

## Appeal Decision

Appeal No. 2020-4050

Appellant                                      Telefonaktiebolaget LM Ericsson (publ)

Patent Attorney                              SONODA, Yoshitaka

Patent Attorney                              TOGASHI, Yoshitaka

Patent Attorney                              ISHIOKA, Toshiyasu

Patent Attorney                              FUJII, Ryo

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2018-515019, entitled "METHOD OF PROVIDING UL GRANTS INCLUDING TIME DOMAIN CONFIGURATION AND RELATED WIRELESS TERMINALS AND NETWORK NODES" [International Publication No. WO 2017/052445, published on November 1, 2018, National Publication of International Patent Application No. 2018-532324] has resulted in the following appeal decision.

### Conclusion

The appeal of the case was groundless.

### Reason

#### No. 1 History of the procedures

The present application was filed on September 8, 2016 as an international filing date (Priority Claim received by the foreign receiving office under the Paris Convention on September 25, 2015, the United States). The history of the procedures thereof is as follows.

May 14, 2018	: Submission of the translation under Article 34 amendment of Patent Cooperation Treaty
June 4, 2018	: Submission of Written amendment
Dated February 19, 2019	: Notice of reasons for refusal
July 25, 2019	: Submission of Written opinion and Written

amendment

Dated November 11, 2019 : Examiner's decision of refusal

March 26,2020 : Submission of Written appeal and Written

amendment

August 6, 2020 : Submission of Written statement

## No. 2 The Invention

The inventions according to Claims 1 to 16 of the present application are recognized as specified by the matters recited in Claims 1 to 16 of the scope of claims. The invention according to Claim 1 (hereinafter referred to as "the Invention") is as follows.

### [Claim 1]

"A method of operating a wireless terminal (UE-a), the method comprising:

transmitting a random access preamble of a random access procedure from the wireless terminal (UE-a) to a node (BS-a) of a radio access network (RAN) (601); and

after transmitting the random access preamble, receiving a random access response (RAR) of the random access procedure from the node (BS-a) of the radio access network (603), wherein

the random access response includes an Uplink (UL) grant for a Message 3 uplink communication of the random access procedure, wherein the UL grant includes:

a time domain configuration associated with the Message 3 uplink communication, wherein the time domain configuration includes:

(a) a repetition factor that defines a number of repetitions across subframes for the Message 3 uplink communication, and/or

(b) Transmission Time Interval (TTI) information for the Message 3 uplink communication; and

a frequency domain configuration associated with the Message 3 uplink communication, wherein the frequency domain configuration includes:

a resource block assignment that indicates Physical Resource Block (PRB) resources for the Message 3 uplink communication, wherein the resource block assignment includes (a) an UL narrowband index and (b) a set of PRB pairs within the narrowband, and/or

a frequency hopping configuration of the Message 3 uplink communication."

## No. 3 Reasons for refusal

The reasons for refusal stated in the examiner's decision include the following reasons: "The invention according to the following claims of this application is an invention which is described in the following publication distributed or an invention made publicly available through an electric telecommunication line in Japan or a foreign country, prior to the filing of the application. Thus, the Appellant should not be granted a patent for the invention under the provisions of Article 29(1)(iii) of the Patent Act."; and "The invention according to the following claims of this application could have been easily made by a person ordinarily skilled in the art of the invention before the filing of the application, on the basis of an invention which is described in the following publication distributed or an invention made publicly available through an electric telecommunication line in Japan or a foreign country, prior to the filing of the application. Thus, the Appellant should not be granted a patent for the invention under the provisions of Article 29(2) of the Patent Act." The following Cited Document 1 is cited for the invention according to Claim 1.

Cited Document 1 Huawei, HiSilicon, Consideration on RACH procedure in coverage enhancement, [online], 3GPP TSG-RAN WG2#91 R2-153357, the Internet <URL:https://www.3gpp.org/ftp/tsg\_ran/WG2\_RL2/TSGR2\_91/Docs/R2-153357.zip>, August 28, 2015

#### No. 4 Description of the Cited Document and Cited Invention

##### 1 Description of Cited Document 1

The following document, Huawei, HiSilicon, Consideration on RACH procedure in coverage enhancement, [online], 3GPP TSG-RAN WG2#91 R2-153357, the Internet <URL:https://www.3gpp.org/ftp/tsg\_ran/WG2\_RL2/TSGR2\_91/Docs/R2-153357.zip>, August 28, 2015 (hereinafter referred to as "Cited Document 1"), which was cited in the reasons for refusal stated in the examiner's decision, includes the following description with drawings. (The underlines were added by the body.)

