

U.S. Patent No. 10,049,080

Declaration of Robert Horst

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCEDES-BENZ USA, LLC,

Petitioner

v.

DAEDALUS PRIME LLC

Patent Owner

Case (to be assigned)

U.S. Patent No. 10,049,080

**DECLARATION OF ROBERT HORST IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW OF
US. PATENT NO. 10,049,080**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
A. Qualifications	2
B. Materials Considered.....	5
II. LEGAL STANDARDS	8
A. Anticipation	8
B. Obviousness.....	9
C. Level of Ordinary Skill in the Art	12
D. Claim Construction.....	13
III. SUMMARY OF GROUNDS	14
IV. THE '080 PATENT.....	16
A. Overview of the '080 Patent.....	16
B. Prosecution History of the '080 Patent	19
V. TECHNOLOGY BACKGROUND.....	22
A. Relationship between power, voltage, and frequency.....	22
B. Multi-core processing approaches.....	24
C. Processor Microarchitectures	27
D. Heterogeneous multi-core processors	29
VI. THE PRIOR ART IN THE APPLIED INVALIDITY GROUNDS	32
A. Mathieson (Ex-1005).....	32
B. Carmack (Ex-1006)	34
C. Sutardja – Sutardja '748 (Ex-1007) and Sutardja '785 (Ex-1008)	37
D. Rychlik (Ex-1009).....	39
VII. CLAIM CONSTRUCTION	40
VIII. DETAILED EXPLANATION OF THE UNPATENABILITY GROUNDS	41
A. Ground 1: Claims 1-4, 7-12, 15-20, 23-24 are rendered obvious by Sutardja (Ex-1007, incorporating Ex-1008).....	41
1. Independent Claim 1	41

- a. Element 1[pre]: A multi-core processor comprising:.....41
 - b. Element 1[a][i]: a first plurality of cores and a second plurality of cores that support a same instruction set,42
 - c. Element 1[a][ii]: wherein the second plurality of cores consume less power, for a same applied operating frequency and supply voltage, than the first plurality of cores; and53
 - d. Element 1[b][i]: power management hardware to, from a state where the first plurality of cores and the second plurality of cores are enabled, disable all of the first plurality of cores for a drop in demand below a threshold without disabling any of the second plurality of cores,..55
 - e. Element 1[b][ii]: wherein an operating system to execute on the multi-core processor is to monitor a demand for the multi-core processor and control the power management hardware based on the demand.66
- 2. Dependent Claim 2: The multi-core processor of claim 1, wherein the second plurality of cores comprise logic gates that have narrower logic gate driver transistors than corresponding logic gates of the first plurality of cores.69
 - 3. Dependent Claim 3: The multi-core processor of claim 1, wherein the second plurality of cores comprise logic gates that consume less power than corresponding logic gates of the first plurality of cores.72
 - 4. Dependent Claim 4: The multi-core processor of claim 1, wherein the second plurality of cores each have a maximum operating frequency that is less than a maximum operating frequency of the first plurality of cores.73
 - 5. Dependent Claim 7: The multi-core processor of claim 1, wherein the first plurality of cores are at a maximum operating frequency in the state.74
 - 6. Dependent Claim 8: The multi-core processor of claim 1, wherein.....75
 - a. Element 8[a]: the power management hardware is to enable all of the first plurality of cores for an increase in demand above the threshold without disabling any of the second plurality of cores,.....75

- b. Element 8[b]: wherein an operating system is to monitor a demand for the multi-core processor and control the power management hardware based on the demand.80
- 7. Independent Claims 9 and 17:.....80
 - a. Element 9[preamble]: A method comprising:80
 - b. Element 17[preamble]: A non-transitory machine readable medium containing program code that when processed by a machine causes a method to be performed, the method comprising:80
 - c. Elements 9[a][i] and 17[a][i]: operating a multi-core processor such that a first plurality of cores and a second plurality of cores execute a same instruction set,.....81
 - d. Elements 9[a][ii] and 17[a][ii]: wherein the second plurality of cores consume less power, for a same applied operating frequency and supply voltage, than the first plurality of cores; and81
 - e. Elements 9[b][i] and 17[b][i]: disabling with power management hardware, from a state where the first plurality of cores and the second plurality of cores are enabled, all of the first plurality of cores for a drop in demand below a threshold without disabling any of the second plurality of cores,81
 - f. Element 9[b][ii] and 17[b][ii]: wherein an operating system executing on the multi-core processor monitors a demand for the multi-core processor and controls the power management hardware based on the demand.81
- 8. Dependent Claims 10 and 18: The [method of claim 9/nontransitory machine readable medium of claim 17], wherein the operating of the second plurality of cores comprises driving logic gates that have narrower logic gate driver transistors than corresponding logic gates of the first plurality of cores.....82
- 9. Dependent Claims 11 and 19: The [method of claim 9/nontransitory machine readable medium of claim 17], wherein the operating of the second plurality of cores comprises driving logic gates that consume less power than corresponding logic gates of the first plurality of cores.82

10. Dependent Claims 12 and 20: The [method of claim 9/nontransitory machine readable medium of claim 17], wherein the operating comprises operating the second plurality of cores at a maximum operating frequency that is less than a maximum operating frequency of the first plurality of cores...82
 11. Dependent Claims 15 and 23: The [method of claim 9/nontransitory machine readable medium of claim 17], wherein the operating comprises operating the first plurality of cores at a maximum operating frequency in the state.....82
 12. Dependent Claims 16 and 24: The [method of claim 9/nontransitory machine readable medium of claim 17], further comprising.....83
 - a. Elements 16[a] and 24[a]: enabling, with the power management hardware, all of the first plurality of cores for an increase in demand above the threshold without disabling any of the second plurality of cores,.....83
 - b. Elements 16[b] and 24[b]: wherein an operating system is to monitor a demand for the multi-core processor and control the power management hardware based on the demand.....83
- B.** Ground 2: Claims 5-6, 13-14, and 21-22 are rendered obvious by Sutardja in view of Rychlik.....83
1. Dependent Claims 5, 13, and 21:.....83
 - a. Elements 5[a], 13[a], 21[a]: The [multi-core processor of claim 1/method of claim 9/non-transitory machine readable medium of claim 17], [wherein the power management hardware is to disable/further comprising disabling, with the power management hardware,] an additional core of the second plurality of cores for each continued drop in demand below a next lower threshold until one core of the second plurality of cores remains enabled, and83
 - b. Elements 5[b], 13[b], 21[b]: [lower/lowering] an operating frequency or a supply voltage of the one core of the second plurality of cores as demand drops below a next lower threshold.90
 2. Dependent Claims 6, 14, 22: [The multi-core processor of claim

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