

APPENDIX K

Invalidity of U.S. Patent No. 10,009,161 (“’196 Patent”) Obvious Combinations

1. Claim 1

Invalidity of U.S. Patent 10,009,161		
Claim Language		Disclosed Art
1[pre]	A method for transmitting channel state information by a User Equipment (UE), the method comprising:	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> LTE Book at 652; Kim 201 at [0134];

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Claim Language		Disclosed Art
		Wang 773 at [0002]; Xu 784 at cl. 5; Hammarwall at [0035].
1[a]	receiving a reference signal for measuring channel quality from a base station;	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> LTE Book;

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Claim Language		Disclosed Art
		Enescu 845 at 7:54-59; Kim 201 at FIG. 18, [0164]; Wang 773 at [0002]; Hammarwall at [0035].
1[b]	measuring the channel quality based on the reference signal, and selecting a channel quality indicator (CQI) index value from a predetermined CQI index table including CQI index values for 256 quadrature amplitude modulation (QAM) modulation, based on the measurement result of the channel quality; and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> LTE Book;

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Claim Language		Disclosed Art
		Enescu 845 at 7:54-59; Kim 201 at FIG. 18, [0164]; Hammarwall at [0035]; Mu at 3; Kwon 630 at [056]; Wang 773 at [0002]; Xia 244 at [0003]; Huawei 033 at 4 (Table 1); Alcatel 058 at 1-2 (Table 1); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); ZTE 258 at 3 (Table 1); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Broadcom 609at 1-2 (Table 3(b)); Ericsson 753 at 102 (Table 1(b));

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Claim Language		Disclosed Art
		ZTE 136 at 3-4 (Table 2); Huawei 034 at 4 (Table 1); Xu 784 at Table 3; Olsson at Table 4.
1[c]	transmitting channel state information including the selected CQI index value to the base station,	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i>

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Claim Language		Disclosed Art
		LTE Book at 662-665; Enescu 845 at 7:54-59; Kim 201 at [0134]; Xu 784 at cl. 5; Xia 422 at [0003].
1[d]	wherein: the CQI index table includes three CQI index values for QPSK modulation, three CQI index values for 16QAM modulation, five CQI index values for 64QAM modulation, and four CQI index values for 256QAM modulation;	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i>

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		Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1); Xia 244 at Table 2.
1[e]	one of the four CQI index values for 256QAM modulation is configured to have one code rate value that supports a same transmission efficiency as a maximum transmission efficiency of a CQI index table that excludes CQI index values for 256QAM modulation; and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1);

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Claim Language		Disclosed Art
		Xia 244 at Table 2; LTE Book at 219 (Table 10.1); Mu at 2 (Table 1); FiberHome 366 at 2; FiberHome 366 at 2 (Table 1); Huawei 120 at 5; Xia 244 at Table 2.
1[f]	another of the four CQI index values for 256QAM modulation is configured to have another code rate value same as the code rate value having a maximum transmission efficiency of a CQI index table that excludes CQI index values for 256QAM modulation; and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7.

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Claim Language		Disclosed Art
		3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Mu at 4 (Table IV); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Chen 732 at FIG. 4; Olsson at Table 4
1[g]	wherein: the one code rate value of the one of the four CQI index values for 256QAM modulation is calculated to be 711 using “code rate×1024,”	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6.

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Claim Language		Disclosed Art
		Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1); LTE Book at 219 (Table 10.1); Mu at 2 (Table 1); FiberHome 366 at 2; FiberHome 366 at 2 (Table 1); Huawei 120 at 5;
1[h]	the another code rate value of the another of the four CQI index values for 256QAM modulation is calculated to be 948 using “code rate×1024,” and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4.

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Claim Language		Disclosed Art
		U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Mu at 4 (Table IV); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Chen 732 at FIG. 4; Olsson at Table 4
1[i]	a different another code rate value of a different another of the four CQI index values for 256QAM modulation is calculated to be 797 using “code rate×1024. ”	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3.