##### (1) ".2.2 RAR reception

In current specification [2], the eNB's response related to UE's PRACH transmission is included in the MAC subheader and MAC RAR. As shown in the figure below, the MAC subheader indicates the random access preamble ID (RAPID) and backoff indicator, and the MAC RAR is of 56 bits, which includes timing advance command, UL grant (for Msg3 scheduling), temporary C-RNTI.

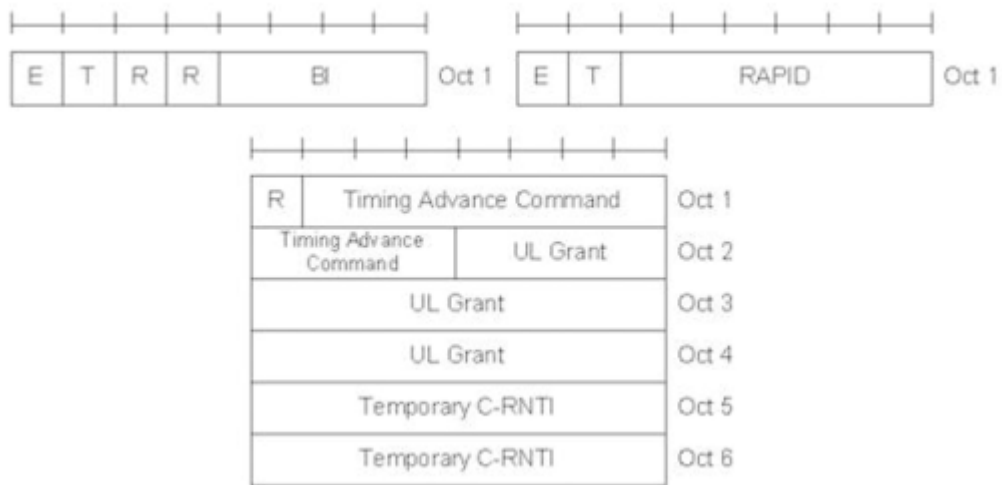


Figure 2: MAC subheader and MAC RAR

" (Page 2, lines 15 to 20)

(2) "In normal coverage (NC) mode case, the UE shall monitor the PDCCH of the PCell for Random Access Response(s) identified by the RA-RNTI, in the RA Response window which starts at the subframe that contains the end of the preamble transmission plus three subframes and has length ra-ResponseWindowSize subframes. The RA-RNTI is associated with the PRACH in which the Random Access Preamble is transmitted." (Page 2, lines 21 to 25)

(3) ".2.3 Msg3 reception

The repetition level of Msg3 transmission can be determined by the repetition level of PRACH transmission or indicated by RAR. In fact, no further information beyond PRACH can be obtained for eNB in order to indicate more accurate repetition level information of Msg3. Therefore, determining the repetition level of Msg3 by that of PRACH is preferred so as to reduce the overhead of RAR. The repetition number of Msg3 transmission can be known according to the repetition level of Msg3.

Proposal 4: Determining the repetition level of Msg3 by that of PRACH is preferred so as to reduce the overhead of RAR.

In normal coverage scenario, the UL grant of Msg3 is carried in RAR. The current 20 bits UL grant in RAR is for Msg3 scheduling and includes the following fields [3];

- Hopping flag – 1 bit
- Fixed size resource block assignment – 10 bits
- Truncated modulation and coding scheme – 4 bits
- TPC command for scheduled PUSCH – 3 bits

- UL delay – 1 bit
- CSI request – 1 bit

Hopping flag: 1 bit Hopping flag field can be used to switch on/off Msg3 hopping. Further, to indicate Msg3 hopping configuration, 2 bits can be considered for hopping indication.

Resource allocation: If the narrowband of Msg3 transmission is implicitly determined by Tx-Rx frequency space or has the same narrowband of preamble transmission, no narrowband indication is needed. Otherwise, maximum 4 bits are needed to indicate the narrowband within 20 MHz system bandwidth.

