GISC 2024

Global ICT Standards Conference 2024

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ELTOWER GRACE Hall 6F

(세션1) ICT 표준특허 Insight

이동통신 분야 표준특허 개발 전략

최수한 교수, 단국대학교

ICT Standards and Intellectual Property : Inclusive Innovation

주최 과학기술정보통신부 특허청 주관 국립전파연구원 TTA IITP KEA kista ETRI

Index

01. About presentation

본 발표는 이동통신 분야 표준특허 개발 전략에 대한 내용입니다.

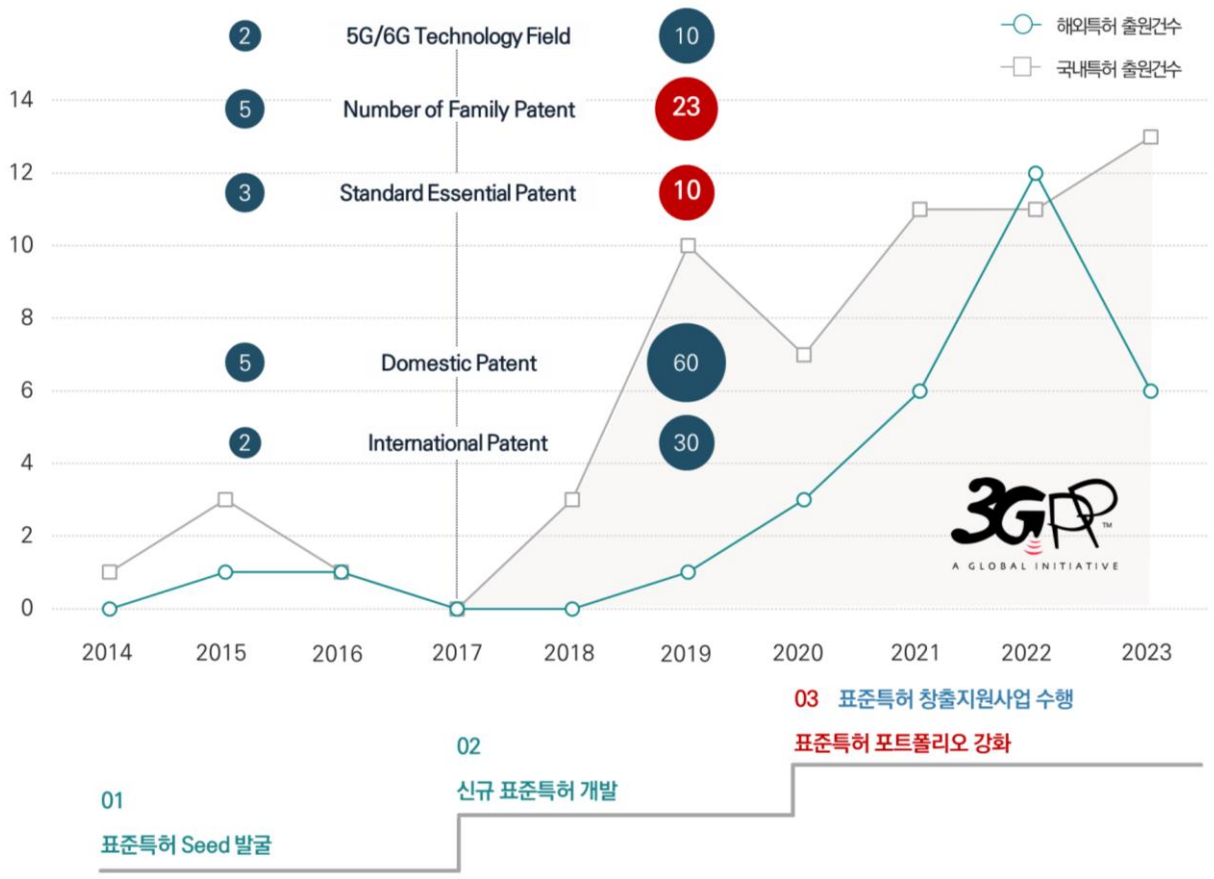
3GPP 이동통신 표준특허 개발 전략

본 발표는 3GPP 이동통신 표준 규격에 매칭되는 표준 특허를 개발하기 위한 전략에 대해 설명합니다.

특히, 표준특허를 개발하기 위한 필요한 요소와 전략에 대해 표준특허 개발을 한 경험을 토대로 발표합니다.