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Claim Language		Disclosed Art
		U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 1; FiberHome 366 at 1, 2; ZTE 258 at 2, 8 (Appendix A); Broadcom 609 at 2; Ericsson 753 at 2, 3-4; R1-075069 at 2; Mu at 2, 4; Ding 2011 at 3;

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Claim Language		Disclosed Art
		Alcatel 058 at 1, 2, 3-7; Hitachi 521 at 3; ZTE 136 at 1-4; Huawei 120 at 7-9; Ikuno 2010; Mehlfuhrer 2009 at 1; Mehlfuhrer 2011 at 1; Kitanov (describing Vienna LTE Link Level Simulator).

2. Claim 2

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Claim Language		Disclosed Art
2	The method of claim 1, wherein the five CQI index values for 64QAM modulation, respectively, to have same difference within a predetermined error rate, as shown in a table below	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit

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Claim Language		Disclosed Art																																																						
	<table><tr><th>CQI index</th><th>modulation</th><th>code rate × 1024</th><th>efficiency</th></tr><tr><td>0</td><td></td><td>out of range</td><td></td></tr><tr><td>1</td><td>QPSK</td><td>78</td><td>0.1523</td></tr><tr><td>2</td><td>QPSK</td><td>193</td><td>0.3770</td></tr><tr><td>3</td><td>QPSK</td><td>449</td><td>0.8770</td></tr><tr><td>4</td><td>16QAM</td><td>378</td><td>1.4766</td></tr><tr><td>5</td><td>16QAM</td><td>490</td><td>1.9141</td></tr><tr><td>6</td><td>16QAM</td><td>616</td><td>2.4063</td></tr><tr><td>7</td><td>64QAM</td><td>466</td><td>2.7305</td></tr><tr><td>8</td><td>64QAM</td><td>567</td><td>3.3223</td></tr><tr><td>9</td><td>64QAM</td><td>666</td><td>3.9023</td></tr><tr><td>10</td><td>64QAM</td><td>772</td><td>4.5234</td></tr><tr><td>11</td><td>64QAM</td><td>873</td><td>5.1152</td></tr></table>	CQI index	modulation	code rate × 1024	efficiency	0		out of range		1	QPSK	78	0.1523	2	QPSK	193	0.3770	3	QPSK	449	0.8770	4	16QAM	378	1.4766	5	16QAM	490	1.9141	6	16QAM	616	2.4063	7	64QAM	466	2.7305	8	64QAM	567	3.3223	9	64QAM	666	3.9023	10	64QAM	772	4.5234	11	64QAM	873	5.1152	K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Mu at 4 (Table IV); Huawei 033 at 4 (Table 1); Alcatel 058 at 1-2 (Table 1); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); ZTE 258 at 3 (Table 1); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Broadcom 609 at 1-2 (Table 3(b));		
CQI index	modulation	code rate × 1024	efficiency																																																					
0		out of range																																																						
1	QPSK	78	0.1523																																																					
2	QPSK	193	0.3770																																																					
3	QPSK	449	0.8770																																																					
4	16QAM	378	1.4766																																																					
5	16QAM	490	1.9141																																																					
6	16QAM	616	2.4063																																																					
7	64QAM	466	2.7305																																																					
8	64QAM	567	3.3223																																																					
9	64QAM	666	3.9023																																																					
10	64QAM	772	4.5234																																																					
11	64QAM	873	5.1152																																																					

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Claim Language		Disclosed Art
		Ericsson 753 at 102 (Table 1(b)); ZTE 136 at 3-4 (Table 2); Xu 784 at Table 3; Olsson at Table 4

3. Claim 3

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Claim Language		Disclosed Art
3[pre]	A method for receiving channel state information by a base station, the method comprising:	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei

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Claim Language		Disclosed Art
		120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> TS 36.213 at 55; LTE Book at 652; Xia 681 at 47; Kim 201 at [0134]; Wang 773 at [0002]; Xu 784 at cl.; Hammarwall at [0035].
3[a]	creating a reference signal for measuring channel quality;	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5.

