

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T SERVICES INC., T-MOBILE USA, INC.,
CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
ERICSSON, INC., AND
NOKIA OF AMERICA CORPORATION,
Petitioners

v.

ASUS TECHNOLOGY LICENSING INC.,
Patent Owner

IPR2024-00992
Patent No. 10,951,359

PATENT OWNER PRELIMINARY RESPONSE

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TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. TECHNOLOGY BACKGROUND.....	3
A. 3GPP and Cellular Standards.....	3
1. 3GPP Technical Groups	4
2. 3GPP’s Process for Developing Technical Specifications	5
3. Knowledge and Skill Level of 3GPP Participants	7
B. ’359 Patent.....	8
1. Challenged Claims	13
2. Effective Filing Date	15
3. Prosecution History	48
C. Alleged Prior Art.....	49
1. Nogami	49
2. Chatterjee	51
3. 3GPP Specification.....	52
4. NTT.....	53
III. CLAIM CONSTRUCTION.....	54
IV. PETITIONER HAS NOT SHOWN A LIKELIHOOD OF SUCCESS FOR ANY GROUNDS	55
A. Nogami Does Not Disclose Or Render Obvious “Not Allowing To Transmit The Signal Such That An Interval Between Any Two Bit Positions With The Value of One In The Set of Bit Positions In The Bit Map Is Smaller Than The First Duration.”	55

B.	Nogami In View of Chatterjee And NTT Does Not Render Obvious “Not Allowing To Transmit The Signal Such That Interval Between Any Bit Position With The Value of One In The Set of Bit Positions In The Bit Map And The Least Significant Bit Position In The Bit Map Is Smaller Than The First Duration Minus One.”	61
1.	Nogami and Chatterjee Do Not Disclose Or Suggest This Limitation	61
2.	NTT	66
C.	The 3GPP Specification Is Not Prior Art And Does Not Remedy The Deficiencies of Nogami	68
D.	The Dependent Claims Are Not Disclosed Or Suggested By The Asserted References	70
V.	THE BOARD SHOULD EXERCISE DISCRETION UNDER SECTION 314 AND DENY INSTITUTION	70
A.	Factor 1	73
B.	Factor 2	74
C.	Factor 3	76
D.	Factor 4	78
E.	Factor 5	81
F.	Factor 6	81
VI.	CONCLUSION	83

TABLE OF AUTHORITIES**Page(s)****Cases**

<i>Arendi S.A.R.L. v. Apple Inc.</i> , 832 F.3d 1355 (Fed. Cir. 2016)	59, 60
<i>DSS Tech. Mgmt. Inc. v. Apple Inc.</i> , 885 F.3d 1367 (Fed. Cir. 2018)	59, 60
<i>Harmonic Inc. v. Avid Tech.</i> , 815 F.3d 1356 (Fed. Cir. 2016)	70
<i>Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.</i> , 851 F.3d 1270 (Fed. Cir. 2017)	59
<i>Viavi Sols. Inc. v. Zhejiang Crystal-Optech Co.</i> , No. 2:21-CV-00378-JRG, 2022 WL 16856099 (E.D. Tex. Nov. 10, 2022)	73

Statutes

35 U.S.C. § 102	69
35 U.S.C. § 314	70, 74, 76, 82
35 U.S.C. § 316	74

Agency Decisions

<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020)	71
<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper 15 (PTAB May 13, 2020)	71
<i>CommScope Techs. LLC v. Dali Wireless, Inc.</i> , IPR2022- 01242, Paper 23 (PTAB Feb. 27, 2023)	72, 82
<i>CrowdStrike, Inc. v. Open Text Inc.</i> , IPR2023-00556, Paper 9 (PTAB Sept. 12, 2023)	76

<i>Ericsson Inc. et al v. Collison Communications, Inc.,</i> IPR2022-01233, Paper 12 (PTAB Jan. 19, 2023)	75
<i>General Plastic Indus. Co., Ltd. v. Canon Kabushiki Kaisha,</i> IPR2016-01357, Paper 19 (PTAB Sept. 6, 2017)	75
<i>Google LLC v. EcoFactor Inc.,</i> IPR2021-00454, Paper 9 (PTAB July 22, 2021).....	79
<i>Hulu, LLC v. SITO Mobile R&D IP, LLC,</i> IPR2021-00298, Paper 11 (PTAB May 19, 2021)	75
<i>LG Elecs., Inc. v. Ancora Techs., Inc.,</i> IPR2021-00581, Paper 16 (PTAB June 10, 2021)	79, 80
<i>NetNut Ltd. v. Bright Data Ltd.,</i> IPR2021-01492, Paper 12 (PTAB. Mar. 21, 2022).....	75
<i>NHK Spring Co. v. Intri-Plex., Inc.,</i> IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018)	70, 75
<i>OpenSky Indus., LLC v. VLSI Tech. LLC,</i> IPR2021-01064, Paper 102 (PTAB Oct. 4, 2022).....	72
<i>Roku, Inc. v. IOENGINE, LLC,</i> IPR2022-01554, Paper 11 (PTAB May 5, 2023)	79
<i>Samsung Electronics Co. Ltd. v. California Institute of Tech.,</i> IPR2023-00130, Paper 10 (PTAB May 4, 2023)	79, 81
<i>Sand Revolution II, LLC v. Continental Intermodal Group – Trucking</i> <i>LLC,</i> IPR2019-01393, Paper 24 (PTAB June 16, 2020)	79

Patent Procedures

Katherine K. Vidal, <i>Interim Procedure for Discretionary Denials in AIA</i> <i>Post-Grant Proceedings with Parallel District Court Litigation</i> (June 21, 2022)	72
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LIST OF EXHIBITS

Exhibit No.	Patent Owner's Exhibits
Ex. 2001	“Understanding 3GPP – starting with the basics,” Qualcomm, Aug 1, 2017, <i>available at</i> https://www.qualcomm.com/news/onq/2017/08/understanding-3gpp-starting-basics , <i>last accessed</i> June 4, 2024.
Ex. 2002	Erik Dahlman, Stefan Parkvall, Johan Skold, <i>4G, LTE-Advanced Pro and The Road to 5G</i> , Academic Press, 2016 (“Dahlman”)
Ex. 2003	3GPP TS 36.300 Version 11.4.0 Release 11: Technical Specification for LTE; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2.
Ex. 2004	3GPP TS 36.331 Version 11.2.0 Release 11: Technical Specification for LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification.
Ex. 2005	LegalMetric District Report for Texas Eastern District Court in Patent Cases (January 2019-April 2024) (“LegalMetric”)
Ex. 2006	United States District Courts—National Judicial Caseload Profile for 12-month period ending June 30, 2024; <i>available at</i> https://www.uscourts.gov/statistics-reports/analysis-reports/federal-court-management-statistics (“Judicial Caseload Statistics”)
Ex. 2007	Defendants’ P.R. 3-3 Invalidity Contentions from <i>ASUS Technology Licensing Inc. and Celerity IP, LLC v. AT&T Corp. et al.</i> , No. 2:23-cv-490 (lead), -489, -491, E.D. Tex., April 12, 2024 (“Invalidity Contentions”)

Ex. 2008	Reserved
Ex. 2009	3GPP Technical Contribution R1-1717062 (“R1-1717062”)

I. INTRODUCTION

At the time of the invention, 3GPP was meeting to develop the 5G technology for cellular networks. One of the many issues being discussed was how mobile devices (“UEs” or “user equipment”) should search for and identify downlink control channels from the base station (the “network node”). These downlink control channels are referred to as “CORESET.” The 3GPP had agreed that the network node would transmit a bit map indicating which symbols of a channel the UE should monitor for the CORESET along with a duration for monitoring. A value of “1” in the bitmap indicated that monitoring should start at the corresponding symbol in the downlink channel and continue for the specified monitoring duration.

One of the resulting issues was that, if the bitmap set more than one bit to “1,” the monitoring windows for two or more CORESETS could overlap. The inventors of the ’359 Patent proposed unique solutions for this problem, as reflected in the challenged claims and the intrinsic record.

As discussed below, the alleged prior art identified by Petitioners recognizes this issue but does not disclose the claimed solutions. Some references suggest that the CORESET overlapping should not be allowed, but do not identify how to implement the prohibition. Some, like Nogami, suggest allowing the overlap to occur in certain instances. None disclose the claimed solution.

For example, Ground 1 of the Petition (Nogami 103) relies on knowledge of a POSITA to supply the completely missing limitation in claim 1 of “not allowing to transmit the signal such that an interval between any two bit positions with the value of one in the set of bit positions in the bit map is smaller than the first duration.” But Petitioner’s argument is pure hindsight—while a POSITA might have been aware of the *issue*, there is no evidence the *claimed solution* was known to a POSITA.

Ground 2 adds the Chatterjee and NTT references to address the completely missing limitation in claim 12 of “not allowing to transmit the signal such that interval between any bit position with the value of one in the set of bit positions in the bit map and the least significant bit position in the bit map is smaller than the first duration minus one.” Again, neither Chatterjee nor NTT disclose the missing claim limitation. Indeed, the record reflects that the top experts in the world had not identified the claimed solution and believed the issue needed future study. EX1019 [NTT], 2.

Ground 3 combines Nogami with a 3GPP Specification in an attempt to remedy the issues with Grounds 1 and 2. But the 3GPP Specification was published long after the effective filing date of the ’359 Patent and is not prior art. Further, the 3GPP specification adds nothing that the other references did not

already disclose, and the limitations discussed above are still completely missing from the record.

Finally, the Board should exercise its discretion not to institute this IPR because jury trials are expected to begin approximately five months before the date a Final Written Decision is expected and each *Fintiv* factor favors denial.

Accordingly, institution should be denied because the alleged prior art does not teach or suggest any of the challenged claims.

II. TECHNOLOGY BACKGROUND

A. 3GPP and Cellular Standards

The Third Generation Partnership Project (“3GPP”) is “an engineering organization that develops technical specifications.” EX2001 [Understanding 3GPP], 5. 3GPP “was initially formed in December 1998 when the European Telecommunications Standards Institute (ETSI) partnered with other standard development organizations (SDOs) from around the world to develop new technologies (or more specifically, technology specifications) for the third generation (3G) of cellular networks.” *Id.*, 2. 3GPP’s work continued on after 3G, extending first to 4G/LTE, and then to new radio technology for 5G. *Id.*, 2-3. After 3GPP develops technical specifications, regional telecommunications standards bodies, such as ETSI, adopt them to turn their contents into standards. *Id.*, 5.

1. 3GPP Technical Groups

3GPP consists of three technical specification groups (or TSGs), with TSG RAN (radio access network) being “responsible for the definition of functions, requirements, and interfaces of the Radio Access.” EX2002 [Dahlman], 25.

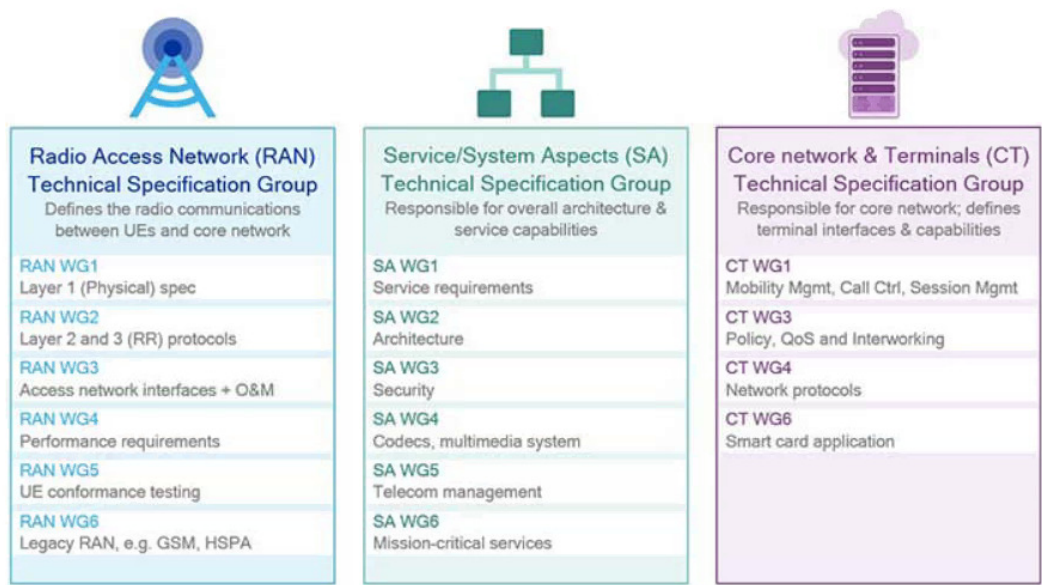


Figure 3: 3GPP distributed organization structure.

