

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE LLC, ZTE (USA), INC., SAMSUNG ELECTRONICS CO., LTD.,  
LG ELECTRONICS INC., HUAWEI DEVICE USA, INC.,  
HUAWEI DEVICE CO. LTD., HUAWEI TECHNOLOGIES CO. LTD.,  
HUAWEI DEVICE (DONGGUAN) CO. LTD.,  
HUAWEI INVESTMENT & HOLDING CO. LTD.,  
HUAWEI TECH. INVESTMENT CO. LTD., and  
HUAWEI DEVICE (HONG KONG) CO. LTD.,

Petitioner

v.

Cywee Group Ltd.

(record) Patent Owner

IPR2018-01257

IPR2018-01258

Patent Nos. 8,552,978 and 8,441,438

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**THIRD DECLARATION OF PROF. MAJID SARRAFZADEH**

## I. INTRODUCTION

1. I, Majid Sarrafzadeh, declare as follows.

2. The terms of my engagement and my qualifications are as-stated in my prior declarations, which are Exhibits 1002 in the *inter partes* review proceedings with trial numbers IPR2018-01257 and IPR2018-01258.

3. I have reviewed Professor LaViola's declaration, Ex. 2032, ¶28, in which he states:

A PHOSITA would be motivated not to combine a *Withanawasam* with *Bachmann*, because *Bachmann* explicitly teaches away from using its sensor system and fusion method on any devices made of magnetic materials. Ex. 1004, 13:42-47 (“Sensors ... of the present invention can be used to track motion and orientation of simple rigid bodies *as long as they are made of non-magnetic materials.*” (emphasis added)). All smartphones contain many magnets and magnetic materials. These include, *inter alia*, magnets in the phones' speakers, and magnetic materials making up many internal steel and gold parts, digital compasses, and often the housings of the smartphones. Because smartphones contain so many magnetic materials, a PHOSITA would avoid combining *Bachmann*'s sensor system and sensor fusion method with *Withanawasam*'s smartphone because the *Bachmann* teaches away from such a combination.

(Ex. 2032, ¶28).

4. I am of the opinion that a person of ordinary skill in the art, in the relevant timeframe (approximately 2009), would **not** have found Bachmann to teach away from combination with Withanawasam.

5. The paragraph in Bachmann from which Professor LaViola quotes reads as follows, in full:

By mounting a plurality of sensors on a body, the posture of the body can be determined and tracked. Sensors constructed in accordance with the principles of the present invention can be used to track motion and orientation of simple rigid bodies as long as they are made of non-magnetic materials. Examples include, but are not limited to hand-held devices, swords, pistols, or simulated weapons. However, the inventors contemplate using the principles of the present invention to track the posture of articulated rigid objects, in one example, human bodies. Such articulated rigid bodies feature a plurality of segments interconnected by a plurality of joints. Each of the segments can correspond to, for example, limbs and extremities such as head, hands, forearms, legs, feet, portions of the torso, and so on. The joints corresponding to wrist, elbow, shoulder, neck, backbone, pelvis, knees, ankles, and so on. The inventors contemplate the application of these principles to other articulated rigid body embodiments. For example, non-magnetic prosthetic devices, robot arms, or other machinery can be tracked in accordance with the principles of the present invention. Additionally, animal body motion can be tracked using such devices.

(Ex. 1004, 13:42-63).

6. In my opinion, it is clear from the passage above that Bachmann's reference to device "made of non-magnetic materials" means that that the device should not be "made of" materials that produce a significant magnetic field, relative to the Earth's magnetic field. The purpose of Bachmann's magnetic sensors is to measure the Earth's magnetic field. (Ex. 1004, 5:11-20). Magnetic materials in a smartphone would not distort this field in a manner which makes measurement of the Earth's magnetic field significantly less accurate.

7. "Made of" is a strong statement, and implies a device encased in a magnetic housing or something similar. For example, among the things Bachmann considers made of "**non**-magnetic materials" are "handheld devices" (Ex. 1004, 13:48), which includes certain cell phones and small computing devices containing speakers, as well as "prosthetic devices, robot arms, or other machinery" (Ex. 1004, 13:60). Bachmann also notes that the orientation of pistols and swords can be tracked (which Bachmann distinguishes from "simulated weapons"). (Ex. 1004, 13:60). While such devices (handheld devices, prostheses, robotic arms, machinery, pistols and swords) can have steel in them, and in some cases nearly always have steel in them (pistols, robotic arms, machinery), they are not "made of" magnetic material in the sense explained by Bachmann.

8. I disagree with the conclusion and many factual assertions in Professor LaViola's statement that:

All smartphones contain many magnets and magnetic materials. These include, *inter alia*, magnets in the phones' speakers, and magnetic materials making up many internal steel and gold parts, digital compasses, and often the housings of the smartphones.

(Ex. 2032, ¶28).

9. Let me begin with one area of agreement. Here, Professor LaViola accurately states that smartphones have speakers, and it is true that audio speakers are constructed using small permanent magnets.

10. However, the fields generated by such magnets would be negligible compared to that of the Earth's magnetic field at the magnetic sensors. That is why many smartphones have both speakers and magnetic sensors. Furthermore, Professor LaViola is simply incorrect that Gold is a magnetic material, and many smartphones have plastic housings. A smartphone, for example, will not magnetically attract iron or other ferromagnetic materials in any perceptible way.

11. A person of ordinary skill would not have been dissuaded from using a method like Bachmann's for sensor fusion in a smartphone. The problem of magnetic interference based on magnetic components of a smartphone was simply not significant. This is demonstrated by the fact that people did in fact use magnetic sensors in smartphones. Withanawasam, for example, teaches that:

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