

APPENDIX I

Invalidity of U.S. Patent No. 11,540,272 (“272 Patent”) Obviousness Combinations

1. Claim 1

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
1[pre]	A base station, comprising: a transceiver; a receiver; and a controller which controls the transceiver and receiver thereby performing operations including:	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4; U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US20170170940A1 to Lee et. al. at [0003]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0010]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0003]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0005];

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 9; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 9.
1[a]	transmitting, to a wireless device, a radio resource control (RRC) signal including information on one or more allocations of a time-domain resource, wherein the time-domain resource includes at least one or more orthogonal frequency-division multiplexing (OFDM) symbols,	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4; U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0003];

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0067]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0055]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0053]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 13; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 67.
1[b]	wherein, based on the information, a number of OFDM symbols are determined for a physical downlink shared channel (PDSCH) or a physical uplink shared channel (PUSCH), and	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4;

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0045]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0069]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0058]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0049]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 13; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 67.
1[c]	wherein the determined number of OFDM symbols is smaller than or equal to a number of OFDM symbols included in a slot; and	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2;

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4;. U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0050]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0068]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0067]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0028]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 13-14; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 68.

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
1[d]	transmitting, to the wireless device, downlink control information (DCI), including a field including a bit string,	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4; U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0063]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0010]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0072]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0061]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 38;

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 82.
1[e]	wherein the bit string in the field relates to a row index of an allocation table, and	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4; U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0060]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0012-14]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0079], [0112]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4;

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 13-14; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 16.
1[f]	wherein the allocation table includes information on a starting OFDM symbol and the number of the OFDM symbols which is smaller than or equal to the number of OFDM symbols included in the slot.	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4;. U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0050]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0012-14]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0058];

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0028]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 13-14; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 16.

2. Claim 2

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
2[a]	The base station of claim 1, wherein the bit string is 3 bits in length.	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4;.

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0051]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0069]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0077]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0061]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 13-14; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 157.

3. Claim 3

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
3[a]	The base station of claim 1, wherein the DCI further includes information on one or more allocations of a frequency-domain resource.	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4; U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0059]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0010]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0067]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0051]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4;

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 17; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 159.

4. Claim 4

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
4[a]	The base station of claim 1, wherein the base station supports a new radio access technology (NR).	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4;. U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6;

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Publication No. US20190165882A1 to You et. al. at [0089]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0125]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 8; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 9.

5. Claim 5

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
5[a]	The base station of claim 1, wherein the base station supports different numerologies which are defined by a subcarrier spacing (SCS).	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3;

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4;. U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0059]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0137]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0104]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0163]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 58; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 65.

6. Claim 6

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
6[pre]	The base station of claim 1, wherein the operations further include:	<i>See</i> 6[a] and 6[b], <i>infra</i> .
6[a]	transmitting, to the wireless device, downlink data via the PDSCH; and	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4; U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0062]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0063]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0118]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4;

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 60; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 67.
6[b]	receiving, from the wireless device, uplink data via the PUSCH.	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4; U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0045]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0063];

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Publication No. US20190165882A1 to You et. al. at [0118]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; 3GPP T-Doc R1-1609050: Numerology for URLLC (Samsung) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 60; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 67.

7. Claim 7

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
7[a]	The base station of claim 1, wherein the number of the OFDM symbols is a maximum of 14.	U.S. Patent Publication No. US20180041325A1 to Lee et. al. ("Lee 325"). <i>See</i> Exhibit I-1; U.S. Patent Publication No. US20180376497A1 to You et. al. ("You"). <i>See</i> Exhibit I-2; U.S. Patent Publication No. US2018192434A1 to Lee et. al. ("Lee 434"). <i>See</i> Exhibit I-3; U.S. Patent Publication No. US20170041948A1 to Cheng et. al. ("Cheng"). <i>See</i> Exhibit I-4;

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Publication No. US20140328260A1 to Papasakelleriou et. al. ("Papasakelleriou"). <i>See</i> Exhibit I-5; U.S. Patent Publication No. US20150215906A1 to Park et. al. ("Park"). <i>See</i> Exhibit I-6; U.S. Patent Publication No. US 20170170940A1 to Lee et. al. at [0051]; U.S. Patent Publication No. US20160330721A1 to Park et. al. at [0069]; U.S. Patent Publication No. US20190165882A1 to You et. al. at [0104]; U.S. Patent Publication No. US20190123883A1 to Islam et. al. at [0041]; 3GPP T-Doc R1-165652: WF on NPDCCH ordered PRACH (Ericsson) at 1-4; LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 12.9.0 Release 12) at 13-14; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (Release 13) at 16.

8. Claim 8

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
8[pre - c]	A wireless device, comprising: a transceiver; a receiver; and a controller which controls the transceiver and receiver	<i>See</i> 1[pre], <i>supra</i> .