(EX2001 [Understanding-3GPP-Basics], 7).

“Radio Access” refers to access by a mobile device (also referred to as a UE or user equipment) to the base station (Evolved-Node-B, “eNB” or “eNodeB”) through the air interface. There are a total of six RAN working groups, each responsible for different aspects of the radio interface. EX2002 [Dahlman], 25. For example, RAN WG1 (“RAN1”) is responsible for “the physical layer

specification,” while RAN WG2 (“RAN2”) is responsible for “the layer 2 and layer 3 radio interface specifications.” *Id.*

The technology discussed in the ’359 Patent centers on radio access network (RAN) technology—specifically Evolved Universal Terrestrial Radio Access Network, or E-UTRAN. EX1001 [’359 Patent], 1:31-38. For this IPR, the RAN working groups are particularly relevant because the specifications and technical contributions discussed in the ’359 Patent generally involve E-UTRAN. EX1001 [’359 Patent], 2:24-39.

2. 3GPP’s Process for Developing Technical Specifications

“Developing technical specifications for mobile communication is not a one-time job,” but “an ongoing process.” EX2002 [Dahlman], 24. The process “typically includes the four phases” as illustrated below in an iterative manner, where decisions made in earlier phases such as requirements or architecture can be revised as discussions evolve. *Id.*, 24-25.

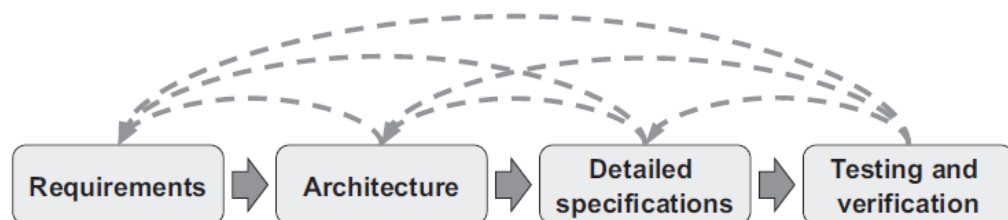


FIGURE 2.8

The standardization phases and iterative process.

3GPP members meet at least four times a year to discuss changes and updates to 3GPP technical specifications, with large working groups like RAN1 and RAN2 meeting eight times a year. EX2001 [Understanding 3GPP], 12; EX2002 [Dahlman], 25. “The 3GPP documents are divided into releases, where each release has a set of features added compared to the previous release. The features are defined in Work Items agreed and undertaken by the TSGs.’ EX2002 [Dahlman], 25. For example, LTE (4G) started with Release 8 in 2008-2009 and progressed to Release 15 in 2017:

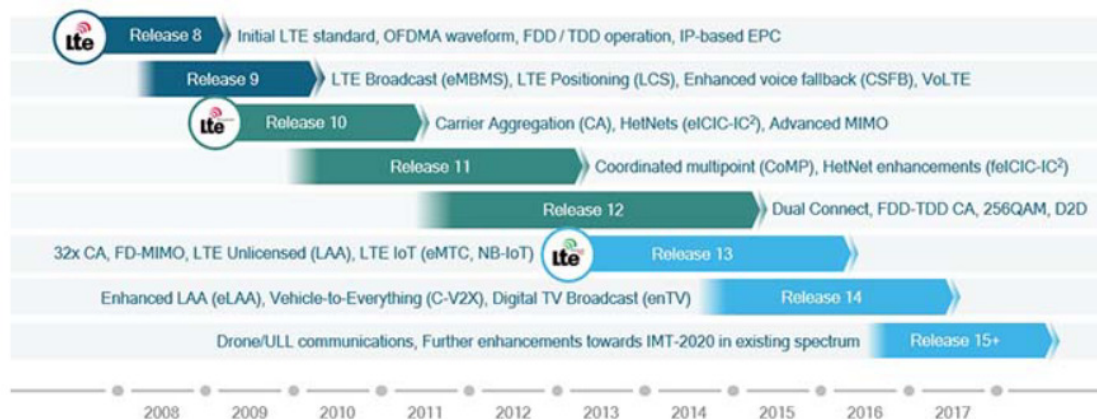


Figure 4: 4G LTE evolution by 3GPP Release.

EX2001 [Understanding 3GPP], 8. Release 15 introduced new radio (“NR”) technologies, often referenced as 5G. *Id.*

The resulting 3GPP technical specifications “are organized in multiple series and are numbered TS XX.YYY, where XX denotes the number of the specification series and YYY is the number of the specification within the series.” EX2002

[Dahlman], 26-27. The 36.YYY series documents cited by the '359 Patent (2:24-39-64) and in the Petition (*e.g.*, at 14) concern “[r]adio aspects for the next generation (5G).” EX2002 [Dahlman], 26.

3. Knowledge and Skill Level of 3GPP Participants

Petitioner provides the following definition for level of ordinary skill in the art:

A person of ordinary skill in the art (“POSITA”) related to the '359 patent would possess: the equivalent of an undergraduate degree in Electrical Engineering, Computer Science, or Computer Engineering; familiarity with the relevant 3GPP standards as of this time; and at least two years of experience in research, design, development, and/or testing of cellular networks. Ex-1003, ¶¶44-45.¹ Furthermore, an individual could qualify as a POSITA with more technical education (*e.g.*, a PhD in Electrical Engineering, Computer Science, or Computer Engineering) and less professional experience or *vice versa*. *Id.*

Pet., 12.

Participants in 3GPP were necessarily far more experienced than Petitioner’s POSITA. Engineers participating in the RAN1 and RAN2 specification drafting generally had above-average skill levels at the time of the invention and that continues to be the case. Such above-average level skill levels are expected

because a person with the 2-year experience proposed by Petitioner would not have the intimate knowledge of the existing standardized cellular system, including the pros and cons of the available techniques and control features. Without such intimate knowledge, they would not know how a proposed change would impact the rest of the system and would not be able to make the right choice. As such, they would not be able to specify a reliable and efficient cellular network.

But even with those far above-average (and sometimes extraordinary) skill levels, engineers participating in 3GPP technical discussions would not be expected to be familiar with all relevant aspects of the specifications. Each specification is typically hundreds of pages of detailed requirements, and there are multiple specifications for different aspects of E-UTRAN. *See, e.g.*, EX2003 [TS 36.300 V11.4.0] (221 pages); EX2004 [TS 36.331 V1 1.2.0] (345 pages). Further, the various sections of the specification are developed by different teams of 3GPP participants, meaning no single engineer is involved with all aspects of the specifications.

B. '359 Patent

The '359 Patent is directed to a method and apparatus for providing control resource set ("CORESET") configuration in a wireless communication system. EX1001 ['359 Patent], Title, 1:43-54. It relates to functionality in 3GPP 5G

technology. A CORESET is a physical resource in 5G telecommunications technologies that transmits downlink (i.e., from a base station to mobile device) control information. EX1001 ['359 Patent], 1:43-54. The '359 Patent discloses a method for allowing a network node (e.g., a base station) to transmit a signal letting access stations (e.g., mobile phones) know where to look for the CORESET information. In the '359 Patent, the network node (e.g., a base station) transmits a signal indicating at least a first duration and a bit map. *Id.* The first duration is the time duration of the CORESET and the bit map indicates the first symbol within a slot that the mobile (the UE) should monitor for the CORESET, wherein a set of bit positions indicates value one in the bit map. *Id.* Importantly, the network node is not allowed to transmit the signal where the interval between two bit positions in the set in the bit map is smaller than a second duration. *Id.*

The '359 Patent explains the existing CORESET monitoring operation as follows:

In the current NR standard as disclosed in 3GPP R1-1721343 and TS 38.331, a CORESET can be configured by indicating time duration and a bit map. The bit map may indicate at least a starting OFDM symbol for monitoring the CORESET in a slot. Each bit in the bit map corresponds to an OFDM symbol in a slot. If a bit position in the bit map has a value of one, it represents a starting OFDM symbol for monitoring the CORESET. The CORESET may be monitored from at least a starting OFDM symbol(s) indicated by the bit map and occupying following OFDM symbol(s) until the configured time duration is reached. For example, if the time duration of a CORESET is configured as 2 and the bit map indicates 10000000000000, the UE may monitor the CORESET (receive at least a PDCCH) on OFDM symbol #0 and #1 in a slot.

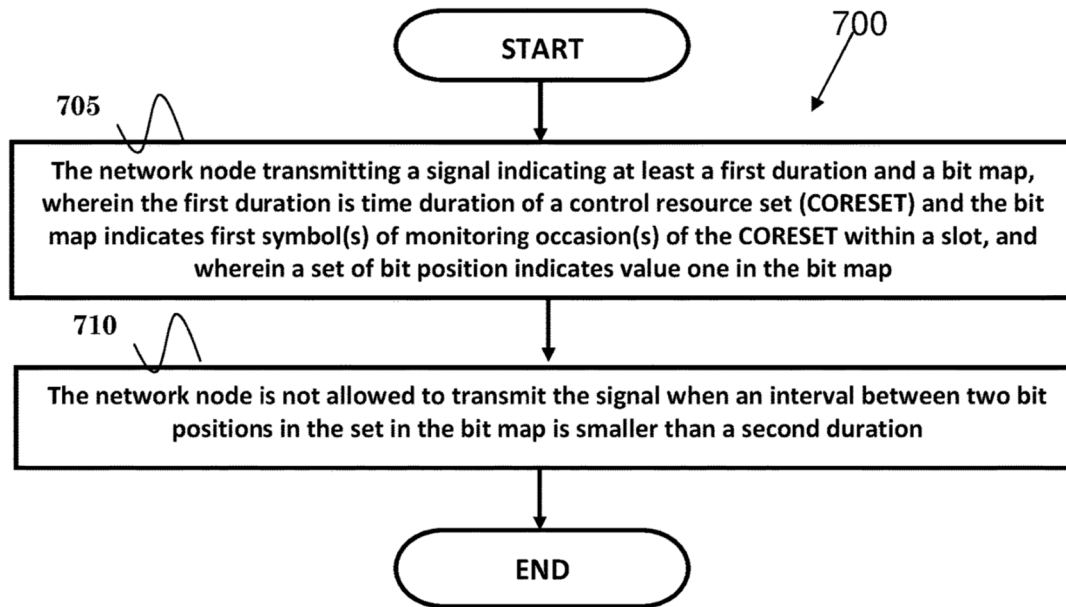
EX1001 ['359 Patent], 3:41-55. Thus, in the example given, a bit map “10000000000000” indicates that the UE (e.g., mobile phone) should start monitoring the downlink signal for the CORESET on OFDM symbol #0 (i.e., bit zero which is set to one) and a time duration of 2 indicates the UE should continue monitoring for the CORESET for 2 bits (i.e., monitor OFDM symbols #0 and #2). As discussed above, the UE needs to identify the appropriate CORESET to receive control information necessary to initiate transmitting data to and from the base station.