For the resource indication within the narrowband, it is preferred that one PRB is used for Msg3 transmission to obtain PSD boosting gain. Therefore, 3 bits can be used to indicate the specific PRB allocation within the narrowband." (Page 3, lines 14 to 38)

## 2 Cited Invention

(1)

A According to the description in 1 (1), "the eNB's response related to UE's PRACH transmission is included in the MAC subheader and MAC RAR", it can be said that Cited Document 1 describes that UE performs PRACH transmission to eNB and the eNB transmits MAC RAR as a response.

B According to the description in 1 (2), "the UE shall monitor the PDCCH of the PCell for Random Access Response(s) identified by the RA-RNTI, in the RA Response window which starts at the subframe that contains the end of the preamble transmission plus three subframes and has length ra-ResponseWindowSize subframes", it can be said that Cited Document 1 describes that UE performs preamble transmission prior to RA response and receives RA response from PCell after the preamble transmission.

It is obvious that the "RA response" in 1 (2) represents the "MAC RAR" in 1 (1), and that the "preamble transmission" in 1 (2) which is performed prior to RA response is conducted in the "PRACH transmission" in 1(1). It is technically well-known that Pcell is composed of eNB having received PRACH. Accordingly, it can be said that Cited Document 1 describes that the preamble transmission is performed from UE to eNB in PRACH transmission and that RA response is received from the eNB constituting Pcell after the preamble transmission.

C According to the title of Cited Document 1 "Consideration on RACH procedure in coverage enhancement", the PRACH transmission and reception of RA response

described in Cited Document 1 relate to "RACH procedure", obviously.

Comprehensively considering A to C, it can be said that Cited Document 1 includes the following description: "Preamble transmission is performed from UE to eNB in PRACH transmission of RACH procedure and the UE receives RA response of RACH procedure from the eNB constituting PCell after the preamble transmission."

(2)

A According to the description in 1 (1), "the MAC RAR is of 56 bits, which includes timing advance command, UL grant (for Msg3 scheduling), temporary C-RNTI", and Figure 2, it is considered to describe that the "RA response" in Cited Document 1 is composed of R, timing advance command, UL grant (for Msg3 scheduling), and temporary C-RNTI.

B According to the descriptions in 1 (3), "In normal coverage scenario, the UL grant of Msg3 is carried in RAR. The current 20 bits UL grant in RAR is for Msg3 scheduling and includes the following fields [3]; - Hopping flag - 1 bit", and "Hopping flag: 1 bit Hopping flag field can be used to switch on/off Msg3 hopping. Further, to indicate Msg3 hopping configuration, 2 bits can be considered for hopping indication", the UL grant of Msg3 includes hopping flag and the hopping flag indicates Msg3 hopping configuration. As with (1) C, Msg3 relates to "RACH procedure", obviously. Considering the described matter in A, it can be said that Cited Document 1 describes that RA response is composed of R, timing advance command, UL grant of Msg3 of RACH procedure, and temporary C-RNTI and that the UL grant includes hopping flag indicating Msg3 hopping configuration.

C In the description in 1 (3), "The repetition number of Msg3 transmission can be known according to the repetition level of Msg3", it is obvious that the repetition level of Msg3 is known to UE, since the UE performs Msg3 transmission. In addition, according to the description in 1 (3), "The repetition level of Msg3 transmission can be determined by the repetition level of PRACH transmission or indicated by RAR", it is considered to describe that RA response includes repetition level of Msg3 transmission and that the repetition number of Msg3 transmission is known to UE according to the repetition level of Msg3 transmission.

Comprehensively considering A to C, it can be said that Cited Document 1

includes the following description: "RA response is composed of R, timing advance command, UL grant of Msg3 of RACH procedure, and temporary C-RNTI and the UL grant includes hopping flag indicating Msg3 hopping configuration. The RA response includes repetition level of Msg3 transmission and that the repetition number of Msg3 transmission is known to UE according to the repetition level of Msg3 transmission".

Therefore, comprehensively considering (1) and (2), it is recognized that Cited Document 1 describes the following invention (hereinafter referred to as "Cited Invention").

"A method in which

preamble transmission is performed from UE to eNB in PRACH transmission of RACH procedure, and

the UE receives RA response of RACH procedure from the eNB constituting PCell after the preamble transmission, wherein

the RA response is composed of R, timing advance command, UL grant of Msg3 of RACH procedure, and temporary C-RNTI, the UL grant includes hopping flag indicating Msg3 hopping configuration, the RA response includes repetition level of Msg3 transmission, and the repetition number of Msg3 transmission is known to UE according to the repetition level of Msg3 transmission."

