UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCEDES-BENZ USA, LLC. Petitioner

v.

NEO WIRELESS, LLC Patent Owner

Case (to be assigned) U.S. Patent No. 10,965,512

DECLARATION OF MR. BRUCE MCNAIR IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,965,512

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	В.	OFDM/OFDMA cellular systems implemented pilot signals for channel estimation and data recovery	27
	C.	OFDM/OFDMA systems implemented multiple types of pilot symbols	30
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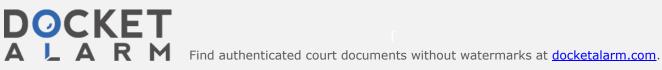
	A.	Kim33
	B.	Ketchum40
	C.	Tong
	D.	Li45
	E.	Smee
XII.		OUND 1: THE COMBINATION OF KIM AND TONG CHES CLAIMS 1-3048
	A.	A POSA would have been motivated to combine Kim and Tong48
		1. A POSA would have been motivated to implement beamforming in Kim's base station, as taught by Tong48
		2. A POSA would have been motivated to use Kim's pilots for channel estimation, and to recover the transmitted data, as taught by Tong
	B.	Independent Claim 1
		1. [1.P]: An orthogonal frequency division multiple access (OFDMA)-compatible base station that uses subcarriers in a frequency domain and time slots in a time domain, the OFDMA-compatible base station comprising:
		2. [1.1] a plurality of antennas; and a transmitter operably coupled to the plurality of antennas;
		3. [1.2] the transmitter configured to: insert first pilots of a first type onto a first plurality of subcarriers, wherein the first pilots are cell-specific pilots; and
		4. [1.3] insert data and second pilots of a second type onto a second plurality of subcarriers;
		5. [1.4] wherein at least some subcarriers of the first plurality of subcarriers or the second plurality of subcarriers are beam-formed; and



	6.	[1.5] the plurality of antennas configured to transmit the first plurality of subcarriers and the second plurality of subcarriers in at least one of the time slots;	70
	7.	[1.6] wherein the second type is different than the first type and wherein the first pilots do not interfere with the second pilots.	
C.	Indep	endent Claim 8	74
	1.	[8.P] A method performed by an orthogonal frequency division multiple access (OFDMA)-compatible base station that uses subcarriers in a frequency domain and time slots in a time domain, the method comprising:	74
	2.	[8.1] inserting, by the OFDMA-compatible base station, first pilots of a first type onto a first plurality of subcarriers, wherein the first pilots are cell-specific pilots;	75
	3.	[8.2] inserting, by the OFDMA-compatible base station, data and second pilots of a second type onto a second plurality of subcarriers;	75
	4.	[8.3] wherein at least some subcarriers of the first plurality of subcarriers or the second plurality of subcarriers are beam-formed; and	75
	5.	[8.4] transmitting, by the OFDMA-compatible base station, the first plurality of subcarriers and the second plurality of subcarriers in at least one of the time slots using a plurality of antennas;	75
	6.	[8.5] wherein the second type is different than the first type and wherein the first pilots do not interfere with the second pilots.	75
D.	Indep	endent Claim 15	76
	1.	[15.P] An orthogonal frequency division multiple access (OFDMA)-compatible mobile station that uses subcarriers in a frequency domain and time slots in a time domain, the OFDMA-compatible mobile station comprising:	76



2.	[15.1] at least one antenna; and a receiver; and	76
3.	[15.2] the at least one antenna and the receiver are configured to: receive first pilots of a first type on a first plurality of subcarriers, wherein the first pilots are cell-specific pilots; and	77
4.	[15.3] receive second pilots of a second type and data on a second plurality of subcarriers, wherein the first plurality of subcarriers and the second plurality of subcarriers are received in at least one of the time slots;	78
5.	[15.4] wherein at least some subcarriers of the first plurality of subcarriers or the second plurality of subcarriers are beam-formed; and	79
6.	[15.5] the receiver is further configured to: recover the data using channel estimates from at least the second pilots; and	79
7.	[15.6] recover cell-specific information using the cell-specific pilots;	82
8.	[15.7] wherein the second type is different than the first type and wherein the first pilots do not interfere with the second pilots	83
Inde	pendent Claim 23	83
1.	[23.P] A method performed by an orthogonal frequency division multiple access (OFDMA)-compatible mobile station that uses subcarriers in a frequency domain and time slots in a time domain, the method comprising:	83
2.	[23.1] receiving first pilots of a first type on a first plurality of subcarriers, wherein the first pilots are cell-specific pilots;	84
3.	[23.2] receiving second pilots of a second type and data on a second plurality of subcarriers, wherein the first plurality of subcarriers and the second plurality of subcarriers are received in at least one of the time slots:	84



E.

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