UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE LLC,
Petitioner

v.

CYWEE GROUP LTD.
Patent Owner

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Case IPR2018-01257
Patent No. 8,552,978

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**EXPERT DECLARATION OF DR. JOSEPH LAVIOLA, PH.D., IN
SUPPORT OF PATENT OWNER'S MOTION TO AMEND**

Table of Contents

I. INTRODUCTION

1. I have been retained by Patent Owner CyWee Group Ltd. ("CyWee" or "Patent Owner") as an expert in the area of motion sensors and sensor fusion technology. I make this Declaration at the request of CyWee regarding my opinions as an independent expert regarding proposed amendments to claims 10 and 12 of U.S. Patent No. 8,552,978 (the "'978 Patent") that are responsive to grounds raised in the matter of *Inter Partes* Review, Petition IPR2018-01257 ("Petition").

2. I am being compensated for this work at the rate of $375/hour, and my compensation is not dependent on the outcome of this matter.

3. In preparation for this Declaration, I studied Exhibits 1001-1006 provided by Petitioner as well as the Petition. I have also studied several documents from various district court actions concerning the '978 Patent. These include the claim construction orders in *CyWee Group Ltd. v. Samsung Electronics Co., Ltd., et al*, No. 2:17-cv-00140-WCB-RSP (E.D. Tex.) (the "Samsung Suit") and *CyWee Group Ltd. v. Motorola Mobility LLC*, No. 1:17-cv-00780-GMS (D. Del.) (the "Motorola Suit").[1] The claim construction orders from these cases are provided as Exhibits 2003 and 2006-2007.

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[1] I have also reviewed the claim construction order in *CyWee Group, Ltd. v. Huawei Device Co. Ltd.*, No. 2:17-cv-00495-WCB-RSP (E.D. Tex) (the "Huawei Suit") in which the court adopted the same constructions it adopted in the Samsung Suit.

4. I also submitted an expert declaration in the Samsung Suit in which I addressed the assertion of Samsung's expert in the Samsung Suit that the '978 Patent is invalid under 35 U.S.C. § 112 for lack of enablement and written description. It is my opinion that the disclosure of the '978 Patent sufficiently enables one of ordinary skill to practice the claimed inventions and discloses that the inventors were in possession of the claimed subject matter at the time of invention. I have seen nothing presented by any party that alters my views as to the enablement and/or written description support of either the original claims of the '978 Patent or the proposed amendments that I have reviewed.

5. In addition to the above Papers and other documents, my opinions herein are also based upon my personal knowledge, professional judgment, education and experience gained through my years as a computer scientist, professor, and consultant.

6. A detailed discussion of the '978 Patent, the level of ordinary skill in the art, the background of the relevant technology, the claim construction issues in the present IPR, and the prior art references relied on by Petitioner can be found in my Expert Declaration in Support of Patent Owner Response, provided as Exhibit 2004. Ex. 2004, Sections IV-VIII.

II. QUALIFICATIONS, PUBLICATIONS, AND PRIOR TESTIMONY

7. My Curriculum Vitae is provided as Exhibit 2005. a detailed listing of my qualifications, publications, and prior testimony can be found in my Expert Declaration in Support of Patent Owner Response. Ex. 2004, Section II.

III. PATENT OWNER'S PROPOSED AMENDMENTS

8. In my opinion, and as discussed in my Expert Declaration in Support of Patent Owner Response, Ex. 2004, Sections X.A.i and X.B.i, Claim 10 is valid over the asserted combinations of *Zhang* in view of *Bachmann* and *Liberty* in view of *Bachmann*. Nonetheless, Patent Owner has presented Proposed Contingent Claim 19 to replace Claim 10 in the event that Claim 10 is found to be obvious over the grounds asserted by Petitioner. Proposed Contingent Claim 19 is reproduced below:

> **[19(a)]** A method for compensating rotations of a 3D pointing device, which is handheld, comprising:
>
> **[19(b)]** generating an orientation output associated with an orientation of the 3D pointing device associated with three coordinate axes of a global reference frame associated with Earth;
>
> **[19(c)]** generating a first signal set comprising axial accelerations associated with movements and rotations of the 3D pointing device in [the] a spatial reference frame;
>
> **[19(d)]** generating a second signal set associated with Earth's magnetism;
>
> **[19(e)]** generating the orientation output based on the first signal set, the second signal set and the rotation output or based on the first signal set and the second signal set;

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