#### No. 5 Comparison

The Invention and the Cited Invention are compared below.

1 The "UE" in the Cited Invention, which indicates a terminal in a wireless communication system as a matter of common general technical knowledge, corresponds to the "wireless terminal (UE-a) in the Invention.

Since the Cited Invention is considered to cause the "UE" to perform "preamble transmission" and "reception of RA response", the method of causing "UE" in the Cited Invention to perform "preamble transmission" and "reception of RA response" is a "method of operating a wireless terminal (UE-a)", as with the Invention.

2 It is technically well-known that the "eNB" in the Cited Invention is one of nodes in a Radio Access Network (RAN). Thus, the "eNB" in the Cited Invention corresponds to "a node (BS-a) of a radio access network (RAN)" in the Invention.

It is technically well-known that the "RACH procedure" in the Cited Invention

represents a random access procedure using random access channel. Thus, the "RACH procedure" in the Cited Invention corresponds to the "random access procedure" in the Invention.

It is also technically well-known that the "PRACH transmission" in the Cited Invention represents Random Access Channel transmission in Physical layer and that the "preamble" transmitted in PRACH is a random access preamble. Thus, the matter described in the Cited Invention, "preamble transmission is performed from UE to eNB in PRACH transmission" corresponds to the matter recited in the Invention, "transmitting a random access preamble".

Accordingly, the matter described in the Cited Invention, "preamble transmission is performed from UE to eNB in PRACH transmission of RACH procedure", corresponds to the matter recited in the Invention, "transmitting a random access preamble of a random access procedure from the wireless terminal (UE-a) to a node (BS-a) of a radio access network (RAN) (601)".

3 The "RA response" in the Cited Invention, which represents a random access response", corresponds to the "random access response (RAR)" in the Invention.

As examined in 2, it is technically well-known that the "RACH procedure" in the Cited Invention represents a random access procedure. Thus, the matter described in the Cited Invention, "the UE receives RA response of RACH procedure from the eNB constituting PCell after the preamble transmission", corresponds to the matter recited in the Invention, "after transmitting the random access preamble, receiving a random access response (RAR) of the random access procedure from the node (BS-a) of the radio access network (603)".

4 Regarding the "Msg3 of RACH procedure" in the Cited Invention, considering the common general technical knowledge regarding the "RACH procedure" representing random access procedure, as examined in 2, the "Msg3" is an abbreviation of message 3 of random access procedure, obviously. Thus, communication of "Msg3 of RACH procedure" in the Cited Invention corresponds to the "Message 3 uplink communication of the random access procedure" in the Invention.

Therefore, the "UL grant of Msg3 of RACH procedure" in the Cited Invention corresponds to the "Uplink (UL) grant for a Message 3 uplink communication of the random access procedure" in the Invention.

Accordingly, the matter described in the Cited Invention that the "RA response" includes "UL grant of Msg3 of RACH procedure" corresponds to the matter recited in



the Invention, "the random access response includes an Uplink (UL) grant for a Message 3 uplink communication of the random access procedure".

5 The "Msg3 transmission" of RACH procedure in the Cited Invention is one of random access procedures, and it is technically well-known that signals are transmitted and received in random access procedures for each subframe. Accordingly, transmission is repeated across subframes for "repetition" of "Msg3 transmission", obviously. Thus, it can be said that the "repetition level of Msg3 transmission" in the Cited Invention defines the number of subframes in a time axis across which "Msg 3 transmission" is repeated. Therefore, the "repetition level of Msg3 transmission" in the Cited Invention is included in the "time domain configuration associated with the Message 3 uplink communication".

The "repetition number of Msg3 transmission" in the Cited Invention corresponds to the "number of repetitions across subframes for the Message 3 uplink communication" in the Invention.

In the Cited Invention, since the "repetition number of Msg3 transmission" is known to UE according to "the repetition level of Msg3 transmission", it can be said that the "repetition level of Msg3 transmission" defines the "repetition number of Msg3 transmission". Accordingly, the "repetition level of Msg3 transmission" in the Cited Invention is included in the "repetition factor" in the Invention.

