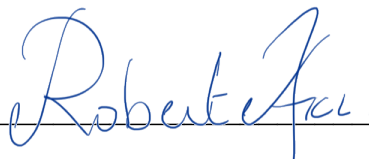


IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Marcus Da Silva et al.
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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: 
Dr. Robert Akl, D.Sc.

Date: June 16, 2022

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A.	Claim 1	43
[1pre]	A receiver for use in a wireless communications system, the receiver comprising:.....	43
[1a]	an antenna, wherein the antenna comprises a first antenna element and a second antenna element;.....	44
[1b]	a transceiver operatively coupled to the antenna and configured to transmit and receive electromagnetic signals using the antenna; and.....	47

[1c]	a processor operatively coupled to the transceiver, the processor configured to:.....	51
[1c-1]	receive a first signal transmission from a remote station via the first antenna element and a second signal transmission from the remote station via the second antenna element simultaneously;	52
[1c-2]	determine first signal information for the first signal transmission;	58
[1c-3]	determine second signal information for the second signal transmission, wherein the second signal information is different than the first signal information;	60
[1c-4]	determine 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 transceiver to construct one or more beam-formed transmission signals;.....	60
[1c-5]	cause the transceiver to transmit a third signal to the remote station via the antenna, the third signal comprising content based on the set of weighting values.....	62
B.	Claim 2	63
[2]	The receiver as recited in claim 1, 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.....	63
C.	Claim 3	65
[3]	The receiver as recited in claim 2, wherein the first signal transmission and the second signal transmission are directional transmissions.....	65
D.	Claim 4	65
[4]	The receiver as recited in claim 1, 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
E.	Claim 5	66

	[5] The receiver as recited in claim 4, 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.	66
F.	Claim 6	67
	[6pre] A receiver for use in a wireless communications system, the receiver comprising:.....	67
	[6a] an antenna;	67
	[6b] a transceiver operatively coupled to the antenna and configured to transmit and receive electromagnetic signals using the antenna; and.....	67
	[6c] a processor operatively coupled to the transceiver, the processor configured to:.....	67
	[6c-1] receive a first signal transmission from a remote station via the antenna and a second signal transmission from the remote station via the antenna simultaneously;	67
	[6c-2] determine first signal information for the first signal transmission;	68
	[6c-3] determine second signal information for the second signal transmission, wherein the second signal information is different than the first signal information;	68
	[6c-4] determine 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 transceiver construct one or more beam-formed transmission signals;.....	68
	[6c-5] cause the transceiver to generate a third signal comprising content based on the set of weighting values;	68
	[6c-6] determine a plurality of signal strength indications for the first signal transmission;	68
	[6c-7] determine a first signal strength average based on the plurality of signal strength indications for the first signal transmission;	69
	[6c-8] determine a plurality of signal strength indications for the second signal transmission;.....	70

	[6c-9] determine a second signal strength average based on the plurality of signal strength indications for the second signal transmission; and	73
	[6c-10] cause the transceiver to generate a fourth signal based on the first signal strength average and the second signal strength average.	73
G.	Claim 7	74
	[7] The receiver as recited in claim 6, wherein the processor is further configured to: cause the transceiver to transmit the fourth signal to the remote station via the antenna.	74
H.	Claim 15	74
	[15pre] An apparatus for use in a wireless communications system, the apparatus comprising:	74
	[15a] an antenna;	74
	[15b] a transceiver operatively coupled to the antenna; and.....	74
	[15c] a processor operatively coupled to the transceiver, the processor configured to:.....	74
	[15c-1] receive a first signal transmission from a remote station via the antenna,	74
	[15c-2] the first signal transmission comprising first signal information, wherein the first signal information comprises one or more of: a transmit power level, a data transmit rate, an antenna direction, quality of service data, or timing data;	74
	[15c-3] receive a second signal transmission from the remote station via the antenna, the second signal transmission comprising second signal information;.....	75
	[15c-4] determine 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 transceiver to construct one or more beam-formed transmission signals;.....	75
	[15c-5] cause the transceiver to generate a third signal comprising content based on the set of weighting values.....	75
I.	Claim 16	75

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