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Claim Language		Disclosed Art
		WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> LTE Book; Enescu 845 at 7:54-59; Kim 201 at FIG. 18, [0164], cl. 6; Wang 773 at [0002]; Hammarwall at [0035].
3[b]	transmitting the reference signal to a User Equipment (UE); and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5.

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Claim Language		Disclosed Art
		WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> LTE Book; Enescu 845 at 7:54-59; Kim 201 at FIG. 18, [0164]; Hammarwall at [0035]; Mu at 3; Wang 773 at [0002];
3[c]	receiving channel state information including a channel quality indicator (CQI) index selected from a predetermined CQI index table including CQI index values for 256 quadrature amplitude modulation (QAM) modulation, based on a	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit

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Claim Language		Disclosed Art
	measurement result of the channel quality, from the User Equipment,	K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> TS 36.213 ; LTE Book at 662-665 (describing enhanced CSI feedback); Enescu 845 at 7:54-59; Kim 201 at [0134], cl. 6; Xu 784 at cl. 5, Table 3; Xia 422 at [0003]; Mu at 4 (Table IV); Huawei 033 at 4 (Table 1); Alcatel 058 at 1-2 (Table 1);

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Claim Language		Disclosed Art
		FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); ZTE 258 at 3 (Table 1); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Broadcom 609 at 1-2 (Table 3(b)); Ericsson 753 at 102 (Table 1(b)); ZTE 136 at 3-4 (Table 2); Olsson at Table 4.
3[d]	wherein: the CQI index table includes three CQI index values for QPSK modulation, three CQI index values for 16QAM modulation, five CQI index values for 64QAM modulation, and four CQI index values for 256QAM modulation;	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5.

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Claim Language		Disclosed Art
		WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1); Xia 244 at Table 2.
3[e]	one of the four CQI index values for 256QAM modulation is configured to have one code rate value that supports a same transmission efficiency as a maximum transmission efficiency of a CQI index table that excludes CQI index values for 256QAM modulation; and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei

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		120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1); Xia 244 at Table 2; LTE Book at 219 (Table 10.1); Mu at 2 (Table 1); FiberHome 366 at 2; Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1); Huawei 120 at 5; Kwon 630 at [0041], Table 5; Xia 244 at Table 2.
3[f]	another of the four CQI index values for 256QAM modulation is configured to have another code rate value	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2.

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	same as the code rate value having a maximum transmission efficiency of a CQI index table that excludes CQI index values for 256QAM modulation; and	WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Mu at 4 (Table IV); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Chen 732 at FIG. 4; Olsson at Table 4

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3[g]	wherein: the one code rate value of the one of the four CQI index values for 256QAM modulation is calculated to be 711 using “code rate×1024,”	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1); Xia 244 at Table 2; LTE Book at 219 (Table 10.1); Mu at 2 (Table 1);

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Claim Language		Disclosed Art
		FiberHome 366 at 2 (“the maximum efficiency supported by current CQI table is 5.5547”); Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1); Huawei 120 at 5; Xia 244 at Table 2.
3[h]	the another code rate value of the another of the four CQI index values for 256QAM modulation is calculated to be 948 using “code rate×1024,” and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8.

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Claim Language		Disclosed Art
		<i>See also, e.g.,</i> Mu at 4 (Table IV); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Chen 732 at FIG. 4; Olsson at Table 4
3[i]	a different another code rate value of a different another of the four CQI index values for 256QAM modulation is calculated to be 797 using “code rate×1024.”	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei

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		120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 1 (“The sampling is based on equal SINR spacing principle”); FiberHome 366 at 1, 2; ZTE 258 at 2, 3, 8 (Appendix A); Broadcom 609 at 2; Ericsson 753 at 2, 3-4; Mu at 2 (plotting the SINR and spectral efficiency of several modulation orders), 4; Ding 2011 at 3; Alcatel 058 at 1, 2 (Figure 1), 3-7; Hitachi 521 at 3; ZTE 136 at 1-4 (describing system-level simulation evaluating gain after introduction of 256QAM based on certain simulation assumptions and mapping CQI against SNR); Huawei 120 at 7-9 (describing simulation results); Ikuno 2010;

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		Mehlfuhrer 2009 at 1; Mehlfuhrer 2011 at 1; Kitanov (describing Vienna LTE Link Level Simulator).