A problem with the existing CORESET monitoring operation is caused if the bit map indicates a subsequent CORESET monitoring period starts during the time duration of the CORESET:

However, if a bit map indicates a starting OFDM symbol belonging to the following OFDM symbol(s) of previous starting OFDM symbol indicated by the bit map (e.g., time duration of a CORESET is 2 and the bit map is 1100000000000000), a UE may be confused about the configuration. If this situation does not specify nor is captured in the standard, how a UE treat this situation needs further consideration. In addition, if the bit map indicates a

EX1001 ['359 Patent], 15:56-63. That is, if the bit map puts a “1” in OFDM symbol #0 with a time duration of 2, the UE will search for the CORESET during OFDM symbol ##0 and 1. However, if the bit map also puts a “1” in OFDM symbol #1, the “UE may be confused” as to whether information on OFDM symbol #1 relates to the original CORESET or a second CORESET. *Id.*

As a solution to the problem with this existing 5G specification, the '359 Patent proposes to “not allow” the network node (i.e., the base station) “to transmit the signal such that an interval between two bit positions in the set in the bit map is smaller than a second duration.” EX1001 ['359 Patent], 1:51-54; 33:42-52. Figure 7 (below) illustrates this process:

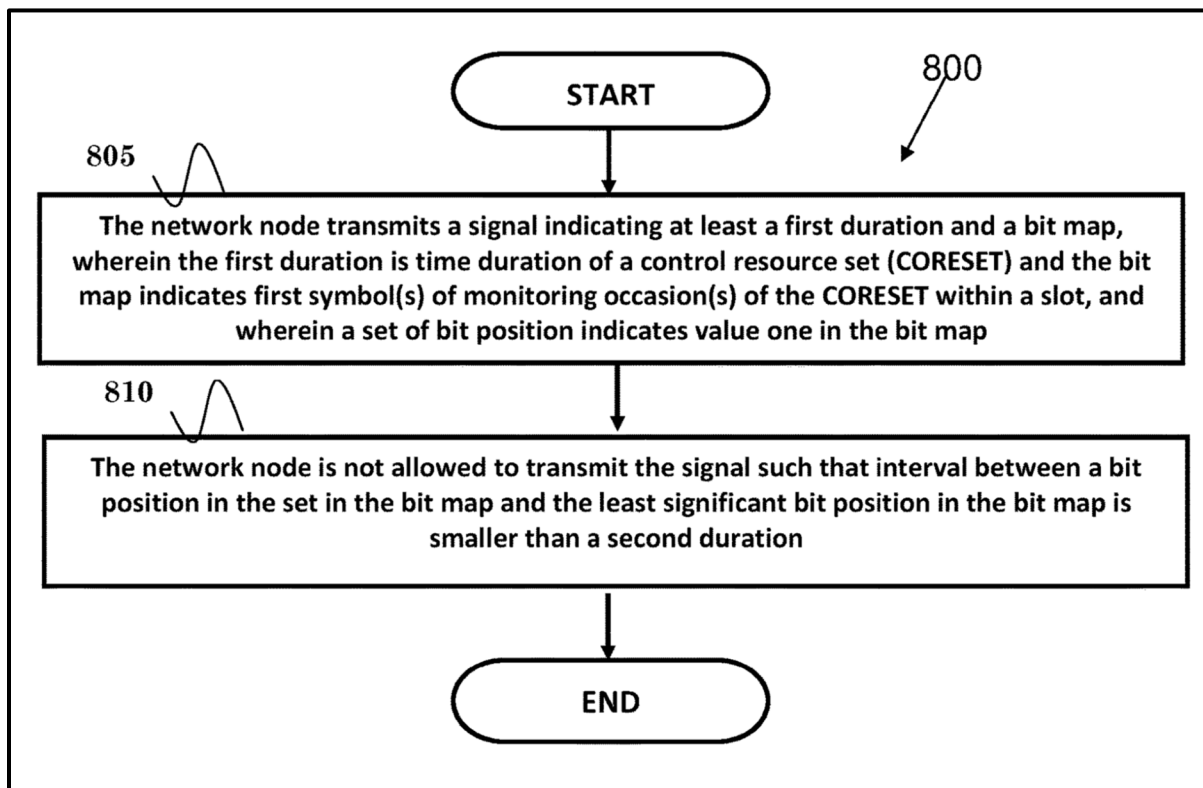


EX1001 [’359 Patent], Fig. 7. This second duration may be either the “first duration” or the “first duration minus one.” *Id.*, 37:53-57.

The ’359 Patent recognizes a second, related problem where the CORESET is configured across an OFDM slot boundary. The ’359 Patent explains “if the bit map indicates a starting OFDM symbol on the last few OFDM symbols of a slot, this may create a problem where the CORESET may be configured across a slot boundary.” *Id.*, 15:63-66. “For example, if time duration of a CORESET is 2 and the bit map is 0000000000000001, how a UE handle[s] this configuration also needs further consideration.” *Id.*, 15:66-16:18.

One solution proposed by the ’359 Patent is to not allow the network node to transmit a signal if the interval between any bit position with the value of one in

the set of bit positions in the bit map and the least significant bit position in the bit map is smaller than the first duration minus one. *Id.*, 37:22-27; 38:1-5. “The least significant bit in the bit map represents the last OFDM symbol in a slot.” EX1001 [’359 Patent], 17:14-15. This scenario is shown below in Fig. 8:



EX1001 [’359 Patent], Fig. 8. “In one embodiment, the second duration is the first duration” and in another embodiment, “the second duration is the first duration minus one.” *Id.*, 34:31-34.

1. Challenged Claims

The Petition challenges claims 1-4, 6-9, 11-14, 16-19 and 21-23. Pet., 2. Claims 1, 12 and 22 are independent claims. Claims 2-4, 6-9 and 11 depend from

claim 1. Claims 13, 14, 16-19 and 21 depend from claim 12. Claim 23 depends from claim 22.

Representative independent method claim 1 is shown below:

1. A method of a network node, the method comprising: transmitting a signal indicating at least a first duration and a bit map, wherein the first duration is time duration of a control resource set (CORESET), and wherein the bit map includes a set of bit positions, where each bit position has a value of one or zero and each bit position with the value of one indicates a starting Orthogonal Frequency Division Multiplexing (OFDM) symbol of a monitoring occasion of the CORESET within a slot; and not allowing to transmit the signal such that an interval between any two bit positions with the value of one in the set of bit positions in the bit map is smaller than the first duration.

EX1001 [’359 Patent], cl. 1.

Claim 12 is similar except that it does not allow the network node to “transmit the signal such that interval between any bit position with the value of one in the set of bit positions in the bit map and the least significant bit position in the bit map is smaller than the first duration minus one.” *Id.*, cl. 12. This limitation is directed to the second embodiment that seeks to address situations where the CORESET may be monitoring across a slot boundary. EX1001 [’359 Patent], 16:23-24. Claim 22 is the system claim version of claim 1. *Id.*, cl. 22.

2. Effective Filing Date

The '359 Patent was filed on January 7, 2019 and claims priority to Provisional Application No. 62/619,041, filed on January 18, 2018. As discussed below, each limitation of the challenged claims finds support in the '041 Provisional.

The Petition identifies only one claim term as allegedly lacking support in the Provisional. Specifically, Petitioner argues that the claim term “interval” is not supported under Petitioner’s construction of “interval” as “the difference between two bit positions or the number of bits between two bit positions.” Pet., 10-12. According to Petitioner, while the '041 Provisional unquestionably supports an “interval” that is “the number of bits between two bit positions,” the '041 Provisional does not support “the difference between two bit positions.” *Id.*

Petitioner is incorrect. The term “interval” is used approximately 67 times in the '041 Provisional and in a number of different manners. EX1011 ['041 Provisional]. Thus, the term “interval” is supported in the '041 Provisional.

Moreover, even under Petitioner’s construction, the term “interval” is supported because the '041 Provisional discloses that the interval can be the difference between two bit positions. In particular, the term “interval” as recited in the claims refers to a value that cannot be “smaller than the first duration.” *See,*

e.g., EX1001 [’359 Patent], cl. 1. The “interval” can be determined in one of two alternative methods under Petitioner’s construction, both of which will achieve the same result. This is supported by the ’041 Provisional, which states “[a]n interval or distance between two bit positions is number of bit between the two bit positions. The two bit positions could be neglected when calculate the interval or distance. For example, an interval or distance between two bit position indicating value 1 for a bitmap ‘10001000000000’ is 3.” “Alternatively, the number is time duration of the CORESET minus one.” EX1011 [’041 Provisional], 38-39.

Under the first method, for a bitmap of “10001000000000,” the interval between the ‘1’s is equal to the distance between those 1’s. Using this method, the interval is 3 as there are three bits between the bits having a value of 1.

According to the alternative method, the interval is determined by subtracting one from the CORESET duration. Referring again to the example of the bitmap 10001000000000, the duration of the first CORESET in the bitmap is 4, beginning with the first 1 and ending with the 0 in the fourth bit position. Subtracting one from this duration results in an interval of 3, which is the same value as the previous method.

Subtracting one from the CORESET duration is equivalent to subtracting one bit from the number of bits (here 4) in the CORESET duration. “The

difference between two bit positions” (*See, e.g.*, EX1001 [’359 Patent], cl. 9 and cl. 19.) restates this second alternative method in terms of bit positions (OFDM symbols). In the example above (“10001000000000,”) the CORESET begins in the first bit position and ends in the fourth bit position. Subtracting 1 (the first bit position) from 4 (the fourth bit position) results in a value of 3. Accordingly, the alternative method above is equivalent to taking the difference between two bit positions. The interval determined according to each of the two alternatives will always result in the same value.

The chart below shows support for each challenged claim in the ’041

Provisional:

Claim	Support in ’041 Provisional
[1A] A method of a network node, the method comprising:	<u>Page 21</u> : PDCCH-Config The PDCCH-Config IE is used to configure UE specific PDCCH parameters such as control resource sets (CORESET), search spaces and additional parameters for acquiring the PDCCH. ...

	<u>Page 28:</u> Alternatively, the UE receives a signal indicating configuration of a CORESET. The configuration of the CORESET comprises at least time duration of the CORESET and a bit map. The bit map comprises 14 bits. A set of bit position(s) in the bit map have value one. The set of bit position(s) indicates starting OFDM symbol(s) in a slot for monitoring the CORESET.
[1B] transmitting a signal indicating at least a first duration and a bit map, wherein the first duration is time duration of a control resource set (CORESET), and	<u>Page 28:</u> Alternatively, the UE receives a signal indicating configuration of a CORESET. The configuration of the CORESET comprises at least time duration of the CORESET and a bit map. The bit map comprises 14 bits. A set of bit position(s) in the bit map have value one. The set of bit position(s) indicates starting OFDM symbol(s) in a slot for monitoring the CORESET. ... For example, an interval or distance between two bit position indicating value 1 for a bitmap

	“100010000000000” is 3. More specifically, the number is time duration of the CORESET.
[1C] wherein the bit map includes a set of bit positions, where each bit position has a value of one or zero and each bit position with the value of one indicates a starting Orthogonal Frequency Division Multiplexing (OFDM) symbol of a monitoring occasion of the CORESET within a slot; and	<u>Page 28:</u> Alternatively, the UE receives a signal indicating configuration of a CORESET. The configuration of the CORESET comprises at least time duration of the CORESET and a bit map. The bit map comprises 14 bits. A set of bit position(s) in the bit map have value one. The set of bit position(s) indicates starting OFDM symbol(s) in a slot for monitoring the CORESET.
[1D] not allowing to transmit the signal such that an interval between	<u>Page 28:</u> For example, an interval or distance between two bit position indicating value 1 for a bitmap

any two bit positions with the value of one in the set of bit positions in the bit map is smaller than the first duration.	“10001000000000” is 3. More specifically, the number is time duration of the CORESET. ... <u>Page 29:</u> The UE doesn't expect to receive a configuration of a bit map such that interval (or distance) between two bit positions indicating value one in the bit map is smaller than the number (e.g., bit map: 110000000000000). The UE could ignore a configuration of the bit map such that interval (or distance) between two bit positions indicating value one in the bit map is smaller than the number (e.g., bit map: 110000000000000 when the number is 1). The UE could ignore part of the bit map such that interval (or distance) between bit positions indicating value one in the part of bit map is smaller than the number (e.g. bit map: 11000000100000 the UE ignore the first two 1 and apply the last 1 when the number is 1).The UE does not apply a configuration of the bit map such
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that interval (or distance) between two bit positions indicating value one in the bit map is smaller than the number (e.g. bit map: 11000000000000 when the number is 1). A base station does not configure a UE with a bit map such that interval (or distance) between two bit positions indicating value one in the bit map is smaller than the number (e.g., bit map: 11000000000000 when the number is 1).

...

Page 38:

An interval or distance between two bit positions is number of bit between the two bit positions. The two bit positions could be neglected when calculate [sic] the interval or distance. For example, an interval or distance between two bit position indicating value 1 for a bitmap "10001000000000" is 3. More specifically, the number is time duration of the CORESET. Alternatively, the number is time duration of the CORESET minus one.