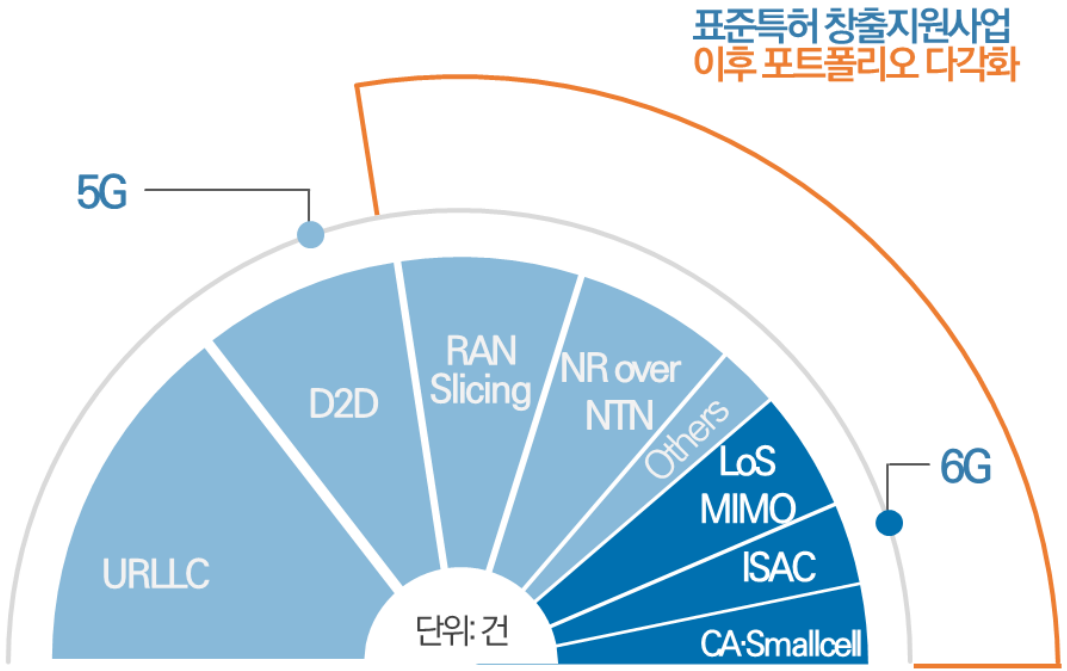
02. 단국대의 5G/6G 이동통신 표준특허 현황

- 2014년부터 현재까지 3GPP 규격에 포함될 가능성이 높은 LTE, 5G, 6G 이동통신 특허를 개발해 왔음.
- 현재까지 3GPP 표준에 매칭되는 SEP(Standard Essential Patent)는 국내/해외 특허는 10여 건이며, 앞으로도 증가할 가능성이 있음.
- 현재까지 Avanci 특허 풀에 등록된 건은 해외 3건, 국내 3건이며 보유하고 있는 SEP에 대한 추가적인 등록을 진행하고 있음.