4. Claim 4

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Claim Language		Disclosed Art																																																					
4	The method of claim 2, wherein the five CQI index values for 64QAM modulation, respectively, to have same difference within a predetermined error rate, as shown in a table below <table> <tr> <th>CQI index</th><th>modulation</th><th>code rate $\times 1024$</th><th>efficiency</th></tr> <tr> <td>0</td><td></td><td>out of range</td><td></td></tr> <tr> <td>1</td><td>QPSK</td><td>78</td><td>0.1523</td></tr> <tr> <td>2</td><td>QPSK</td><td>193</td><td>0.3770</td></tr> <tr> <td>3</td><td>QPSK</td><td>449</td><td>0.8770</td></tr> <tr> <td>4</td><td>16QAM</td><td>378</td><td>1.4766</td></tr> <tr> <td>5</td><td>16QAM</td><td>490</td><td>1.9141</td></tr> <tr> <td>6</td><td>16QAM</td><td>616</td><td>2.4063</td></tr> <tr> <td>7</td><td>64QAM</td><td>466</td><td>2.7305</td></tr> <tr> <td>8</td><td>64QAM</td><td>567</td><td>3.3223</td></tr> <tr> <td>9</td><td>64QAM</td><td>666</td><td>3.9023</td></tr> <tr> <td>10</td><td>64QAM</td><td>772</td><td>4.5234</td></tr> <tr> <td>11</td><td>64QAM</td><td>873</td><td>5.1152</td></tr> </table>	CQI index	modulation	code rate $\times 1024$	efficiency	0		out of range		1	QPSK	78	0.1523	2	QPSK	193	0.3770	3	QPSK	449	0.8770	4	16QAM	378	1.4766	5	16QAM	490	1.9141	6	16QAM	616	2.4063	7	64QAM	466	2.7305	8	64QAM	567	3.3223	9	64QAM	666	3.9023	10	64QAM	772	4.5234	11	64QAM	873	5.1152	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7.	
CQI index	modulation	code rate $\times 1024$	efficiency																																																				
0		out of range																																																					
1	QPSK	78	0.1523																																																				
2	QPSK	193	0.3770																																																				
3	QPSK	449	0.8770																																																				
4	16QAM	378	1.4766																																																				
5	16QAM	490	1.9141																																																				
6	16QAM	616	2.4063																																																				
7	64QAM	466	2.7305																																																				
8	64QAM	567	3.3223																																																				
9	64QAM	666	3.9023																																																				
10	64QAM	772	4.5234																																																				
11	64QAM	873	5.1152																																																				

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Claim Language		Disclosed Art
		3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Mu at 4 (Table IV); Huawei 033 at 4 (Table 1); Alcatel 058 at 1-2 (Table 1); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); ZTE 258 at 3 (Table 1); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Broadcom 609at 1-2 (Table 3(b)); Ericsson 753 at 102 (Table 1(b)); ZTE 136 at 3-4 (Table 2); Huawei 034 at 4 (Table 1); Nokia 529 at 2 (Table 1); Larsson 091 at FIG. 4;

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		Xu 784 at Table 3; Olsson at Table 4

5. Claim 5

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5[pre]	A User Equipment (UE) for transmitting channel state information, comprising:	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i>

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		LTE Book at 652; Kim 201 at [0134]; Wang 773 at [0002]; Xu 784 at cl. 5; Hammarwall at [0035].
5[a]	a receiver configured to receive a reference signal for measuring channel quality from a base station;	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i>

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		LTE Book; Enescu 845 at 7:54-59; Kim 201 at FIG. 18, [0164], cl. 6; Wang 773 at [0002]; Hammarwall at [0035].
5[b]	a controller configured to measure the channel quality based on the reference signal, and select a channel quality indicator (CQI) index value from a predetermined CQI index table including CQI index values for 256 quadrature amplitude modulation (QAM) modulation, based on the measurement result of the channel quality; and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i>