[2] The method of claim 1, wherein the network node is not allowed to transmit the signal indicating that the first duration is 2 and the bit map is 1100000000000000.	<u>Page 29:</u> A base station does not configure a UE with a bit map such that interval (or distance) between two bit positions indicating value one in the bit map is smaller than the number (e.g., bit map: 1100000000000000 when the number is 1).
[3] The method of claim 1, wherein the interval between two bit positions in the set in the bit map shall be larger than or equal to the first duration.	<u>Page 29:</u> A base station does not configure a UE with a bit map such that interval (or distance) between two bit positions indicating value one in the bit map is smaller than the number (e.g., bit map: 1100000000000000 when the number is 1).
[4] The method of claim 1, wherein the network node is not allowed to transmit the signal such	<u>Page 29:</u> The least significant bit in the bit map represents the last OFDM symbol in a slot. ...

that interval between any bit position in the set in the bit map and the least significant bit position in the bit map is smaller than the first duration minus one.	<u>Pages 38-39:</u> An interval or distance between two bit positions is number of bit between the two bit positions. The two bit positions could be neglected when calculate [sic] the interval or distance. For example, an interval or distance between two bit position indicating value 1 for a bitmap “10001000000000” is 3. More specifically, the number is time duration of the CORESET. Alternatively, the number is time duration of the CORESET minus one. Alternatively, the number is maximum time duration of the CORESET minus one. Alternatively, the number is maximum time duration of the CORESET minus one. For example, if time duration of a CORESET is configured as 2, a bit map of a CORESET has a restriction that interval between each bit position in the set and the least significant bit in the bit map is larger than or equal to 2 minus 1. (e.g., bit map: 000000000000010). The UE doesn’t expect to receive a
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	configuration of a bit map such that interval (or distance) between each bit position indicating 1 in the bit map and the least significant bit in the bit map (or between the last bit indicating 1 in the bitmap and the least significant bit in the bit map) is smaller than the number (e.g., bit map: 000000000000001). ... A base station does not configure a UE with a bit map such that interval (or distance) between each bit position indicating 1 in the bit map and the least significant bit in the bit map (or between the last bit indicating 1 in the bitmap and the least significant bit in the bit map) is smaller than the number (e.g., bit map: 000000000000001)
[6] The method of claim 1, wherein the network node transmits a Physical Downlink Control Channel	<u>Page 4:</u> • For a CORESET which is configured by DE-specific higher-layer signaling, at least following is configured. ► Monitoring periodicity

(PDCCH) candidate on monitoring occasion(s) of the CORESET.	❖ FFS: it is a configuration per CORESET or per one or a set of PDCCH candidates ... <u>Page 17:</u> A UE shall monitor a set of PDCCH candidates in one or more control resource sets on the active DL BWP on each activated serving cell according to corresponding search spaces where monitoring implies decoding each PDCCH candidate according to the monitored DCI formats. ... <u>Page 21:</u> PDCCH-Config The PDCCH-Config IE is used to configure UE specific PDCCH parameters such as control resource sets (CORESET), search spaces and additional parameters for acquiring the PDCCH.
[7] The method of claim 1, wherein the signal	<u>Page 21:</u> PDCCH-Config

indicates the configuration of the CORESET.	The PDCCH-Config IE is used to configure UE specific PDCCH parameters such as control resource sets (CORESET), search spaces and additional parameters for acquiring the PDCCH. ... <u>Page 28:</u> A UE is configured with a control resource set (CORESET). Alternatively, the UE receives a signal indicating configuration of a CORESET. The configuration of the CORESET comprises at least time duration of the CORESET and a bit map. The bit map comprises 14 bits. A set of bit position(s) in the bit map have value one. The set of bit position(s) indicates starting OFDM symbol(s) in a slot for monitoring the CORESET. Interval (or distance) between each bit position (indicating value one) in the set (or bitmap) is larger than or equal to a number.
[8] The method of claim 1, wherein the signal is	<u>Page 21:</u> PDCCH-Config

PDCCH-config information element.	The PDCCH-Config IE is used to configure UE specific PDCCH parameters such as control resource sets (CORESET), search spaces and additional parameters for acquiring the PDCCH.
[9] The method of claim 1, wherein the interval is the difference between two bit positions.	<u>Page 38:</u> An interval or distance between two bit positions is number of bit between the two bit positions. The two bit positions could be neglected when calculate [sic] the interval or distance. For example, an interval or distance between two bit position indicating value 1 for a bitmap “1000100000000000” is 3. More specifically, the number is time duration of the CORESET. Alternatively, the number is time duration of the CORESET minus one.
[11] The method of claim 1, wherein the CORESET is monitored on a number of consecutive OFDM	<u>Page 13:</u> - Case 1: PDCCH monitoring periodicity of 14 or more symbols - Case 1-1: PDCCH monitoring on up to three OFDM symbols at the beginning of a slot

symbol provided by the first duration from the starting OFDM symbol.	- Case 1-2: PDCCH monitoring on any span of up to 3 consecutive OFDM symbols of a slot - For a given UE, all search space configurations are within the same span of 3 consecutive OFDM symbols in the slot ... <u>Page 29:</u> Alternatively, the bit map can indicate at least a monitoring occasion for the CORESET by indicating a starting OFDM symbol with following contiguous OFDM symbol(s) till the time duration of the CORESET.
[12A] A method of a network node, the method comprising:	<i>See [1A], above</i>
[12B] transmitting a signal indicating at least a first duration and a bit map, wherein the first	<i>See [1B], above</i>

duration is time duration of a control resource set (CORESET), and	
[12C] wherein the bit map includes a set of bit positions, where each bit position has a value of one or zero and each bit position with the value of one indicates a starting Orthogonal Frequency Division Multiplexing (OFDM) symbol of a monitoring occasion of the CORESET within a slot; and	<i>See [1C], above.</i>

[12D] not allowing to transmit the signal such that interval between any bit position with the value of one in the set of bit positions in the bit map and the least significant bit position in the bit map is smaller than the first duration minus one	<i>See</i> [1D], above.
[13] The method of claim 12, wherein the network node is not allowed to transmit the signal indicating that the first duration is 2 and the bit map is 0000000000000001.	<u>Page 39</u>: Alternatively, the number is maximum time duration of the CORESET minus one. For example, if time duration of a CORESET is configured as 2, a bit map of a CORESET has a restriction that interval between each bit position in the set and the least significant bit in the bit map is larger than or equal to 2 minus 1. (e.g., bit map: 0000000000000010). The UE doesn't

	expect to receive a configuration of a bit map such that interval (or distance) between each bit position indicating 1 in the bit map and the least significant bit in the bit map (or between the last bit indicating 1 in the bitmap and the least significant bit in the bit map) is smaller than the number (e.g., bit map: 00000000000001). The UE could ignore a configuration of a bit map such that interval (or distance) between each bit position indicating 1 in the bit map and the least significant bit in the bit map (or between the last bit indicating 1 in the bitmap and the least significant bit in the bit map) is smaller than the number (e.g., bit map: 00000000000001). ... A base station does not configure a UE with a bit map such that interval (or distance) between each bit position indicating 1 in the bit map and the least significant bit in the bit map (or between the last bit indicating 1 in the bitmap and the least significant bit
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	in the bit map) is smaller than the number (e.g., bit map: 000000000000001).
[14] The method of claim 12, wherein the interval between a bit position in the set in the bit map and the least significant bit position in the bit map shall be larger than or equal to the first duration minus one.	<i>See Claim 5.</i>
[16] The method of claim 12, wherein the network node transmits a Physical Downlink Control Channel (PDCCH) candidate on	<i>See Claim 6.</i>

monitoring occasion(s) of the CORESET.	
[17] The method of claim 12, wherein the signal indicates the configuration of the CORESET.	<i>See Claim 7.</i>
[18] The method of claim 12, wherein the signal is PDCCH-config information element.	<i>See Claim 8.</i>
[19] The method of claim 12, wherein the interval is the difference between two bit positions.	<i>See Claim 9.</i>
[21] The method of claim 12, wherein the CORESET is monitored	<i>See Claim 11.</i>

on a number of consecutive OFDM symbol provided by the first duration from the starting OFDM symbol.

[22A] A network node, comprising:

Page 58 (Fig. A3):

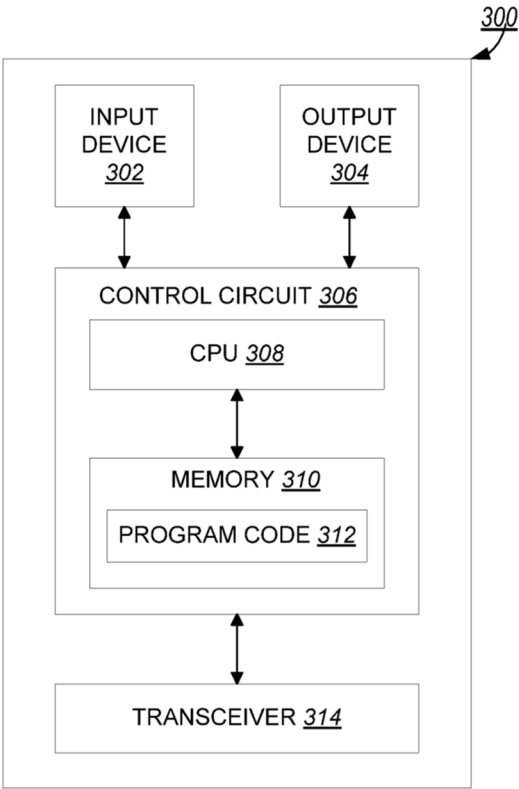
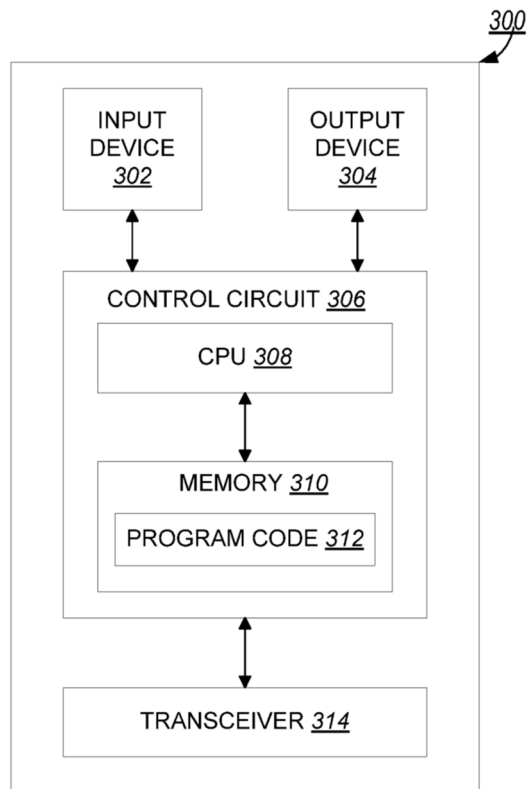


FIG. A3

Note: Fig. A3 shows a functional block diagram of a communication device (i.e., a network node),

	including blocks representing a control circuit, a CPU/processor in the control circuit, memory coupled to the processor and program code stored in the memory. ... <u>Pages 54-55:</u> As shown in Figure A3, the communication device 300 in a wireless communication system can be utilized for realizing the UEs (or ATs) 116 and 122 in Figure A1, and the wireless communications system is preferably the LTE system. The communication device 300 may include an input device 302, an output device 304, a control circuit 306, a central processing unit (CPU) 308, a memory 310, a program code 312, and a transceiver 314. The control circuit 306 executes the program code 312 in the memory 310 through the CPU 308, thereby controlling an operation of the communications device 300. ...
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	<u>Page 52:</u> 103. A device comprising: - a control circuit; - a processor installed in the control circuit; - a memory installed in the control circuit and coupled to the processor; wherein the processor is configured to execute a program code stored in the memory to perform the method steps as defined in anyone of the preceding bullets.
[22B] a control circuit;	<u>Page 58 (Fig. A3):</u> Note: Fig. A3 shows a functional block diagram of a communication device (i.e., a network node), including blocks representing a control circuit, a CPU/processor in the control circuit, memory coupled to the processor and program code stored in the memory.