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
	thereby performing operations including:	
8[d]	receiving, from a base station, a radio resource control (RRC) signal including information on one or more allocations of a time-domain resource,	<i>See 1[a], supra.</i>
8[e]	wherein the time-domain resource includes at least one or more orthogonal frequency-division multiplexing (OFDM) symbols,	<i>See 1[a], supra.</i>
8[f]	wherein, based on the information, a number of OFDM symbols are determined for a physical downlink shared channel (PDSCH) or a physical uplink shared channel (PUSCH), and	<i>See 1[b], supra.</i>
8[g]	wherein the determined number of OFDM symbols is smaller than or equal to a number of OFDM symbols included in a slot; and	<i>See 1[c], supra.</i>
8[i]	receiving, from the base station, downlink control information (DCI), including a field including a bit string,	<i>See 1[d], supra.</i>

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
8[j]	wherein the bit string in the field relates to a row index of an allocation table, and	See 1[e], <i>supra</i> .
8[k]	wherein the allocation table includes information on a starting OFDM symbol and the number of the OFDM symbols which is smaller than or equal to the number of OFDM symbols included in the slot.	See 1[f], <i>supra</i> .

9. Claim 9

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
9[a]	The wireless device of claim 8, wherein the bit string is 3 bits in length.	See 2[a], <i>supra</i> .

10. Claim 10

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
10[a]	The wireless device of claim 8, wherein the DCI further includes information on one or more allocations of a frequency-domain resource.	See 3[a], <i>supra</i> .

11. Claim 11

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
11[a]	The wireless device of claim 8, wherein the wireless device supports a new radio access technology (NR).	<i>See 4[a], supra.</i>

12. Claim 12

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
12[a]	The wireless device of claim 8, wherein the wireless device supports different numerologies which are defined by a subcarrier spacing (SCS).	<i>See 5[a], supra.</i>

13. Claim 13

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
13[pre]	The wireless device of claim 8, wherein the operations further include:	<i>See, e.g., 6[pre], supra.</i> <i>See 13[a]–[b], infra.</i>
13[a]	receiving, from the base station, downlink data via the PDSCH; and	<i>See, e.g., 6[b], supra.</i>

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
13[b]	transmitting, to the base station, uplink data via the PUSCH.	<i>See, e.g., 6[a], supra.</i>

14. Claim 14

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
14[a]	The wireless device of claim 8, wherein the number of the OFDM symbols is a maximum of 14.	<i>See, e.g., 7[a], supra.</i>

15. Claim 15

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
15[pre]	An operation method of wireless device, comprising:	<i>See 1[pre], supra.</i>
15[a]	receiving, from a base station, a radio resource control (RRC) signal including information on one or more allocations of a time-domain resource,	<i>See 1[a]–[b], supra.</i>
15[b]	wherein the time-domain resource includes at least one or more orthogonal frequency-	<i>See 1[a], supra.</i>

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
	division multiplexing (OFDM) symbols,	
15[c]	wherein, based on the information, a number of OFDM symbols are determined for a physical downlink shared channel (PDSCH) or a physical uplink shared channel (PUSCH), and	<i>See 1[b], supra.</i>
15[d]	wherein the determined number of OFDM symbols is smaller than or equal to a number of OFDM symbols included in a slot; and	<i>See 1[c], supra.</i>
15[e]	receiving, from the base station, downlink control information (DCI), including a field including a bit string,	<i>See 1[d], supra.</i>
15[f]	wherein the bit string in the field relates to a row index of an allocation table, and	<i>See 1[e], supra.</i>
15[g]	wherein the allocation table includes information on a starting OFDM symbol and the number of the OFDM symbols which is smaller than or equal to the number of OFDM symbols included in the slot.	<i>See 1[f], supra.</i>

16. Claim 16

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
16[a]	The method of claim 15, wherein the bit string is 3 bits in length.	<i>See, e.g., 2[a], supra.</i>

17. Claim 17

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
17[a]	The method of claim 15, wherein the DCI further includes information on one or more allocations of a frequency-domain resource.	<i>See, e.g., 3[a], supra.</i>

18. Claim 18

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
18[a]	The method of claim 15, wherein the wireless device supports a new radio access technology (NR).	<i>See, e.g., 4[a], supra.</i>

19. Claim 19

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
19[a]	The method of claim 18, wherein the wireless device supports different numerologies which are defined by a subcarrier spacing (SCS).	<i>See, e.g., 5[a], supra.</i>

20. Claim 20

Invalidity of U.S. Patent 11,540,272 in view of Obviousness Combinations		
Claim Language		Disclosed Art
20[pre]	The method of claim 18, further comprising:	<i>See, e.g., 6[pre], supra.</i> <i>See 13[a]–[b], infra.</i>
20[a]	receiving, from the base station, downlink data via the PDSCH; and	<i>See, e.g., 6[b], supra.</i>
20[b]	transmitting, to the base station, uplink data via the PUSCH.	<i>See, e.g., 6[a], supra.</i>