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Claim Language		Disclosed Art
		LTE Book; Enescu 845 at 7:54-59; Kim 201 at FIG. 18, [0164], cl. 6; Hammarwall at [0035]; Mu at 3, 4 (Table IV); Wang 773 at [0002]; Huawei 033 at 4 (Table 1); Alcatel 058 at 1-2 (Table 1); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); ZTE 258 at 3 (Table 1); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Broadcom 609 at 1-2 (Table 3(b)); Ericsson 753 at 102 (Table 1(b)); ZTE 136 at 3-4 (Table 2);

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Claim Language		Disclosed Art
		Huawei 034 at 4 (Table 1); Nokia 529 at 2 (Table 1); Larsson 091 at FIG. 4; Xu 784 at Table 3; Olsson at Table 4.
5[c]	a transmitter configured to transmit channel state information including the selected CQI index value to the base station,	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i>

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		LTE Book at 662-665 (describing enhanced CSI feedback); Enescu 845 at 7:54-59; Kim 201 at [0134], cl. 6; Xu 784 at cl. 5; Xia 422 at [0003].
5[d]	wherein: the CQI index table includes three CQI index values for QPSK modulation, three CQI index values for 16QAM modulation, five CQI index values for 64QAM modulation, and four CQI index values for 256QAM modulation;	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i>

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		Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1); Xia 244 at Table 2.
5[e]	one of the four CQI index values for 256QAM modulation is configured to have one code rate value that supports a same transmission efficiency as a maximum transmission efficiency of a CQI index table that excludes CQI index values for 256QAM modulation; and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1);

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Claim Language		Disclosed Art
		Xia 244 at Table 2; LTE Book at 219 (Table 10.1); Mu at 2 (Table 1); FiberHome 366 at 2 (“the maximum efficiency supported by current CQI table is 5.5547”); FiberHome 366 at 2 (Table 1); Huawei 120 at 5; Xia 244 at Table 2.
5[f]	another of the four CQI index values for 256QAM modulation is configured to have another code rate value same as the code rate value having a maximum transmission efficiency of a CQI index table that excludes CQI index values for 256QAM modulation; and wherein:	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei

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		120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Mu at 4 (Table IV); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Chen 732 at FIG. 4; Olsson at Table 4
5[g]	wherein: the one code rate value of the one of the four CQI index values for 256QAM modulation is calculated to be 711 using “code rate×1024,”	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5.

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Claim Language		Disclosed Art
		WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 4 (Table 1); FiberHome 366 at 2 (Table 1); Xia 244 at Table 2; LTE Book at 219 (Table 10.1); Mu at 2 (Table 1); FiberHome 366 at 2 (“the maximum efficiency supported by current CQI table is 5.5547”); FiberHome 366 at 2 (Table 1); Huawei 120 at 5 (“The SE (5.5547 should be maintained to reduce impact on Modulation and TBS index/TBS tables,” and “[t]he modulation order of existing CQI index 15 is changed to 256QAM.”); Xia 244 at Table 2.

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Claim Language		Disclosed Art
5[h]	the another code rate value of the another of the four CQI index values for 256QAM modulation is calculated to be 948 using “code rate×1024,” and	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Mu at 4 (Table IV); FiberHome 366 at 2 (Table 1); Qualcomm 451 at 2 (Table 2); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2);

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		Chen 732 at FIG. 4; Olsson at Table 4
5[i]	a different another code rate value of a different another of the four CQI index values for 256QAM modulation is calculated to be 797 using “code rate×1024.”	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Huawei 033 at 1; FiberHome 366 at 1, 2; ZTE 258 at 2, 3, 8 (Appendix A);

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Claim Language		Disclosed Art
		Broadcom 609 at 2; Ericsson 753 at 2; Mu at 2, 4; Ding 2011 at 3; Alcatel 058 at 1, 2 (Figure 1), 3-7; Hitachi 521 at 3; ZTE 136 at 1-4; Huawei 120 at 7-9; Ikuno 2010; Mehlfuhrer 2009 at 1; Mehlfuhrer 2011 at 1; Kitanov.