**FIG. A3**Pages 54-55:

As shown in Figure A3, the communication device 300 in a wireless communication system can be utilized for realizing the UEs (or ATs) 116 and 122 in Figure A1, and the wireless communications system is preferably the LTE system. The communication device 300 may include an input device 302, an output device 304, a control circuit 306, a central processing

	unit (CPU) 308, a memory 310, a program code 312, and a transceiver 314. The control circuit 306 executes the program code 312 in the memory 310 through the CPU 308, thereby controlling an operation of the communications device 300. ... <u>Page 52:</u> 103. A device comprising: - a control circuit; - a processor installed in the control circuit; - a memory installed in the control circuit and coupled to the processor; wherein the processor is configured to execute a program code stored in the memory to perform the method steps as defined in anyone of the preceding bullets.
[22C] a processor installed in the control circuit; and	<u>Page 58</u> (Fig. A3):

	<pre>graph TD 300[300] --- 302[INPUT DEVICE 302] 300 --- 304[OUTPUT DEVICE 304] 302 <--> 306[CONTROL CIRCUIT 306] 304 <--> 306 subgraph 306 [CONTROL CIRCUIT 306] 308[CPU 308] 310[MEMORY 310] 312[PROGRAM CODE 312] 308 <--> 310 310 --- 312 end 306 <--> 314[TRANSCEIVER 314]</pre> FIG. A3 Note: Fig. A3 shows a functional block diagram of a communication device (i.e., a network node), including blocks representing a control circuit, a CPU/processor in the control circuit, memory coupled to the processor and program code stored in the memory. ... <u>Pages 54-55:</u>
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As shown in Figure A3, the communication device 300 in a wireless communication system can be utilized for realizing the UEs (or ATs) 116 and 122 in Figure A1, and the wireless communications system is preferably the LTE system. The communication device 300 may include an input device 302, an output device 304, a control circuit 306, a central processing unit (CPU) 308, a memory 310, a program code 312, and a transceiver 314. The control circuit 306 executes the program code 312 in the memory 310 through the CPU 308, thereby controlling an operation of the communications device 300.

...

Page 52:

103. A device comprising:

- a control circuit;
- a processor installed in the control circuit;
- a memory installed in the control circuit and coupled to the processor;

	wherein the processor is configured to execute a program code stored in the memory to perform the method steps as defined in anyone of the preceding bullets.
[22D] a memory installed in the control circuit and coupled to the processor;	Page 58 (Fig. A3): FIG. A3 Note: Fig. A3 shows a functional block diagram of a communication device (i.e., a network node), including blocks representing a control circuit, a

	CPU/processor in the control circuit, memory coupled to the processor and program code stored in the memory. ... <u>Pages 54-55:</u> As shown in Figure A3, the communication device 300 in a wireless communication system can be utilized for realizing the UEs (or ATs) 116 and 122 in Figure A1, and the wireless communications system is preferably the LTE system. The communication device 300 may include an input device 302, an output device 304, a control circuit 306, a central processing unit (CPU) 308, a memory 310, a program code 312, and a transceiver 314. The control circuit 306 executes the program code 312 in the memory 310 through the CPU 308, thereby controlling an operation of the communications device 300. ... <u>Page 52:</u>
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	103. A device comprising: - a control circuit; - a processor installed in the control circuit; - a memory installed in the control circuit and coupled to the processor; wherein the processor is configured to execute a program code stored in the memory to perform the method steps as defined in anyone of the preceding bullets.
[22E] wherein the processor is configured to execute a program code stored in the memory to:	<u>Page 58</u> (Fig. A3):

	<pre>graph TD subgraph 300 [300] direction TB ID[INPUT DEVICE 302] <--> CC[CONTROL CIRCUIT 306] OD[OUTPUT DEVICE 304] <--> CC subgraph CC [306] direction TB CPU[CPU 308] <--> MEM[MEMORY 310] subgraph MEM [310] PC[PROGRAM CODE 312] end end CC <--> TR[TRANSCEIVER 314] end</pre> FIG. A3 Note: Fig. A3 shows a functional block diagram of a communication device (i.e., a network node), including blocks representing a control circuit, a CPU/processor in the control circuit, memory coupled to the processor and program code stored in the memory. ... <u>Pages 54-55:</u>
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As shown in Figure A3, the communication device 300 in a wireless communication system can be utilized for realizing the UEs (or ATs) 116 and 122 in Figure A1, and the wireless communications system is preferably the LTE system. The communication device 300 may include an input device 302, an output device 304, a control circuit 306, a central processing unit (CPU) 308, a memory 310, a program code 312, and a transceiver 314. The control circuit 306 executes the program code 312 in the memory 310 through the CPU 308, thereby controlling an operation of the communications device 300.

...

Page 52:

103. A device comprising:

- a control circuit;
- a processor installed in the control circuit;
- a memory installed in the control circuit and coupled to the processor;

	wherein the processor is configured to execute a program code stored in the memory to perform the method steps as defined in anyone of the preceding bullets.
[22F] transmit a signal indicating at least a first duration and a bit map,	<i>See Claim 1B, above.</i>
[22G] wherein the first duration is time duration of a control resource set (CORESET), and	<i>See Claim 1B, above.</i>
[22H] wherein the bit map includes a set of bit positions, where each bit position has a value of one or zero and each bit position with the value of one indicates a	<i>See Claim 1C, above.</i>

starting Orthogonal Frequency Division Multiplexing (OFDM) symbol of a monitoring occasion of the CORESET within a slot; and	
[22I] not allowing to transmit the signal such that an interval between any two bit positions with the value of one in the set of bit positions in the bit map is smaller than the first duration.	<i>See Claim 1D, above.</i>
[23] not allowing to transmit the signal such that an interval between any two bit positions	<i>See Claim 11.</i>

with the value of one in the set of bit positions in the bit map is smaller than the first duration.	
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3. Prosecution History

The Examiner allowed the claims because the prior art of record (“CORESET configuration and search space design,” R1-1717062) did not disclose the limitation “not allowing to transmit the signal such that an interval between any two bit positions with the value of one in the set of bit positions in the bit map is smaller than the first duration.” EX1010 [’359 Patent File History], 158.

Petitioner argues that “there is no evidence that the Examiner was aware of the prior art identified in this Petition.” Pet., 9. However, R1-1717062 is largely cumulative of the teachings of Nogami and NTT. R1-1717062 is a Huawei contribution to October 2017 3GPP meetings that summarizes agreements on CORESET configuration from previous meetings and provides additional considerations on CORESET configuration and search space design. EX2008 [R1-1717062], 1. The document discusses many of the same issues as Nogami and NTT—namely, the 3GPP’s ongoing discussions of CORESET configuration for

5G. *Id.* Thus, the arguments presented by Petitioner are cumulative of the art relied on by the Examiner.

While Petitioner argues that “Nogami [] discloses or suggests precisely what the Examiner found lacking in the prior art” (Pet., 9), PO explains below why this statement is incorrect. *Infra*, §IV.A. Indeed, the Petition itself contradicts Petitioner’s statement. Ground 1 is obviousness over Nogami in view of knowledge of a POSITA. Pet., 17, 22. Nogami cannot be said to disclose “precisely what the Examiner found lacking in the prior art” when Petitioner relies on knowledge of a POSITA to supply the missing limitation.

Petitioner’s argument and R1-1717062 underscore the fact that there were many different approaches suggested for CORESET configuration.

C. Alleged Prior Art

1. Nogami

Nogami (U.S. Pat. No. 10,945,251) was filed November 14, 2018 and claims priority back to a provisional application filed November 15, 2017. EX1004 [Nogami], 1-2. Nogami is directed toward monitoring and identifying CORESETs and the Physical Downlink Control Channel (PDCCH). EX1004 [Nogami], 2:32-48.

Like the '359 Patent, Nogami recognizes that, in certain circumstances, “PDCCH monitoring occasions” may “partially overlap.” *Id.*, 30:60-64. Nogami suggests “several ways to handle this overlapping.” *Id.*, 30:64-65. “The first approach is that the UE **102** is not expected to be configured with the CORESET-monitor-DCI-symbolPattern which causes overlapping between adjacent PDCCH monitoring occasions for a same search space set.” *Id.*, 30:65-31:2. That is, the UE is simply not configured to search for overlapping.

In the next two approaches, overlapping is permitted. “The second approach is that the PDCCH monitoring occasion overlapping is allowed and the UE **102** is not required to monitor PDCCH candidates being fully/partially mapped to the RE or REG that was already used by another detected PDCCH of another PDCCH monitoring occasion of the CORESET.” *Id.*, 31:2-7. “The third approach is that the PDCCH monitoring occasion overlapping is allowed and the UE **102** is not required to monitor PDCCH candidates if the higher-layer parameter CORESET-precoder-granularity equals the number of contiguous RBs in the frequency domain within CORESET and if another PDCCH was detected in the other PDCCH monitoring occasion (i.e. overlapping PDCCH monitoring occasion) of the CORESET.” *Id.*, 7-15. Finally, “[a]dditionally and/or alternatively, if the higher-layer parameter CORESET-precoder-granularity equals the number of

contiguous RBs in the frequency domain within CORESET and if a PDCCH was detected in a PDCCH monitoring occasion in the CORESET, the UE **102** may assume DMRS associated with the detected PDCCH is present in all REGs within the set of contiguous RBs of the CORESET where and when the detected PDCCH is mapped, and the UE **102** may not be expected to monitor PDCCH(s) in another PDCCH monitoring occasion overlapping the DMRS.” *Id.*, 31:15-25.

2. Chatterjee

Chatterjee (U.S. Pat. No. 11,025,456) was filed on January 11, 2019 and claims priority to three provisional applications filed in January 2018. EX1005 [Chatterjee], 1-2. Chatterjee is directed to “Time Domain Resource Allocation For Mobile Communication.” *Id.*, Title. *See also id.*, 1:16-19. Unlike the ’359 Patent and Nogami, Chatterjee is not primarily focused on monitoring for CORESET information; instead, Chatterjee focuses on data channels such as the PDSCH and PUSCH. *See, e.g., id.*, 2:9-13 (“Embodiments herein provide mechanisms for TDRA for DL and UL shared channels, for example, PDSCH and PUSCH, that may be scheduled dynamically using DCI carried by PDCCH or based on semi-static configurations, for example, DL SPS or UL transmissions without UL grant.”). *See also id.*, cls. 1-26.

For certain embodiments of Chatterjee’s PDSCH/PUSCH mapping, Chatterjee prohibits allocated symbols from crossing slot boundaries. *Id.*, 17: 47-67. Chatterjee does not disclose these in the context of CORESET mapping (which uses different signals), nor does Chatterjee specify a mechanism for prohibiting symbols from crossing the slot boundaries. *Id.*

3. 3GPP Specification

The 3GPP-Specification is a 3GPP Technical Specification for Group Radio Access Network in 5G technologies. EX1006, 1. Specifically, it is 3GPP TS 38.213 V15.2.0. *Id.* The 3GPP-Specification “specifies and establishes the characteristics of the physical layer procedures for control operations in 5G-NR.” *Id.*, 6.

According to Petitioner, 3GPP-Specification was published June 29, 2018. Pet., 16. As discussed below, 3GPP-Specification does not qualify as prior art because the effective filing date of the challenged claims is January 18, 2018. *Infra*, §IV.1; *see also supra*, §II.B.2. The technologies being discussed in the ’359 Patent, Nogami and NTT relate to 3GPP TSG RAN WG1 meetings during 2017 and early 2018 where participants were discussing which technologies to ultimately incorporate into future specifications like the 3GPP-Specification. *See* EX1001 [’359 Patent], 2:24-39 (discussing documents from RAN WG1 meetings

89, 90bis and 91); EX1004 [Nogami], 23:47-55 (“at least some of the system and methods described herein may be described in relation to [3GPP releases 8-15]”); EX1019 [NTT], 1 (“3GPP TSG RAN WG1 Meeting 90bis”).

4. NTT

NTT (R1-1718834) is a TDOC from the October 9-13, 2017 meeting of the 3GPP TSG RAN Working Group 1 (Meeting 90bis). EX1019 [NTT], 1. The document was authored by NTT DOCOMO, Inc. and is a “summary of key aspects for search space.” *Id.* In other words, it summarizes the results from the meeting relating to CORESET and PDCCH searching and lists open items that are still being investigated.

