

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Marcus Da Silva et al.
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Filing Date: April 24, 2017
Title: DIRECTED WIRELESS COMMUNICATION

DECLARATION OF DR. ROBERT AKL

I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

By: Robert Akl

Robert Akl, D.Sc.

Date: January 7, 2022

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A.	Claim 8	44
[8pre]	A method in a wireless communications system, the method comprising:.....	44
[8a]	receiving a first signal transmission from a remote station via a first antenna element of an antenna and a second	

	signal transmission from the remote station via a second antenna element of the antenna simultaneously,	45
[8b]	wherein the first signal transmission and the second signal transmission comprise electromagnetic signals comprising one or more transmission peaks and one or more transmission nulls;.....	48
[8c]	determining first signal information for the first signal transmission; and [8d] determining second signal information for the second signal transmission, wherein the second signal information is different than the first signal information;	51
[8e]	determining a set of weighting values based on the first signal information and the second signal information, wherein the set of weighting values is configured to be used by the remote station to construct one or more beam-formed transmission signals; and.....	59
[8f]	transmitting to the remote station a third signal comprising content based on the set of weighting values.....	61
B.	Claim 9	62
[9]	The method as recited in claim 8, further comprising: transmitting the third signal to the remote station via the antenna.	62
C.	Claim 10	62
[10]	The method as recited in claim 8, wherein the first signal transmission and the second signal transmission are directional transmissions.....	62
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[11]	The method as recited in claim 8, wherein the set of weighting values is further based on one or more of: a transmit power level, a data transmit rate, an antenna direction, quality of service data, or timing data.	64
E.	Claim 12	65
[12]	The method as recited in claim 11, wherein the content comprises data configured to be used by the remote station to modify the placement of one or more transmission	

	peaks and one or more transmission nulls in a subsequent signal transmission.	65
F.	Claim 13	66
	[13a] The method as recited in claim 12, further comprising: determining a plurality of signal strength indications for the first signal transmission;	66
	[13b] determining a first signal strength average based on the plurality of signal strength indications for the first signal transmission;	69
	[13c] determining a plurality of signal strength indications for the second signal transmission; and [13d] determining a second signal strength average based on the plurality of signal strength indications for the second signal transmission; and.....	69
	[13e] generating a fourth signal based on the first signal strength average and the second signal strength average.	70
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	[14] The method as recited in claim 13, further comprising: causing the transceiver to transmit the fourth signal to the remote station via the antenna.....	72
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I. INTRODUCTION

1. My name is Robert Akl. I have been retained by counsel as an expert witness to provide assistance regarding U.S. Patent No. 10,715,235 (“the ’235 Patent”). It is my understanding that Apple Inc. and HP Inc. (collectively “Petitioners”) are submitting an IPR petition challenging certain claims of the ’235 Patent. Specifically, I have been asked to review claims 8-14 of the ’235 Patent (the “Challenged Claims”) in view of prior art references, and the understanding of a person of ordinary skill in the art (“POSITA”) as it relates to the ’235 Patent. I have personal knowledge of the facts and opinions set forth in this declaration and believe them to be true. If called upon to do so, I would testify competently thereto.

2. I am being compensated for my time at my standard consulting rate. I am also being reimbursed for expenses that I incur during the course of this work. My compensation is not contingent upon the results of my study, the substance of my opinions, or the outcome of any proceeding involving the challenged claims. I have no financial interest in the outcome of this matter or on the pending litigation between Petitioner and Patent Owner.

3. In writing this declaration, I have considered the following: my own knowledge and experience, including my work experience in the fields of wireless communications and electrical engineering; my experience in teaching those subjects; and my experience in working with others involved in those fields. In

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