6. Claim 6

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Claim Language		Disclosed Art																																																					
6	The User Equipment of claim 5, wherein and five CQI index values for 64QAM modulation, respectively, to have a same difference within a predetermined error rate, as shown in a table below <table><tr><th>CQI index</th><th>modulation</th><th>code rate × 1024</th><th>efficiency</th></tr><tr><td>0</td><td></td><td>out of range</td><td></td></tr><tr><td>1</td><td>QPSK</td><td>78</td><td>0.1523</td></tr><tr><td>2</td><td>QPSK</td><td>193</td><td>0.3770</td></tr><tr><td>3</td><td>QPSK</td><td>449</td><td>0.8770</td></tr><tr><td>4</td><td>16QAM</td><td>378</td><td>1.4766</td></tr><tr><td>5</td><td>16QAM</td><td>490</td><td>1.9141</td></tr><tr><td>6</td><td>16QAM</td><td>616</td><td>2.4063</td></tr><tr><td>7</td><td>64QAM</td><td>466</td><td>2.7305</td></tr><tr><td>8</td><td>64QAM</td><td>567</td><td>3.3223</td></tr><tr><td>9</td><td>64QAM</td><td>666</td><td>3.9023</td></tr><tr><td>10</td><td>64QAM</td><td>772</td><td>4.5234</td></tr><tr><td>11</td><td>64QAM</td><td>873</td><td>5.1152</td></tr></table>	CQI index	modulation	code rate × 1024	efficiency	0		out of range		1	QPSK	78	0.1523	2	QPSK	193	0.3770	3	QPSK	449	0.8770	4	16QAM	378	1.4766	5	16QAM	490	1.9141	6	16QAM	616	2.4063	7	64QAM	466	2.7305	8	64QAM	567	3.3223	9	64QAM	666	3.9023	10	64QAM	772	4.5234	11	64QAM	873	5.1152	CQI/MCS Table Design for 256QAM (R1-140034) (“Huawei 034”); <i>See</i> Exhibit K-1. Further Details on CQI Table Design (R1-141529) (“Nokia 529”); <i>See</i> Exhibit K-2. WO2014/194681 to Xia et. al. (“Xia 681”); <i>See</i> Exhibit K-3. U.S. Patent Appl. Pub. No. 2014/0192732 to Chen et. al. (“Chen 732”); <i>See</i> Exhibit K-4. U.S. Patent No. 9,860,091 to Larson et. al. (“Larson 091”); <i>See</i> Exhibit K-5. WO2015/103630 to Kwon et. al. (“Kwon 630”); <i>See</i> Exhibit K-6. Further Discussion on CQI/MCS Table Design for 256QAM (R1-141120) (“Huawei 120”); <i>See</i> Exhibit K-7. 3GPP TS 36.213 V12.0.0 (2013-12) (“TS 36.213”); <i>See</i> Exhibit K-8. <i>See also, e.g.,</i> Mu at 4 (Table IV); Huawei 033 at 4 (Table 1); Alcatel 058 at 1-2 (Table 1); FiberHome 366 at 2 (Table 1);	
CQI index	modulation	code rate × 1024	efficiency																																																				
0		out of range																																																					
1	QPSK	78	0.1523																																																				
2	QPSK	193	0.3770																																																				
3	QPSK	449	0.8770																																																				
4	16QAM	378	1.4766																																																				
5	16QAM	490	1.9141																																																				
6	16QAM	616	2.4063																																																				
7	64QAM	466	2.7305																																																				
8	64QAM	567	3.3223																																																				
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		Qualcomm 451 at 2 (Table 2); ZTE 258 at 3 (Table 1); Alcatel 160 at 4 (Table 3); Hitachi 521 at 2 (Table 2); Broadcom 609at 1-2 (Table 3(b)); Ericsson 753 at 102 (Table 1(b)); ZTE 136 at 3-4 (Table 2); Huawei 034 at 4 (Table 1); Nokia 529 at 2 (Table 1); Larsson 091 at FIG. 4; Xu 784 at Table 3; Olsson at Table 4