Like the ’359 Patent, NTT recognized issues with CORESETs that span slot boundaries. *Id.*, 2 (“For non-slot-based scheduling, it is useful to enable CORESET starting at any OFDM symbol, where the need of some restrictions on particular cases (e.g., whether a CORESET can span a slot boundary) should be FFS.”). Thus, NTT recommended future study of the situation (“FFS” = “For Future Study”). NTT does not suggest not allowing CORESETs to ever cross slot boundaries, nor does NTT suggest any particular solution to the situation. *Id.*

III. CLAIM CONSTRUCTION

Petitioner proposes construing the term “interval” as “the difference between two bit positions or the number of bits between two bit positions.” Pet., 10-12. For purposes of this Patent Owner Preliminary Response, Patent Owner has applied Petitioner’s construction, but takes no position as to whether the construction is correct. For purposes of this Preliminary Response, Patent Owner’s position is that all terms are entitled to their plain and ordinary meaning as understood by a POSITA under the proper construction. *Supra*, §II.A.3. Patent Owner reserves the right to provide express constructions for claim terms in the ’359 Patent should this IPR be instituted.

However, Petitioner is incorrect in arguing that the ’041 Provisional does not support the full scope of Petitioner’s construction. Pet., 11-12. Specifically, Petitioner alleges that the ’041 Provisional does not support an interval or distance that is the “difference of the two bit positions.” Pet., 6, 11-12. As discussed above in §II.B.2, Petitioner’s argument is incorrect. Thus, the ’041 Provisional supports intervals that are the “difference of the two bit positions.”

IV. PETITIONER HAS NOT SHOWN A LIKELIHOOD OF SUCCESS FOR ANY GROUNDS

A. Nogami Does Not Disclose Or Render Obvious “Not Allowing To Transmit The Signal Such That An Interval Between Any Two Bit Positions With The Value of One In The Set of Bit Positions In The Bit Map Is Smaller Than The First Duration.”

Petitioner argues that “Nogami in view of the knowledge of a POSITA discloses or suggests this limitation.” Pet., 22. Thus, Petitioner admits that this limitation is missing from the prior art asserted in Ground 1. According to Petitioner, “Nogami discloses that its signal may have an overlap situation such that an interval between any two bit positions with the value of one in the set of bit positions in the bit map is smaller than the first duration.” Pet., 27. While Nogami discloses that overlap can occur, it does not teach that the claimed overlap is “not allowed,” let alone “not allowing [the network node] to transmit the signal such that an interval between any two bit positions with the value of one in the set of bit positions in the bit map is smaller than the first duration” as required by the claim. *See* Pet., 26-27, Ex-1004 [Nogami], 2:46-48, 2:63-65, 3:13-15, 3:30-32, 30:60-64.

The Petition points out that Nogami identifies several solutions to overlap issues. Pet., 26-27. None of them are the claimed solution. “The first approach is that the UE 102 is not expected to be configured with the CORESET-monitor-DCI-symbolPattern which causes overlapping between adjacent PDCCH

monitoring occasions for a same search space set.” EX1004 [Nogami], 30:65-31:2. But this does not prohibit the transmission of overlapping signals from the network node, let alone do so in the manner claimed. Instead, it configures UE 102 not to expect overlapping. EX1004 [Nogami], 30:65-31:2. The next two solutions expressly “allow” for overlapping (*Id.*, 31:2-15) and in the final solution, “the UE 102 may not be expected to monitor PDCCH(s) in another PDCCH monitoring occasion overlapping the DMRS.” *Id.*, 31:15-25. In other words, the UE 102 only monitors for the first CORESET instruction and ignores any potentially overlapping instructions. Nogami further describes yet another solution that avoids the potential for overlap entirely by having the UE assume a monitoring duration of one: “even if the CORESET-time-duration is set to greater than 1 OFDM symbol, the UE 102 may assume each PDCCH monitoring occasion spans 1 OFDM symbol for the search space set(s) which is configured with CORESET-monitor-DCI-symbolPattern.” *Id.*, 30:34-38.

Petitioner argues that “[t]o the extent Nogami’s guidance about the overlap situation does not explicitly disclose *not allowing to transmit* the signal such that an interval between any two bit positions with the value of one in the set of bit positions in the bit map is smaller than the first duration, it would nevertheless have been obvious in view of the knowledge of a POSITA to modify Nogami’s

process to implement this feature.” Pet., 27. As discussed above, the Petition identifies no explicit disclosure of this limitation. Pet., 27-28; *see also* EX1002 [Haas Decl.], ¶92. Thus, the Petition is supplying a limitation solely from the “knowledge of a POSITA.”

There are several problems with Petitioner’s argument. First, there are any number of possible solutions to address the problem of overlapping CORESET instructions. Indeed, while Nogami indicates that overlap can be an issue, it provides at least four solutions to that potential issue, as well as a more general solution that avoids the possibility of overlap to begin with (in a different way than claimed in the ‘359 patent). EX1004 [Nogami], 30:34-38, 30:65-31:25. Notably, Nogami’s solutions involve changing the behavior of a *UE* to either avoid or remedy the overlap issue, rather than restricting the signaling transmitted from the network node.

Petitioner does not explain why a POSITA would arrive at the claimed solution of “not allowing [the network node] to transmit the signal such that an interval between any two bit positions with the value of one in the set of bit positions in the bit map is smaller than the first duration” that is not disclosed in any prior art of record. Petitioner identifies no rationale for why a POSITA would ignore the multiple solutions already known in the literature in favor of a

previously-undisclosed solution. *Id.*, Pet., 27-28. Petitioner’s arguments otherwise are purely hindsight. *See* Pet., 28 (“In other words, if the base station never transmits (due to not being allowed to transmit) a signal that corresponds to an overlap situation, then the UE (which performs blind decoding of PDCCH candidates based on the received signal) will never have to deal with the above-discussed problem of overlap.”).

The generic rationales provided by Petitioner bear its hindsight approach out. Petitioner argues that “A POSITA would have understood that it would be inappropriate for the base station (gNB) to transmit [overlapping] configurations in the first place, at least because such transmissions (1) would not be accepted by UE and would waste the transmission bandwidth, (2) would waste UE processing time, and (3) depending on UE design, might confuse the UE.” Pet., 27. Both Nogami and the ’359 Patent recognize that overlap is acceptable in some situations and would be accepted by the UE (*supra*, §§II.C.1, IV.A; EX1001 [’359 Patent], 20:13-14 (“Alternatively, the OFDM symbols for different CORESET could overlap.”)). Thus, the evidence contradicts Petitioner’s assertion that overlap “would be inappropriate ... in the first place.” Pet., 27. Further, prohibiting one type of transmission (i.e., overlapping) does not save transmission bandwidth or processing power as the transmission signal bandwidth is still used for other, non-

prohibited transmissions that still must be processed by the UE. That is, the claims require “transmitting a signal indicating a first duration and a bit map.” The duration and bitmap are still transmitted and use the same bandwidth and UE processing regardless of the bitmap configuration. Finally, wireless communications systems like Nogami are designed so that the base station and UE operate together. EX1004 [Nogami], 1:22-42. Thus, the UE will be designed to be compatible with the signals from the base station so that it does not get confused.

Second, Petitioner is relying on a POSITA’s knowledge to supply a limitation that is completely missing from the alleged prior art. A POSITA’s knowledge of the art is not a wholesale substitute to provide limitations that are completely missing from the claims. *See DSS Tech. Mgmt. Inc. v. Apple Inc.*, 885 F.3d 1367, 1377 (Fed. Cir. 2018) (The Board may not “rel[y] on ‘ordinary creativity’ ‘as a wholesale substitute for reasoned analysis and evidentiary support’ ‘when dealing with a limitation missing from the prior art references specified’”) (*quoting Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016)); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 851 F.3d 1270, 1274-1275 (Fed. Cir. 2017) (expert may not “fill in missing limitations” by alleging that a person of ordinary skill in the art would envision them). Petitioner presents no

evidence that a POSITA would have been aware of this limitation or otherwise understood to implement it in Nogami.

Further, using a POSITA's knowledge of the art to fill missing limitations is only appropriate when "the limitation in question was unusually simple and the technology particularly straightforward." *DSS Tech* at 1374 (quoting *Arendi* at 1362). As discussed above (*Supra*, II.A), 3GPP cellular standards are not unusually simple or particularly straightforward. Leading experts from around the world meet several times a year to revise standards in an ongoing and iterative process. *Id.* This process can take years. EX2002 [Dahlman], 27, Fig. 2.10, 527 ("the world has witnessed four generations of mobile communication, with each new generation emerging roughly 10 years after the emergence of the previous generation."). These revision processes must account for backward compatibility with existing standards. EX2002 [Dahlman], 29 ("[LTE RAN] requirements were also set on ... interaction/compatibility with other 3GPP radio-access technologies..."), 41 ("One important requirement was *backward compatibility*. Essentially this means that an earlier-release LTE device should be able to access a carrier supporting LTE 10 functionality...") (emphasis in original).

The limitation here—"not allowing to transmit the signal such that an interval between any two bit positions with the value of one in the set of bit

positions in the bit map is smaller than the first duration”—is not unusually simple or particularly straightforward. It applies to a specific issue with monitoring for downlink control channels in 5G wireless technologies and solves that problem in a very specific way by prohibiting certain configurations of a bitmap from being transmitted. *Supra*, §II.B.

The missing limitation, moreover, is not a minor detail but instead “plays a major role in the subject matter claimed.” *Arendi*, 832 F.3d at 1362. The missing limitation solves the problem the claims are directed to—namely, handling overlapping OFDM signals when monitoring CORESET configuration. *Supra*, §II.B; EX1001 [’359 Patent], 15:62-63 (“this situation needs further consideration.”). This is not a case where alleged knowledge of a POSITA can be used to substitute for a limitation that is completely missing from the prior art of record. Accordingly, Nogami does not disclose or render obvious claims 1 or 22.

B. Nogami In View of Chatterjee And NTT Does Not Render Obvious “Not Allowing To Transmit The Signal Such That Interval Between Any Bit Position With The Value of One In The Set of Bit Positions In The Bit Map And The Least Significant Bit Position In The Bit Map Is Smaller Than The First Duration Minus One.”

1. Nogami and Chatterjee Do Not Disclose Or Suggest This Limitation

Petitioner argues “Nogami in view of Chatterjee discloses or suggests this limitation” of claims 4 and 12. Pet., 43-49. Petitioner’s analysis does not explain

how Nogami or Chatterjee discloses this limitation. *Id.* Instead, Petitioner argues that “a POSITA would have known that for a 14-symbol slot (and a corresponding 14-bit CORESET bitmap), starting a 3-symbol-duration monitoring occasion at symbol 13 could not accommodate the CORESET duration because there are only two symbols remaining (i.e., symbols 13 and 14, if the first symbol is numbered as symbol 1) before the end of the slot” and that “Chatterjee explicitly discloses this concern.” Pet., 43-44.

There are several problems with Petitioner’s argument. First, nowhere does Petitioner allege that Chatterjee discloses the missing limitation “the network node is not allowed to transmit the signal such that interval between any bit position in the set in the bit map and the least significant bit position in the bit map is smaller than the first duration minus one.” Pet., 43-49. The Petition argues that “Chatterjee explicitly discloses this *concern*” (Pet., 44) (emphasis added), but Chatterjee is simply explaining how to generate a table of valid parameter combinations for PDSCH/PUSCH mapping, based on an assumption that the PDSCH/PUSCH occasions cannot cross slot boundaries. EX1005 [Chatterjee], 17:47-56 (describing two ways to tabulate “all possible starting locations within a slot [] possible for the allocation length of 1, 2, 4 or 7 symbols such that the allocated symbols do not cross the slot boundary”). The portions of Chatterjee Petitioner relies on all

involve “PDSCH/PUSCH mapping,” not CORESET mapping, and say nothing about whether such a constraint would, or should, be applied in that context. Pet., 17:47-56 (“In an embodiment, when PDSCH/PUSCH mapping type is B ...”); 22:29-46 (“In embodiments ... such as aggregated PUSCH transmission of mapping type B, is going to cross the slot boundary, such a transmission may need to be postponed.”); Pet., 45 (“the above disclosures of Chatterjee are in the context of physical downlink shared channel (PDSCH)”). CORESET “is designed to transmit PDCCH/DCI”—that is, the Physical Downlink Control Channel and Downlink Control Information. PDSCH and PUSCH are the Physical Downlink and Physical Uplink Shared Channels to deliver user data. Thus, the disclosures Petitioner points to from Chatterjee are directed toward different channels with different setups.