In light of the above, the matter described in the Cited Invention that the "RA response" "includes repetition level of Msg3 transmission, and the repetition number of Msg3 transmission is known to UE according to the repetition level of Msg3 transmission" and the matter recited in the Invention that "the UL grant" included in "random access response" "includes a time domain configuration associated with the Message 3 uplink communication, wherein the time domain configuration includes a repetition factor that defines a number of repetitions across subframes for the Message 3 uplink communication" are identical in that "random access response" "includes a time domain configuration associated with the Message 3 uplink communication, wherein the time domain configuration includes a repetition factor that defines a number of repetitions across subframes for the Message 3 uplink communication".

6 It is technically well-known that the "hopping" in the Cited Invention represents frequency hopping. "Hopping configuration" regarding frequency hopping is one piece of configuration information of frequency domain, obviously. Thus, the matter described in the Cited Invention that the "UL grant" "includes hopping flag indicating

Msg3 hopping configuration" corresponds to the matter recited in the Invention that the "UL grant" "includes a frequency domain configuration associated with the Message 3 uplink communication", and "the frequency domain configuration includes a frequency hopping configuration of the Message 3 uplink communication."

Comprehensively considering 1 to 6, the Invention and the Cited Invention have the following corresponding feature:

" A method of operating a wireless terminal (UE-a), the method comprising:

transmitting a random access preamble of a random access procedure from the wireless terminal (UE-a) to a node (BS-a) of a radio access network (RAN) (601); and

after transmitting the random access preamble, receiving a random access response (RAR) of the random access procedure from the node (BS-a) of the radio access network (603), wherein

the random access response includes an Uplink (UL) grant for a Message 3 uplink communication of the random access procedure,

the random access response includes

a time domain configuration associated with the Message 3 uplink communication, the time domain configuration including

a repetition factor that defines a number of repetitions across subframes for the Message 3 uplink communication,

the UL grant includes

a frequency domain configuration associated with the Message 3 uplink communication,

the frequency domain configuration including

a frequency hopping configuration of the Message 3 uplink communication."

The Invention and the Cited Invention have the following different features.

<Different Feature 1>

Regarding the matter, "the random access response includes a time domain configuration associated with the Message 3 uplink communication, the time domain configuration including a repetition factor that defines a number of repetitions across subframes for the Message 3 uplink communication", the Invention is configured so that the "UL grant" included in "random access response" includes "the time domain configuration associated with the Message 3 uplink communication which includes: (a) a repetition factor that defines a number of repetitions across subframes for the Message

3 uplink communication, and/or (b) Transmission Time Interval (TTI) information for the Message 3 uplink communication, while the Cited Invention does not specify the matters specifying the Invention although the RA response includes the repetition level of Msg3 transmission.

<Different Feature 2>

The Invention is configured to "include", as "a frequency domain configuration associated with the Message 3 uplink communication" included in "UL grant", "a resource block assignment that indicates Physical Resource Block (PRB) resources for the Message 3 uplink communication, wherein the resource block assignment includes (a) an UL narrowband index and (b) a set of PRB pairs within the narrowband and/or a frequency hopping configuration of the Message 3 uplink communication". The Cited Invention does not specify the matters specifying the Invention while it "includes hopping flag indicating Msg3 hopping configuration".

No. 6 Judgment

1 Regarding Different Feature 1

The "RA response" in the Cited Invention is configured so that "the RA response is composed of R, timing advance command, UL grant of Msg3 of RACH procedure, and temporary C-RNTI". According to the general technical knowledge, the R represents a reservation bit.

The Cited Invention does not clearly describe a location in the "RA response" where the "repetition level of Msg3 transmission" is stored. However, it is technically well-known that the "repetition level on Msg3 transmission" is information on a resource of "Msg3 transmission" and that the "UL grant" is for transmitting information on a resource of uplink transmission. In light of the above, the matter described in the Cited Invention that the "repetition level of Msg3 transmission" is included in the "RA response" indicates that the "UL grant" included in the "RA response" includes the "repetition level of Msg3 transmission", or that "UL grant" included in "random access response" includes "a time domain configuration associated with the Message 3 uplink communication, wherein the time domain configuration includes (a) a repetition factor that defines a number of repetitions across subframes for the Message 3 uplink communication.