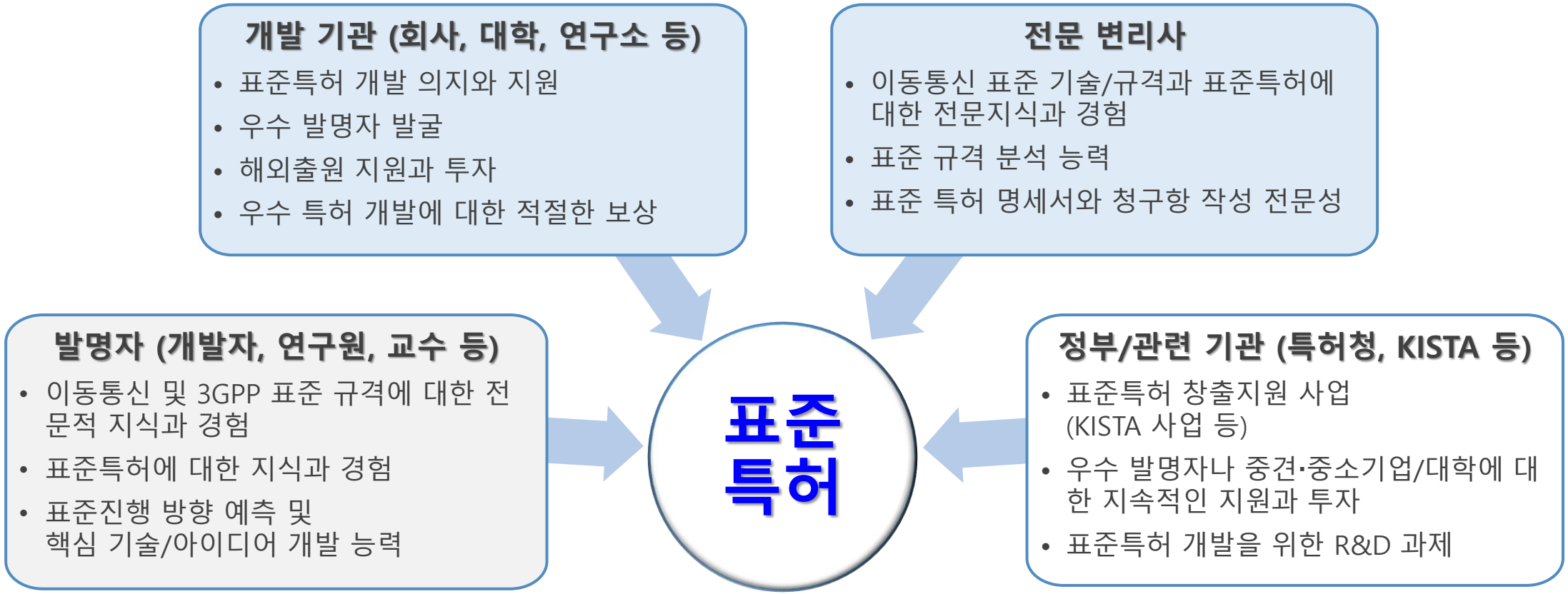


02. 단국대의 5G/6G 이동통신 표준특허 현황

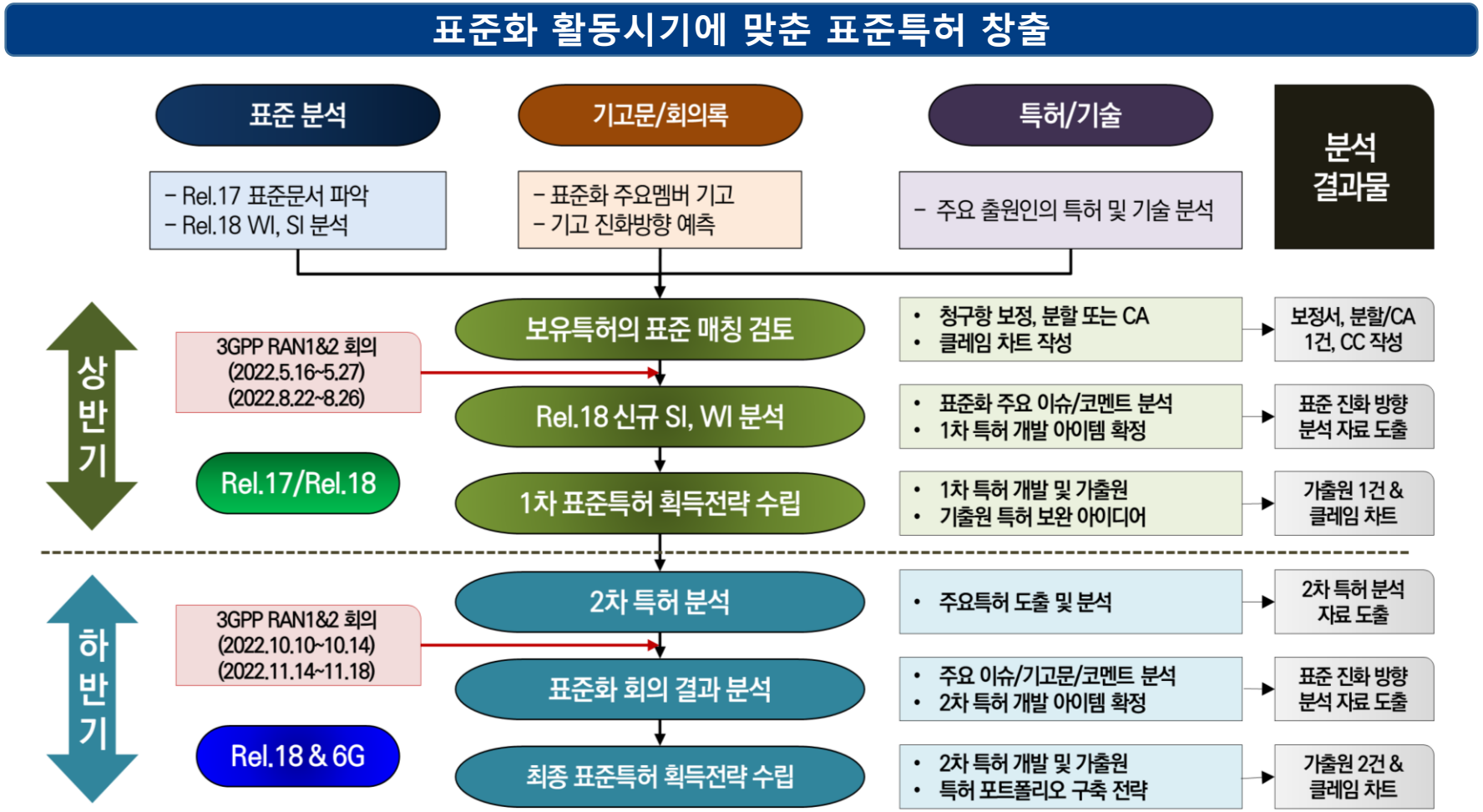
- 단국대의 이동통신 표준특허 포트폴리오 현황
  - 5G 표준특허 관련 기술 분야
    - URLLC (Ultra-Reliable and Low Latency Communications)
    - URLLC enhancements
    - D2D Communications / Sidelink
    - RAN Slicing
    - NR over NTN
  - 6G 관련 표준특허 개발 분야
    - LoS (Line of Sight) MIMO
    - ISAC (Integrated Sensing and Comm.)
    - Ultra-wideband Carrier Aggregation



