

APPENDIX D

Invalidity of U.S. Patent No. 11,405,942 (“942 Patent”) Obvious Combinations

1. Claim 1

Invalidity of U.S. Patent 11,405,942 in view of Obviousness Combinations		
Claim Language		Disclosed Art
1[pre]	A method of receiving a downlink (DL) signal by a first user equipment (UE), the method comprising:	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1; U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3; U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4; 3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6; U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7; U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8; U.S. Patent Application No. US20180092104A1 to Sheng et. al. at [0006];

Invalidity of U.S. Patent 11,405,942 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Application No. US2018041858A1 to Sheng et. al. at [0014]; U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0011]; 3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-166408 from ZTE at 1; 3GPP T-Doc R1-1611545 from Sony at 1-5; 3GPP T-Doc R1-1612316 from Interdigital at 1-6; 3GPP T-Doc R1-1608957 from ZTE at 1.
1[a]	receiving, by the first UE, a specific radio network temporary identifier (RNTI) for DL preemption indication information through a UE-specific radio resource control (RRC) signaling;	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1; U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3; U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4; 3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6;

Invalidity of U.S. Patent 11,405,942 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7; U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8; U.S. Patent Application No. US20180092104A1 to Sheng et. al. at [0006]; U.S. Patent Application No. US2018041858A1 to Sheng et. al. at [0036]; U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0247]; 3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-166408 from ZTE at 1; 3GPP T-Doc R1-1611545 from Sony at 1-5; 3GPP T-Doc R1-1612316 from Interdigital at 1-6; 3GPP T-Doc R1-1608957 from ZTE at 1-2.
1[b]	after receiving the specific RNTI, monitoring, by the first UE, a DL control channel for receiving the DL preemption indication information based on the received specific RNTI; and	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1; U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3;

Invalidity of U.S. Patent 11,405,942 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4; 3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6; U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7; U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8; U.S. Patent Application No. US20180092104A1 to Sheng et. al. at [0043]; U.S. Patent Application No. US2018041858A1 to Sheng et. al. at [0036]; U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0489]; 3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-166408 from ZTE at 1; 3GPP T-Doc R1-1611545 from Sony at 1-5; 3GPP T-Doc R1-1612316 from Interdigital at 1-6; 3GPP T-Doc R1-1608957 from ZTE at 1-3.
1[c]	receiving, by the first UE, the DL preemption indication	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1;

Invalidity of U.S. Patent 11,405,942 in view of Obviousness Combinations		
Claim Language		Disclosed Art
	information through a multicast signal,	U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3; U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4; 3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6; U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7; U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8; U.S. Patent Application No. US20180092104A1 to Sheng et. al. at [0112]; U.S. Patent Application No. US2018041858A1 to Sheng et. al. at [0041]; U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0253]; 3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-166408 from ZTE at 3; 3GPP T-Doc R1-1611545 from Sony at 1-5;

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Claim Language		Disclosed Art
		3GPP T-Doc R1-1612316 from Interdigital at 1-6; 3GPP T-Doc R1-1608957 from ZTE at 2-4.
1[d]	wherein the specific RNTI received through the UE specific RRC signaling is a newly defined RNTI other than at least a cell-RNTI (C-RNTI),	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1; U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3; U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4; 3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6; U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7; U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8; U.S. Patent Application No. US20180092104A1 to Sheng et. al. at [0043]; U.S. Patent Application No. US2018041858A1 to Sheng et. al. at [0036]; U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0249];

Invalidity of U.S. Patent 11,405,942 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-166408 from ZTE at 3; 3GPP T-Doc R1-1611545 from Sony at 1-5; 3GPP T-Doc R1-1612316 from Interdigital at 1-6; 3GPP T-Doc R1-1608957 from ZTE at 4.
1[e]	wherein the DL preemption indication information indicates preempted resource information in a prior slot, which precedes a slot in which the DL preemption indication information is received,	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1; U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3; U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4; 3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6; U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7; U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8;

Invalidity of U.S. Patent 11,405,942 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0103]; 3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-166408 from ZTE at 5; 3GPP T-Doc R1-1611545 from Sony at 1-5; 3GPP T-Doc R1-1612316 from Interdigital at 1-6; 3GPP T-Doc R1-1608957 from ZTE at 4.
1[f]	wherein the specific RNTI is received with information related to time and frequency, and	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1; U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3; U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4; 3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6; U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7;

Invalidity of U.S. Patent 11,405,942 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8; U.S. Patent Application No. US20180092104A1 to Sheng et. al. at [0016]; U.S. Patent Application No. US2018041858A1 to Sheng et. al. at [0028]; U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0165]; 3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-166408 from ZTE at 6; 3GPP T-Doc R1-1611545 from Sony at 1-5; 3GPP T-Doc R1-1612316 from Interdigital at 1-6; 3GPP T-Doc R1-1608957 from ZTE at 1-2.
1[g]	wherein the information related to time and frequency is received for the reception of the DL preemption indication information through the UE-specific RRC signaling.	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1; U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3; U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4;

Invalidity of U.S. Patent 11,405,942 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6; U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7; U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8; U.S. Patent Application No. US20180092104A1 to Sheng et. al. at [0051]; U.S. Patent Application No. US2018041858A1 to Sheng et. al. at [0044]; U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0181]; 3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-1611545 from Sony at 1-5; 3GPP T-Doc R1-1612316 from Interdigital at 1-6; 3GPP T-Doc R1-1608957 from ZTE at 3-5.