Second, Petitioner’s argument assumes that “a POSITA would have known that for a 14-symbol slot (and a corresponding 14-bit CORESET bitmap), starting a 3-symbol-duration monitoring occasion at symbol 13 could not accommodate the CORESET duration because there are only two symbols remaining (i.e., symbols 13 and 14, if the first symbol is numbered as symbol 1) before the end of the slot.” Pet., 43-44. This is incorrect. There are many different ways to account for CORESETs that cross two slots and Petitioner identifies no reason a POSITA

would not monitor for a CORESET across two OFDM slots. For example, while the '359 Patent recognizes that monitoring for CORESETS across two OFDM slots can be an issue and “needs further consideration” (EX1001 ['359 Patent], 15:66-16:18), it does not limit the possible solutions to monitoring of a single CORESET. As shown below, the '359 Patent discloses embodiments where the CORESET “span[s] a first slot and a second slot”:

slots. A CORESET could span a first slot and a second slot if the interval or distance between the last bit position indicating 1 in the first slot and the last symbol in the first slot is shorter than the number. The second slot is the next slot of the first slot. For example, when a UE is configured with a time duration 2 and a bit map “10000101000001”, the UE monitors the CORESET for the following symbols in a slot: {1st symbol, 2nd symbol}, {6th symbol, 7th symbol}, {8th symbol, 9th symbol} and {14th symbol, 1st symbol of the next slot}. Alternatively, the CORESET time duration of

That is, “the UE monitors the CORESET for the following symbols in a slot: ... {14th symbol, *1st symbol of the next slot*}.” *Id.* (emphasis added). In this example, the UE is monitoring both the 14th symbol of the first OFDM slot and the 1st symbol of a second OFDM slot for the CORESET information. Thus, a POSITA would not “have known that for a 14-symbol slot (and a corresponding 14-bit CORESET bitmap), starting a 3-symbol-duration monitoring occasion at

symbol 13 could not accommodate the CORESET duration because there are only two symbols remaining” (Pet., 43) because the CORESET duration may extend between two slots. Nothing in Chatterjee suggests the claimed limitation.

Third, similar to the ’359 Patent, the NTT reference (R1-1718834) discloses that cases where CORESETs span slot boundaries need further consideration. NTT discloses “[f]or non-slot-based scheduling, it is useful to enable CORESET starting at any OFDM symbol, where the *need of some restrictions on particular cases (e.g., whether a CORESET can span a slot boundary)* should be FFS [for future study].” EX1019 [NTT], 2, Pet., 46. *See id.* (“[t]he starting OFDM symbol of a CORESET can be any symbol in a slot”). Further, NTT does not suggest limiting time duration based on symbol location or otherwise prohibiting crossing slot boundaries. *Id.* That is, NTT is not saying not to allow CORESETs to span slot boundaries, it is saying that whether and when a CORESET should span a slot boundary should be the subject of further study. This indicates that, at the time of the invention, experts in the field had not decided whether, or how, to resolve the issue of CORESETs spanning slot boundaries, and Petitioner has failed to identify evidence suggesting a POSITA would have implemented the solution ultimately presented by the ’359 patent inventors.

Thus, based on Petitioner’s own evidence, whether a CORESET could span a slot boundary in 5G was not within the knowledge of an *expert* at the time, let alone knowledge of a POSITA. For all the reasons discussed above for Nogami, Petitioner cannot rely on knowledge of a POSITA for a limitation that is completely missing from the alleged prior art of record. *Supra*, §IV.A.

Thus, neither Nogami nor Chatterjee disclose or suggest this limitation.

2. NTT

Petitioner argues that “A POSITA would have recognized in view of NTT that while the above disclosures of Chatterjee are in the context of physical downlink shared channel (PDSCH), the underlying concern regarding not transmitting symbols that would cross a slot boundary are applicable to CORESET monitoring for PDCCH candidates, too.” Pet., 45. Again, identifying a *concern*—that is, the problem to be solved—is not the same as disclosing or suggesting the claimed solution. Like Nogami and Chatterjee, NTT fails to disclose or suggest the claimed solution.

Petitioner argues that “a POSITA would have found it obvious in view of Chatterjee and NTT to configure Nogami’s base station (“network node”) so that it is not allowed to transmit the signal such that an interval between any bit position in the set in the bit map having a value of ‘1’ and the least significant bit position

in the bit map is smaller than the first duration minus one.” Pet., 47. Again, the claimed limitation is completely missing from any of the three references Petitioner relies on. The asserted references do not discuss least significant bits, generating an interval between bits with a value of one and the least significant bit, or comparing the interval to the duration minus one.

Petitioner’s argument at heart boils down to equating not allowing PDSCH and PUSCH search areas to cross slot boundaries (an assumption made by Chatterjee) with the claim language “the network node is not allowed to transmit the [CORESET] signal such that interval between any bit position in the set in the bit map and the least significant bit position in the bit map is smaller than the first duration minus one.” Pet., 47-48. As discussed above for Chatterjee, this is not the same as the claim’s restriction on transmission of CORESET search space information. *Supra*, §IV.B.1.

Petitioner provides a use case where the claimed method would result in “postponing a transmission that would cross a slot boundary” and compares the result to Chatterjee’s teachings for PDSCH and PUSCH channels. Pet., 47-48. But Petitioner is arguing that a stopped clock is right twice a day. The claims are directed to a particular method of determining whether to allow a signal to be transmitted. EX1001 [’359 Patent], cls. 4, 12. Chatterjee teaches a different method

of not allowing any transmissions that cross slot boundaries for PDSCH and PUSCH. Chatterjee—whether alone or combined with Nogami and NTT—does not teach the method of claims 4 and 12.

Finally, Petitioner argues that NTT has an “explicit disclosure about a restriction in the situation of CORESET spanning a slot boundary.” Pet, 48. This is incorrect. As explained above, NTT does not restrict CORESETs from spanning slot boundaries. *Supra*, §II.C.4. Instead, NTT discloses that further study is needed to determine whether, and in which cases, CORESETs can span slot boundaries. EX1019 [NTT], 2 (“[f]or non-slot-based scheduling, it is useful to enable CORESET starting at any OFDM symbol, where the need of some restrictions on particular cases (e.g., whether a CORESET can span a slot boundary) should be FFS [for future study].” Again, NTT at best identifies a potential “concern” (Pet., 43) but does not address how to resolve that concern, much less identify the solution claimed in claims 4 and 12 of the ’359 Patent.

Accordingly, Nogami in view of Chatterjee and NTT does not render obvious claims 4 or 12.

C. The 3GPP Specification Is Not Prior Art And Does Not Remedy The Deficiencies of Nogami

Ground 3 argues that “[t]o the extent that the Board finds that Nogami in view of the knowledge of a POSITA does not disclose or suggest the feature “an

interval between any two bit positions with the value of one ... is smaller than the first duration” as recited in limitation 1(e), it would nevertheless have been obvious in view of 3GPP Specification to implement this feature.” Pet., 54.

The 3GPP-Specification was first published in June 2018. EX1006 [3GPP-Specification], 2 (date of 2018-06) in upper right corner of page), Pet., 16 (“3GPP-Specification was uploaded to 3GPP’s file server on June 29, 2018”); EX1007 [Bishop Decl.], ¶¶54-60 (same). As discussed above (*supra*, §II.B.2), the challenged claims are each supported by the ’041 Provisional and therefore have an effective filing date of January 18, 2018. A printed publication is only prior art if it predates the effective filing date of the claimed invention. 35 U.S.C. § 102(a)(1), (d)(2). Because the effective filing date of the ’359 Patent (January 18, 2018) predates the publication date of 3GPP-Specification (June 29, 2018), 3GPP-Specification is not prior art and Ground 3 of the Petition fails.

Even if the 3GPP-Specification qualified as prior art, it would not remedy the deficiencies of the primary references; for the same reasons described above in Section §IV.A (claims 1-3, 6-9, 11, and 22-23) and Section §IV.B (claims 4, 12-14, 16-19, and 21), petitioner has failed to explain how the cited disclosure teaches prohibiting the network node from transmitting signals as required by the claims.

Accordingly, Nogami in view of 3GPP does not render obvious the challenged claims.

D. The Dependent Claims Are Not Disclosed Or Suggested By The Asserted References

As discussed above, Petition Grounds 1-3 fail to disclose or suggest challenged independent claims 1, 12 and 22. *Supra*, §§IV.A-C. Accordingly, Grounds 1-3 also fail to disclose or suggest the challenged claims that depend therefrom.

V. THE BOARD SHOULD EXERCISE DISCRETION UNDER SECTION 314 AND DENY INSTITUTION

The Board should deny institution under 35 U.S.C. § 314 because all six *Fintiv* factors favor discretionary denial. There is no requirement that the Board institute IPR. *See, e.g., Harmonic Inc. v. Avid Tech.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016). “[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.” *Id.* Rather, the decision to institute is delegated to the Board and is purely discretionary.

35 U.S.C. § 314(a) gives the Board discretion to deny institution because of efficiency considerations stemming from parallel proceedings on the same patent. *See NHK Spring Co. v. Intri-Plex, Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential, designated May 7, 2019) (“*NHK Spring*”). The PTAB has set

forth six factors for determining whether discretionary denial due to efficiency considerations relating to parallel proceedings is appropriate (the “*Fintiv* factors”):

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner(s) and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board’s exercise of discretion, including the merits.

Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv I*”), 6; *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 (PTAB May 13, 2020) (order denying institution) (informative, designated July 13, 2020) (“*Fintiv II*”), 7-8.

The Director has issued additional guidance on the application of *Fintiv*. See Katherine K. Vidal, *Interim Procedure for Discretionary Denials in AIA Post-*

Grant Proceedings with Parallel District Court Litigation (June 21, 2022)¹ (“*Fintiv* Memo”). See also *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102, 49–50 (PTAB Oct. 4, 2022) (precedential) (“*OpenSky*”) and *CommScope Techs. LLC v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23 (PTAB Feb. 27, 2023) (precedential) (“*CommScope*”). Under the interim *Fintiv* Memo, if the Board “determines that the information presented at the institution stage presents a compelling unpatentability challenge, that determination alone demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*.” *Interim Fintiv* Memo, 4–5. However, *OpenSky* and *CommScope* make clear that the compelling merits standard is a significantly higher standard than the institution standard, requiring that it be “highly likely that the petitioner would prevail with respect to at least one challenged claim.” *OpenSky*, 49; *CommScope*, 3–4. Further, “compelling merits” should be considered only after a determination that the first five *Fintiv* factors favor discretionary denial. *CommScope*, 4–5.

¹ Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

Here, all six *Fintiv* factors weigh in favor of discretionary denial and there are no “compelling merits” or a *Sotera*-type stipulation. Accordingly, the Board should exercise its discretion and deny institution.

A. Factor 1

The first *Fintiv* factor—regarding whether a stay exists or is likely to be granted if a proceeding is instituted—weighs in favor of denial. No motion to stay pending the institution decision has been filed in the litigations. The district court has an established practice not to stay litigations pending resolution of inter partes review prior to institution. *Viavi Sols. Inc. v. Zhejiang Crystal-Optech Co.*, No. 2:21-CV-00378-JRG, 2022 WL 16856099, at *5 (E.D. Tex. Nov. 10, 2022) (“It is the Court’s established practice to consider that motions to stay pending IPR proceedings which have not been instituted are inherently premature and should be denied as such.”).

Even post-institution, the district court judge is unlikely to stay the case absent agreement from the parties. EX2005 [LegalMetric], 3 (showing 15% win rate on contested motions to stay pending IPRs in the ED Tex). Thus, this factor weighs in favor of denial.

B. Factor 2

The second *Fintiv* factor—the proximity of the court’s trial date to the Board’s projected statutory deadline for a Final Written Decision—weighs in favor of denial. The Notice of Filing Date Accorded To Petition was mailed on June 18, 2024. Paper 7, 1. A Final Written Decision will therefore be due by December 18, 2025. *See* 35 U.S.C. §314(b); 35 U.S.C. § 316(a)(11). Jury selection in the district court litigation is scheduled to begin on July 21, 2025. EX1016, 1. Thus, a final written decision will issue roughly five months after the trial.