03. 이동통신 표준특허 개발을 위한 필수 요소



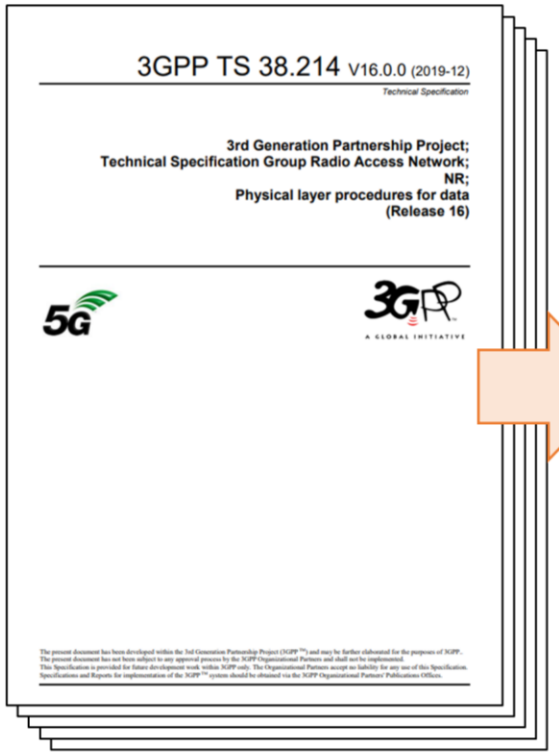
04. 3GPP 표준특허 개발을 위한 전략



04. 3GPP 표준특허 개발을 위한 전략

기존 결과물의 정밀 후속관리를 통한 표준특허 창출

3GPP TS 문서



3GPP TS 38.214 V16.0.0 (2019-12)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Radio Access Network;
NR;
Physical layer procedures for data
(Release 16)

5G

3GPP
A GLOBAL INITIATIVE

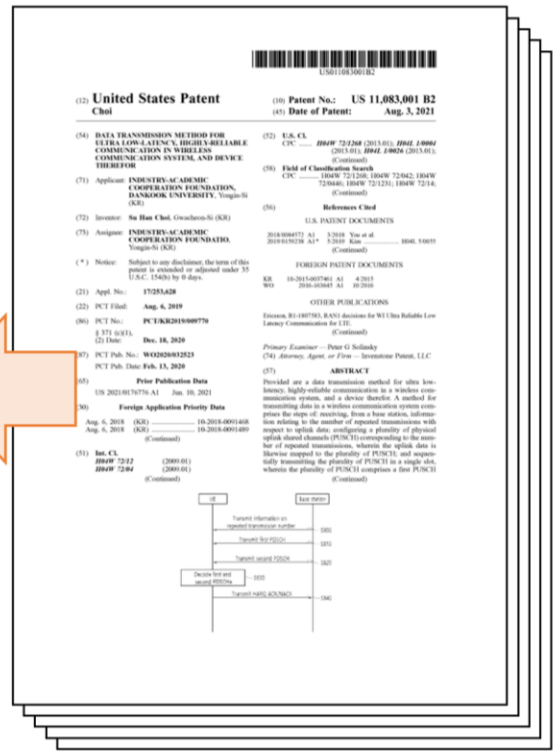
The present document has been developed within the 3rd Generation Partnership Project (3GPP ™) and may be further elaborated for the purposes of 3GPP.
The present document has not been subject to any approval process by the 3GPP Organizational Partners and shall not be implemented.
This Specification is provided for future development work within 3GPP only. The Organizational Partners accept no liability for any use of this Specification.
Specifications and Reports for implementation of the 3GPP ™ system should be obtained via the 3GPP Organizational Partners' Publications Offices.