Even if the matter described in the Cited Invention that the "repetition level of Msg3 transmission" is included in the "RA response" does not indicate that the "UL grant" included in the "RA response" includes the "repetition level of Msg3

transmission", as described above, considering the common general technical knowledge that the "repetition level on Msg3 transmission" is information on a resource of "Msg3 transmission" and that the "UL grant" is for transmitting information on a resource of uplink transmission, a person skilled in the art could have easily conceived of a configuration in which "UL grant" included in "RA response" includes a time domain configuration including "repetition level on Msg3 transmission", or conceived of a configuration, as with the Invention, in which "UL grant" included in "random access response" includes "a time domain configuration associated with the Message 3 uplink communication, wherein the time domain configuration includes (a) a repetition factor that defines a number of repetitions across subframes for the Message 3 uplink communication".

The term "or" of the "and/or" in "a time domain configuration associated with the Message 3 uplink communication, wherein the time domain configuration includes: (a) a repetition factor that defines a number of repetitions across subframes for the Message 3 uplink communication, and/or (b) Transmission Time Interval (TTI) information for the Message 3 uplink communication" in the Invention indicates alternative option. Accordingly, the Invention includes ones that do not include the specifying matter, "(b) Transmission Time Interval (TTI) information for the Message 3 uplink communication", as "a time domain configuration associated with the Message 3 uplink communication". Therefore, the Cited Invention's failure to include the specifying matter is not a substantial different feature.

## 2 Regarding Different Feature 2

The matter described in the Cited invention that the "UL grant" "includes hopping flag indicating Msg3 hopping configuration" corresponds, as examined in "No. 5" "6", to the matter in the Invention that "UL grant" "includes a frequency domain configuration associated with the Message 3 uplink communication, wherein the frequency domain configuration includes a frequency hopping configuration of the Message 3 uplink communication".

The term "or" of the "and/or" in "a frequency domain configuration associated with the Message 3 uplink communication, wherein the frequency domain configuration includes: a resource block assignment that indicates Physical Resource Block (PRB) resources for the Message 3 uplink communication, wherein the resource block assignment includes (a) an UL narrowband index and (b) a set of PRB pairs within the narrowband, and/or a frequency hopping configuration of the Message 3 uplink communication" in the Invention indicates alternative option. Accordingly, the

Invention includes the ones that do not include the specifying matter, "a resource block assignment that indicates Physical Resource Block (PRB) resources for the Message 3 uplink communication, wherein the resource block assignment includes (a) an UL narrowband index and (b) a set of PRB pairs within the narrowband", as "a frequency domain configuration associated with the Message 3 uplink communication". Thus, the Cited Invention's failure to include the specifying matter is not a substantial different feature.

### 3 Appellant's allegation

The Appellant alleges in the written appeal dated March 26, 2020 as follows: "None of Cited Documents 1 to 3 includes any disclosure or indication about UL grant including 'a resource block assignment including (b) a set of PRB pairs within the narrowband'". The Appellant also alleges in the written statement of August 6, 2020 as follows: "Claim 1 as of the demand for appeal includes the recitation, 'the UL grant includes a time domain configuration and a frequency domain configuration, the frequency domain configuration including a resource block assignment including (b) a set of PRB pairs within the narrowband'. Thus, it is considered that the finding of the examiner is inappropriate."

However, as examined in 2, the Invention includes ones that do not include the following matter specifying the invention alleged by the Appellant: "UL grant includes 'a resource block assignment including (b) a set of PRB pairs within the narrowband'". Thus, the Cited Invention's failure to include the specifying matter is not a substantial different feature.

Therefore, the Appellant's allegation cannot be accepted.

### 4 Summary

As described above, the Invention is the Cited Invention and could have been easily made by a person skilled in the art on the basis of the Cited Invention.

### No. 7 Closing

As above, the invention according to Claim 1 of the present application is the invention described in Cited Document 1. The Appellant should not be granted a patent for the invention under the provisions of Article 29(1)(iii) of the Patent Act. The invention according to Claim 1 of the present application could have been easily made by a person skilled in the art on the basis of the invention described in Cited Document 1. The Appellant should not be granted a patent for the invention under the

provisions of Article 29(2) of the Patent Act.

Thus, the present application should be rejected without examining other claims.

Therefore, the appeal decision shall be made as described in the conclusion.

November 11, 2020

Chief administrative judge: NAKAKI, Tsutomu

Administrative judge: HIROKAWA, Hiroshi

Administrative judge: HONGO, Akira