2. Claim 2

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
2[a]	The method according to claim 1, wherein at least one of a subcarrier spacing and a time-	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1;

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
	domain scheduling unit of first radio resources allocated for the first UE are different from second radio resources allocated for a second UE.	U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3; U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4; 3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6; U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7; U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8; U.S. Patent Application No. US20180092104A1 to Sheng et. al. at [0195]; U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0295]; 3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-166408 from ZTE at 6; 3GPP T-Doc R1-1611545 from Sony at 1-5; 3GPP T-Doc R1-1612316 from Interdigital at 1-6.

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		3GPP T-Doc R1-1608957 from ZTE at 1-3.

3. Claim 3

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
3[a]	The method according to claim 1, wherein the DL preemption indication information is received through a common search space of the DL control channel.	U.S. Patent Application No. US20170223687A1 to Kuchibhotla et. al. (Kuchibhotla). <i>See</i> Exhibit D-1; U.S. Patent Application No. US20190268930A1 to Rudolf et. al. (“Rudolf”). <i>See</i> Exhibit D-2; U.S. Patent Application No. US2018192434A1 to Lee et. al. (“Lee”). <i>See</i> Exhibit D-3; U.S. Patent Application No. US20180092104A1 to Sheng et. al. (“Sheng”). <i>See</i> Exhibit D-4; 3GPP T-Doc R1-1612646 from InterDigital (“InterDigital”). <i>See</i> Exhibit D-5; 3GPP T-Doc R1-1609050 from Samsung (“Samsung”). <i>See</i> Exhibit D-6; U.S. Patent Application No. US20190165882A1 to You et. al. (“You”). <i>See</i> Exhibit D-7; U.S. Patent Application No. US20190123883A1 to Islam et. al. (“Islam”). <i>See</i> Exhibit D-8; U.S. Patent Application No. US20180092104A1 to Sheng et. al. at [0043].

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
		U.S. Patent Application No. US20230037317A1 to Kwak et. al. at [0315]; 3GPP T-Doc R1-1613047 from Sony at 1-5; 3GPP T-Doc R1-1611545 from Sony at 1-5; 3GPP T-Doc R1-1612316 from Interdigital at 1-6; 3GPP T-Doc R1-1608957 from ZTE at 1-3.

4. Claim 5

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
5[pre]	A method of transmitting a downlink (DL) signal by a base station (BS), the method comprising:	<i>See 1[pre], supra.</i>
5[a]	configuring, by the BS, a specific radio network temporary identifier (RNTI) for DL preemption indication information;	<i>See 1[a], supra.</i>
5[b]	transmitting, from the BS, the configured specific RNTI to a first user equipment (UE) through a UE-specific radio resource control (RRC) signaling; and	<i>See 1[a], supra.</i>

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
5[c]	transmitting, from the BS, the DL preemption indication information based on the specific RNTI through a multicast signal	<i>See 1[c], supra.</i>
5[d]	wherein the specific RNTI transmitted through the UE specific RRC signaling is a newly defined RNTI other than at least a cell-RNTI (C-RNTI),	<i>See 1[d], supra.</i>
5[e]	wherein the DL preemption indication information indicates preempted resource information in a prior slot, which precedes a slot in which the DL preemption indication information is transmitted,	<i>See 1[b] and 1[e], supra.</i>
5[f]	wherein the specific RNTI is transmitted with information related to time and frequency, and	<i>See 1[f] and 1[g], supra.</i>
5[g]	wherein the information related to time and frequency is transmitted for a reception of the DL preemption indication information by the first UE through the UE-specific RRC signaling.	<i>See 1[f] and 1[g], supra.</i>

5. Claim 6

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
6[a]	The method according to claim 5, wherein at least one of a subcarrier spacing and a time-domain scheduling unit of first radio resources allocated for the first UE are different from second radio resources allocated for a second UE.	See 2[a], <i>supra</i> .

6. Claim 7

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
7[a]	The method according to claim 5, wherein the DL preemption indication information is transmitted through a common search space of the DL control channel.	See 3[a], <i>supra</i> .

7. Claim 9

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
9[pre]	A user equipment (UE) for receiving a downlink (DL) signal, the UE comprising:	See 1[pre], <i>supra</i> .

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
9[a]	a receiver configured to receive a specific radio network temporary identifier (RNTI) for DL preemption indication information through a UE-specific radio resource control (RRC) signaling;	<i>See 1[a], supra.</i>
9[b]	after reception of the specific RNTI, a controller configured to monitor a DL control channel for receiving the DL preemption indication information based on the received specific RNTI,	<i>See 1[a], supra.</i>
9[c]	wherein the receiver further configured to receive the DL preemption indication information through a multicast signal,	<i>See 5[c], supra.</i>
9[d]	wherein the specific RNTI received through the UE specific RRC signaling is a newly defined RNTI other than at least a cell-RNTI (C-RNTI),	<i>See 5[d], supra.</i>
9[e]	wherein the DL preemption indication information indicates preempted resource information in a prior slot, which precedes a slot in which	<i>See 5[e], supra.</i>

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
	the DL preemption indication information is received,	
9[f]	wherein the specific RNTI is received with information related to time and frequency, and	<i>See 1[b] and 1[f], supra.</i>
9[g]	wherein the information related to time and frequency is received for the reception of the DL preemption indication information through the UE-specific RRC signaling.	<i>See 1[g], supra.</i>

8. Claim 10

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
10[a]	The UE according to claim 9, wherein at least one of a subcarrier spacing and a time-domain scheduling unit of first radio resources allocated for the UE are different from second radio resources allocated for another UE.	<i>See 2[a], supra.</i>

9. Claim 11

Invalidity of U.S. Patent 8,554,196 in view of Obviousness Combinations		
Claim Language		Disclosed Art
11[a]	The UE according to claim 9, wherein the DL preemption indication information is received through a common search space of the DL control channel.	<i>See 3[a], supra.</i>