Claim Chart

Claim 1	3GPP TS 38.214 V16.0.0 (2019-12)
A method of transmitting data in a wireless communication system, the method comprising steps of: receiving information on a repeated transmission number of physical uplink shared channel (PUSCH) regarding uplink data from a base station; configuring a plurality of PUSCHs corresponding to the repeated transmission number of the PUSCH, wherein the uplink data is identically mapped to the plurality of PUSCHs; and sequentially transmitting the plurality of PUSCHs within one slot, wherein the plurality of PUSCHs include a first PUSCH and a second PUSCH, wherein the one slot includes a first mini-slot and a second mini-slot each of which consists of at least one orthogonal frequency division multiplexing (OFDM) symbol, wherein the first PUSCH is transmitted in the first mini-slot and the second PUSCH is transmitted in the second mini-slot, wherein frequency hopping is applied to each transmission of the first PUSCH transmission and the second PUSCH transmission, wherein the repeated transmission of the PUSCH includes a case where the repeated transmission of the PUSCH is performed based on an uplink grant and a case where the repeated transmission of the PUSCH is performed without the uplink grant, and wherein a signaling which indicates a format regarding the repeated transmission of the PUSCH is different according to whether the uplink grant is present or not.	6.1 UE procedure for transmitting the physical uplink shared channel 6.1.2.1 Resource allocation in time domain For PUSCH repetition Type B, the starting symbol S relative to the start of the slot, and the number of consecutive symbols L counting from the symbol S allocated for the PUSCH are provided by *startSymbol* and *length* of the indexed row of the resource allocation table, respectively. Table 6.1.2.1-1: Valid S and L combinations PUSCH mapping type / Normal cyclic prefix (S, L, S+L) / Extended cyclic prefix (S, L, S+L) Type A: 0 / {4,...,14} / {4,...,14} (repetitionType A only) / 0 / {4,...,12} / {4,...,12} Type B: {0,...,13} / {1,...,14} / {1,...,14} for repetition Type A, {1,...,27} for repetition Type B / {0,...,11} / {1,...,12} / {1,...,12} Table 6.1.2.1-2: Redundancy version for PUSCH transmission rv_{id} indicated by the DCI scheduling the PUSCH / rv_{id} to be applied to n^{th} transmission occasion (repetition Type A) or n^{th} actual repetition (repetition Type B) n mod 4 = 0 / n mod 4 = 1 / n mod 4 = 2 / n mod 4 = 3 0: 0, 2, 3, 1 2: 2, 3, 1, 0 3: 3, 1, 0, 2 1: 1, 0, 2, 3

- PUSCH repetition type B의 경우, Table 6.1.2.1-1에서와 같이, PUSCH의 시간 길이가 normal CP의 경우 L(=1~14 symbol)일 수 있음. 즉, PUSCH의 시간 길이는 1 슬롯보다 작은 심볼단위(mini-slot)임.
- 또한, Table 6.1.2.1-2에는 n번째 PUSCH 반복시의 RV가 정의되어 있는 바, 복수의 PUSCH가 RV를 달리하며 순차적으로 전송됨을 알 수 있음

출원특허



US011083001B2

(12) United States Patent
Choi

(10) Patent No.: US 11,083,001 B2
(45) Date of Patent: Aug. 3, 2021

(54) DATA TRANSMISSION METHOD FOR ULTRA LOW-LATENCY, HIGHLY-RELIABLE COMMUNICATION IN WIRELESS COMMUNICATION SYSTEM, AND DEVICE THEREFOR

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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H04W 72/04 (2009.01)

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CPC H04W 72/1268 (2013.01); H04L 1/0061 (2013.01); H04L 1/0026 (2013.01);

(58) Field of Classification Search
CPC H04W 72/1268; H04W 72/042; H04W 72/0446; H04W 72/1231; H04W 72/14;

(56) References Cited
U.S. PATENT DOCUMENTS
FOREIGN PATENT DOCUMENTS
OTHER PUBLICATIONS

(57) ABSTRACT

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감사합니다.

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