Further, under the Interim *Fintiv* Memo, the PTAB will consider the median time from filing to disposition of the civil trial for the district in which the parallel litigation resides. *Id.*, 4-5. The current median time to trial in the Eastern District of Texas is 21.6 months. EX2006 [Judicial Caseload Profile, June 2024], 35. The district court litigations were filed on October 19, 2023. Paper 8 [Patent Owner’s Mandatory Notices], 2. Under these statistics, trial would be expected July or August 2025. Thus, using either the actual scheduled trial date in this matter or the median time-to-trial statistics for the Eastern District of Texas, trial is expected to conclude at least four or five months before a final written decision is due in this matter.

Under *Fintiv* factor 2, this weighs heavily in favor of discretionary denial. *See Fintiv I*, 9 (“If the court’s trial date is earlier than the projected statutory deadline, the Board generally has weighed this factor in favor of exercising authority to deny institution under *NHK*.”). *See Ericsson Inc. et al v. Collison Communications, Inc.*, IPR2022-01233, Paper 12 (PTAB Jan. 19, 2023) at 12-13 (holding Factor 2 “weighs in favor of denying institution, given that we would not expect to issue a final written until at least four months” after trial). Further, granting institution here would frustrate one of the primary objectives of the AIA, which is “to provide an effective and efficient alternative” to parallel litigation. *NHK Spring*, 19-20 (quoting *General Plastic Indus. Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19, 15-19 (PTAB Sept. 6, 2017) (precedential, designated Oct. 18, 2017)). If IPR were instituted, any potential FWD would issue well after trial concludes. Thus, instituting IPR here cannot be viewed as an “alternative” to litigation. Rather, it would simply be more litigation.

Petitioners cite *Hulu, LLC v. SITO Mobile R&D IP, LLC*, IPR2021-00298, Paper 11 at 11-18 (PTAB May 19, 2021) and *NetNut Ltd. v. Bright Data Ltd.*, IPR2021-01492, Paper 12 at 9-16 (PTAB. Mar. 21, 2022) to argue that “[t]he Board has granted institution in cases where the final written decision issued a few months after the scheduled trial date when other factors favor institution.” Pet., 62-

63. In both cases, several factors weighed in favor of institution. Here, no factors weigh in favor of institution.

Petitioners cite *CrowdStrike, Inc. v. Open Text Inc.*, IPR2023-00556, Paper 9 at 8 (PTAB Sept. 12, 2023) to argue that the Board treats factor 2 as neutral where Petitioners will have multiple trials (Pet., 63), but in *Crowdstrike*, the trials started “a few weeks earlier than the projected statutory deadline.” *Id.* Here, the projected statutory deadline will be roughly four or five months after the scheduled trials. Thus, *Crowdstrike* does not support Petitioners’ position. Factor 2 therefore weighs in favor of denying institution.

C. Factor 3

The third *Fintiv* factor—which relates to “the amount and type of work already completed in the parallel litigation by the court and the parties at the time of the institution decision” (*Fintiv I* at 9)—also favors denial. Significant amounts of work have been completed in the district court. The parties have completed their P.R. 3-1 and 3-2 disclosures (Infringement Contentions) and their P.R. 3-3 and 3-4 disclosures (Invalidity Contentions). EX1016 [Docket Control Order], 5-6. The institution decision is expected no later than December 18, 2024. *See* 35 U.S.C. § 314(b). By that date, the parties will have exchanged proposed claim constructions, submitted their opening claim construction briefs, completed claim construction

discovery, and submitted technical tutorials. EX1016 [Docket Control Order], 4-5. The *Markman* hearings in the district court litigations are scheduled for January 22, 2025 and February 5, 2025, respectively.² EX1016 [Docket Control Order], 3. The ordinary practice of this district court is to provide preliminary constructions at or shortly before the Markman hearing. Thus, significant substantive work will have already been completed in the district court litigation by the expected time of the institution decision. *See Fintiv II*, 14 (“based on the level of investment and effort already expended on claim construction and invalidity contentions in the District Court, this factor weighs somewhat in favor of discretionary denial in this case.”).

Petitioners argue that their “diligence in filing and the district court’s minimal investment tips this factor in favor of institution.” Pet., 66. But the Petition measures investment at the time the IPRs were filed, not (as required by *Fintiv*) at the time of the institution decision. As discussed above, by the time of

² The district court split the deadlines for the district court cases into two tracks—the “ATL cases” (including cases 2:23-cv-486, 2:23-cv- 487, and 2:23-cv-488) and the “ISL cases” (including cases 2:23-cv-489, 2:23- cv-490, and 2:23-cv-491). EX1016 [Docket Control Order], 2 n.2. The ATL schedule is roughly two weeks ahead of the ISL schedule.

the institution decision, claim construction will be nearly complete and significant discovery will have taken place.

Further, the Petition was filed on June 3, 2024. Paper 7 at 1. Infringement contentions were filed January 4, 2024. EX1016 [Docket Control Order], 6. Thus, Petitioners waited approximately five months from receiving infringement contentions to file the Petition. Indeed, Petitioners filed their own invalidity contentions on April 12, 2024 and then waited another six weeks before filing this Petition. EX1016 [Docket Control Order], 5. These timelines show more delay than any case Petitioner cites. Accordingly, factor 3 weighs in favor of non-institution.

D. Factor 4

The fourth *Fintiv* factor—which relates to overlap between issues raised in the petition and in the parallel proceeding—also weighs in favor of denying institution. “[I]f the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial.” *Fintiv* at 12. The claims at issue in the parallel litigation (claims 1-4, 6-9, 11-14, 16-19 and 21-23) are the same claims challenged in the Petition. EX2007 [Invalidity Contentions], 2. The alleged prior art references asserted in the Petition are identified and charted in Petitioner’s invalidity

contentions. EX2007 [Invalidity Contentions], 9 (identifying U.S. Patent No. 10,945,251 (Nogami), U.S. Patent No. 11,025,456 (Chatterjee), 3GPP TS38.213 V15.2.0 (“3GPP”) and R1-1718834 (“NTT”) as alleged prior art).

The Petition stipulates that “if trial is instituted, Petitioners will not pursue this IPR’s Grounds in the district court litigation.” Pet., 66-67. The PTAB has classified such stipulations as “*Sand Revolution*”-style stipulations after the stipulation filed in *Sand Revolution II, LLC v. Continental Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 (PTAB June 16, 2020), where Petitioner filed a stipulation that it “will not pursue the same grounds in district court litigation.” *Id.* at 11-12. The PTAB has routinely found similar stipulations weigh only “marginally in favor of not exercising discretion to deny institution.” *Id.*, 12; *LG Elecs., Inc. v. Ancora Techs., Inc.*, IPR2021-00581, Paper 16, 9-10 (PTAB June 10, 2021) (same); *Google LLC v. EcoFactor Inc.*, IPR2021-00454, Paper 9 (PTAB July 22, 2021) (same); *Samsung Electronics Co. Ltd. v. California Institute of Tech.*, IPR2023-00130, Paper 10, 19-20 (PTAB May 4, 2023) (same); *Roku, Inc. v. IOENGINE, LLC*, IPR2022-01554, Paper 11, 13-14 (PTAB May 5, 2023) (same).

In short, the Board routinely assigns almost no weight to *Sands Revolution* style stipulations such as the one Petitioner filed here. This is because *Sands*

Revolution-style stipulations do little to eliminate overlap with the district court litigations. Petitioners' stipulation does nothing to prevent the alleged prior art references asserted in the Petition from being re-used in substantially the same form in the litigation by combining them with different secondary references. Indeed, Petitioner's invalidity contentions reserve the right to do so. *See, e.g.*, EX2007 [Invalidity Contentions], 14 ("Any prior art reference cited herein may be combined with any other reference to demonstrate the invalidity of any of the Asserted Claims."). Thus, the stipulation here is almost meaningless.

Further, the Board has often denied institution in situations like the present where the other factors clearly favored non-institution, even where Petitioners offered stronger stipulations than the one offered here. For example, in *LG Elecs., Inc. v. Ancora Techs., Inc.*, No. IPR2021-00581, Paper 16, 9-10 (PTAB June 10, 2021), the Board denied institution despite Petitioner's stipulation "it will not subsequently assert invalidity in the district court on the same grounds asserted in the IPR or on the basis of the Hellman reference, either alone or in combination with any other reference." *Id.* Unlike Petitioner's stipulation here, the Petitioner in *Ancora* agreed to a blanket stipulation not to assert the primary referenced Hellman under any circumstance. The Board there agreed with Patent Owner that, even with Petitioner's stipulation, "there is significant overlap between the issues raised in

the Petition and in the parallel district court proceeding.” *Id.* Similarly, in *Samsung Electronics Co., LTD. v. California Institute of Technology*, IPR2023-00130, Paper 10 (PTAB May 4, 2023), the Board denied institution notwithstanding a stipulation it characterized as “broader to some degree than the stipulation discussed in *Sand Revolution*” because “the trial in the Underlying Litigation would commence several months before the expected date of our final written decision” and there had been significant investment in the litigation. *Id.*, 16-20.

The facts here are similar to *Ankora* and *Samsung*. Accordingly, any marginal weight Petitioner’s stipulation is entitled to does not outweigh the other factors.

E. Factor 5

The fifth *Fintiv* factor—whether the petitioners and the defendant in the parallel proceedings are the same parties—weighs in favor of discretionary denial. The parties here are the same as the parties in the litigations. *Fintiv II*, 15 (“Because the petitioner and the defendant in the parallel proceeding are the same party, this factor weighs in favor of discretionary denial.”).

F. Factor 6

The sixth *Fintiv* factor—relating to other circumstances that impact the Board’s exercise of discretion, including the merits—weighs in favor of

discretionary denial. As demonstrated in Section IV above, the merits of Petitioner's arguments are weak and Petitioner has failed to show a reasonable likelihood of success for any ground, much less a high likelihood of prevailing as required to show "compelling merits." *See Fintiv I*, 15 ("if the merits of the grounds raised in the petition are a closer call, then that fact has favored denying institution when other factors favoring denial are present"); *Commscope Technologies LLC, v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23, 5 (precedential) ("Merely pointing to [] analysis under the lower institution standard is insufficient to demonstrate that the Petition presents a compelling unpatentability challenge."). Each independent claim has at least one limitation that is completely missing from the alleged prior art, forcing Petitioner to rely on hindsight knowledge of a POSITA to supply the missing limitations. *Supra*, §IV. Merits are not compelling when no combination of asserted references discloses every limitation of the challenged claims.

Petitioner's allegations that the Petition shows "compelling merits" (Pet., 68) are the type of unsupported attorney argument rejected by *Commscope*. Petitioner's allegations essentially "point[] to its analysis under the lower § 314 standard." *Commscope*, IPR2022-01242, Paper 23. *See* Pet., 68 ("the Examiner found most of the features in the prior art, but was likely not aware of the prior art identified in

this Petition, which discloses or suggests **precisely** what the Examiner found lacking in the prior art.”). Petitioner does not elaborate on what the Examiner found lacking in the prior art, or how the references asserted here allegedly disclose the limitations the Examiner found were lacking. *See supra*, §IV. Further, every IPR Petition necessarily alleges, as Petitioners do here, that the asserted prior art teaches limitations that were missing from the prior art examined during prosecution. Such generic allegations do not rise to the level of compelling merits. *See, e.g., OpenSky* at 49 (“a compelling-merits challenge is a higher standard than the reasonable likelihood required for the institution of an IPR under 35 U.S.C. § 314(a).”). Thus, this factor favors discretionary denial.

Accordingly, all six *Fintiv* factors weigh in favor of discretionary denial.

The Board should use its discretion to deny institution of this IPR

VI. CONCLUSION

Based on the foregoing, the Board should deny the Petition.

Dated: September 18, 2024

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CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner Preliminary Response consists of 13,709 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The Response complies with the type-volume limitation of 14,000 words as set forth in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6, the undersigned certifies that on September 18, 2024, a copy of the foregoing documents **PATENT OWNER PRELIMINARY RESPONSE AND EXHIBITS** were served by electronic mail, as consented to by Petitioner, upon the following:

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