civ. No. 14-cv-01431-LPS-CJB

Jury Trial Demanded

ELM 3DS INNOVATIONS LLC,)
)
Plaintiff,)

v.)

SK HYNIX INC., SK HYNIX AMERICA)
)
INC., HYNIX SEMICONDUCTOR)
)
MANUFACTURING AMERICA INC., and)
)
SK HYNIX MEMORY SOLUTIONS INC.)
)
Defendants.)

Civ. No. 14-cv-01432-LPS-CJB)

Jury Trial Demanded

DEFENDANTS' FOURTH AMENDED INVALIDITY CONTENTIONS

I. INTRODUCTION

Pursuant to the agreed upon schedule, Defendants SK hynix Inc., SK hynix America Inc., Hynix Semiconductor Manufacturing America Inc., and SK hynix Memory Solutions, Inc. (collectively, "SK hynix Defendants"), Micron Technology, Inc., Micron Semiconductor Products, Inc., and Micron Consumer Products Group, Inc. (collectively, "Micron Defendants"), Samsung Electronics Co., Ltd., Samsung Semiconductor, Inc., Samsung Electronics America, Inc., , and Samsung Austin Semiconductor, LLC (collectively, "Samsung Defendants") (together, "Defendants") hereby provide their Fourth Amended Invalidity Contentions with respect to the asserted claims identified by Plaintiff Elm 3DS Innovations LLC ("Elm") in the Disclosure of Asserted Claims and Infringement Contentions dated November 2, 17 and 20, 2015 and May 23, 2018. The asserted claims are as follows, with brackets indicating a claim asserted only against Samsung Defendants and parentheses indicating claims asserted only against SK hynix Defendants and Micron Defendants:

Asserted Patent	Asserted Claims
U.S. Pat. No. 7,193,239	10, 11, 12, 18, 19, 20, 60, 61, 62, 63, 67, 70, 71, 72, 73, 77
U.S. Pat. No. 7,474,004	20, 21, 22, 23
U.S. Pat. No. 7,504,732	10, [11], 13, 14
U.S. Pat. No. 8,410,617	51
U.S. Pat. No. 8,629,542	1, 2, 3, 30, 31, 33, 40, 41, 44
U.S. Pat. No. 8,653,672	17, 22, 95, 129, [130], 131, 132, 145, 146, 152
U.S. Pat. No. 8,796,862	34, 36, 135, 136, 137, 138, 147
U.S. Pat. No. 8,841,778	32, 44, 46, 54
U.S. Pat. No. 8,907,499	12, 13, 24, [36], [37], 38, (49), 53, 83, 86, 87, 132
U.S. Pat. No. 8,928,119	18, (33)
U.S. Pat. No. 8,933,570	58, 60, [61], 67

standard for measuring stress. Stress also can be uniform or non-uniform throughout a thin film. If the stress is uniform, its measurement will give an average stress. If the stress is non-uniform, a difference of stress or stress gradient exists between the top and the bottom of the thin film, as well as different stress at different locations from the center of the film outward to the edges. There is a vertical and lateral variation of stress. Consequently, just indicating that a film is “low stress” or “low tensile stress” does not provide enough context to one of skill in the art because the phrase alone does not indicate whether extrinsic or intrinsic stress, average stress measurement, or the measurement point along the film is indicated.

Thus, one of skill in the art could not determine the meaning of such “stress” with reasonable certainty. A person of ordinary skill in the art would not understand the alleged inventor to be in possession of the purported invention and would not be reasonably apprised of the scope of the invention.

Claim limitations including relative terms or terms of degree such as “substantially planar,” “majority of the surface area,” “other than at the edges,” “monolithic substrates,” “thin,” “major portion,” and “low stress” and related or dependent terms are indefinite, not enabled, and lack an adequate written description because the Asserted Patents do not disclose and a person of ordinary skill in the art could not determine the bounds of these terms with reasonable certainty. A person of ordinary skill in the art would not understand the alleged inventor to be in possession of the purported invention and would not be reasonably apprised of the scope of the invention.

Claim limitations involving circuitry including “active circuitry,” “passive circuitry,” “polycrystalline active circuitry, and “reconfiguration circuitry” and related or dependent terms are indefinite, not enabled, and lack an adequate written description because the Asserted Patents

- *Ludwig* describes a controller chip that performs various functions such as error correction and refreshing on DRAM chips. *See e.g., Ludwig*, 10:4-14.

One of ordinary skill in the art would have been motivated to modify the controller circuit(s) and memory circuits using known circuit design and programming methods to perform refreshing, read/write, error correction and other functions/logic as taught by IBM RS 6000 or *Ludwig*.

There are further motivations to combine prior art products such as products by Irvine Sensors Corporation, Texas Instruments Corporation, and General Electric Corporation. These products were all competitors in the same market of high density integrated circuits and were even compared in the prior art by references such as *Crowley* to show which products achieved the highest integrated circuit density, which can be achieved through thin, substantially flexible layers. Further, one of ordinary skill in the art would be motivated to combine Irvine Sensors' products with the improvements to the technology taught in patents invented by Irvine Sensors and IBM as the Memory Short Stack technology was developed by Irvine Sensors and then licensed to and improved by IBM.

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