

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HUIZHOU TCL MOBILE COMMUNICATION CO. LTD., TCT MOBILE
(US) INC. and TCL MOBILE COMMUNICATION (HK) CO., LTD.,
Petitioner,

v.

WI-LAN INC,
Patent Owner.

IPR2020-00304
Patent 9,854,577 B2

Before GARTH D. BAER, KAMRAN JIVANI, and SCOTT E. BAIN,
Administrative Patent Judges.

BAIN, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Huizhou TCL Mobile Communication Co. Ltd., TCT Mobile (US) Inc., and TCL Mobile Communication (HK) Co., Ltd. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–22 (all claims) of U.S. Patent No. 9,854,577 B2 (“the ’577 patent,” Ex. 1001). Paper 1 (“Pet.”). Wi-LAN Inc. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Pursuant to our authorization, Petitioner filed a Reply, and Patent Owner filed a Sur-reply. Paper 7 (“Reply”); Paper 8 (“Sur-reply”).

Institution of an *inter partes* review is authorized when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). We have considered the Petition, the Preliminary Response, the Reply, the Sur-reply, and accompanying exhibits submitted by the parties. For the reasons explained below, we do not institute an *inter partes* review.

B. Related Matters

The parties identify *Wi-LAN Inc., et al. v. Huizhou TCL Mobile Communication Co. Ltd., et al.*, 8:19-cv-00870 (C.D. Cal.) as a related matter. Pet. 2; Paper 4, 2–3.

C. Real Parties in Interest

Petitioner identifies Huizhou TCL Mobile Communication Co. Ltd., TCT Mobile (US) Inc., TCL Mobile Communication (HK) Co., Ltd., and TCL Communication Technology Holdings Ltd. as real parties in interest. Pet. 1–2.

Patent Owner states, “Wi-LAN Labs, Inc. (Delaware) is a subsidiary of WiLAN USA, Inc. (Florida), which is a subsidiary of Wi-LAN Technologies Inc. (Delaware), which is a subsidiary of Wi-LAN Inc. (CBCA), which is a subsidiary of Quarterhill Inc. (CBCA).” Paper 4, 2.

D. The '577 Patent and Illustrative Claim

The '577 patent discloses aggregating multiple channels to increase the effective bandwidth of a wireless device. Ex. 1001, 3:25–53, 5:43–61, Figs. 1, 3B. As disclosed in the '577 patent, downlink data is divided, and then transmitted on a first and second channel simultaneously. *Id.* at 5:55–61. Identification of the channels to be aggregated for downlink transmission is transmitted to the terminal device via control channels. *Id.* at 23:39–49.

Figure 1 of the '577 patent, reproduced below, illustrates an embodiment.

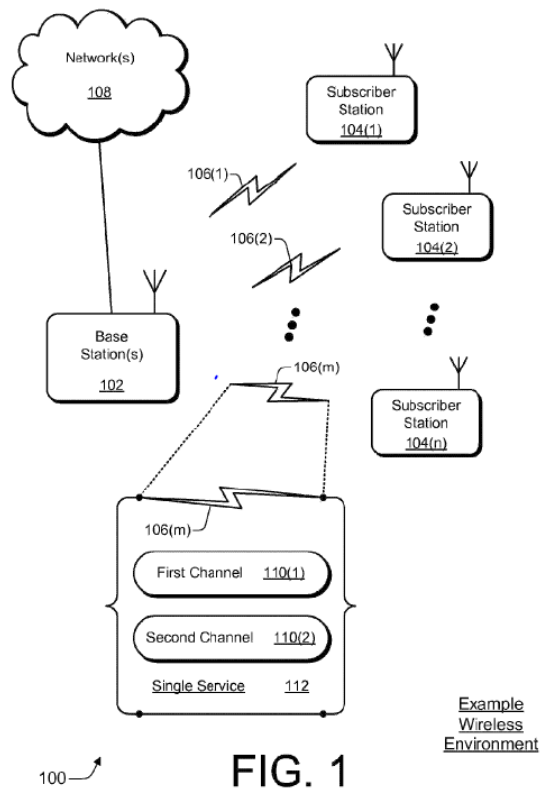


Figure 1 is a block diagram of a wireless environment including first channel 110(1), second channel 110(2), base station(s) 102, subscriber station(s) 104(1)–104(n), and wireless link(s) 106(1)–106(m). Ex. 1001, 2:48–49, 5:46–51. As disclosed in the '577 patent, the embodiment of Figure 1 illustrates a “single service 112 is being communicated using multiple aggregated channels 110.” *Id.* at 5:45–47. Specifically, “a first channel 110(1) and a second channel 110(2) are channel-aggregated for communications via wireless link 106(m) for single service 112.” *Id.* at 5:48–50.

Claim 1 is illustrative, and is reproduced below.

1. A wireless device comprising:
 - a receive unit; and
 - a processor; and
 - the receive unit and the processor are configured to receive control data via control channels over at least a first communication channel or a second communication channel, the control data including a first assignment of downlink resources for the first communication channel and a second assignment of downlink resources for the second communication channel;
 - wherein the first assignment of downlink resources indicates assigned orthogonal frequency division multiple access (OFDM) subcarriers of the first communication channel and the second assignment of downlink resources indicates assigned OFDM subcarriers of the second communication channel; and
 - the receive unit and the processor are further configured to receive downlink data on the assigned OFDM subcarriers of the first communication channel and the assigned OFDM subcarriers of the second communication channel;
 - wherein at least a portion of the downlink data is received at least in part simultaneously on the first communication channel and the second communication channel; and
 - the processor is configured to combine at least a portion of the received downlink data from the first communication channel

and the second communication channel to produce data for a single service.

Id. at 24:21–51.

E. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–22 of the ’577 patent on the following grounds:

Claims Challenged	35 U.S.C. § ¹	Reference(s)/Basis
1, 3–6, 8–12, 14–17, 19–22	103(a)	Gorokhov ²
2, 13	103(a)	Gorokhov, Jung ³
7, 18	103(a)	Gorokhov, Zhao ⁴
10, 21	103(a)	Gorokhov, Walton ⁵
1, 3–5, 11, 12, 14–16, 22	103(a)	Ryu, ⁶ Yamaura ⁷
2, 13	103(a)	Ryu, Yamaura, Jung
7, 18	103(a)	Ryu, Yamaura, Zhao
10, 21	103(a)	Ryu, Yamaura, Walton

Petitioner relies on the testimony of its expert, Dr. Titus Lo, in support of its arguments. Ex. 1003 (“Lo Declaration”).

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective after the filing of the application for the ’577 patent. Therefore, we apply the pre-AIA version of this section.

² Gorokhov et al., US 8,582,592 B2, published Mar. 6, 2008 (Ex. 1004).

³ Jung et al., WO 2006/001671 A1, published Jan. 5, 2006 (Ex. 1012).

⁴ Zhao et al., US 2005/0152409 A1, published Jul. 14, 2005 (Ex. 1013).

⁵ Walton et al., US 6,493,331 B1, published Dec. 10, 2002 (Ex. 1014).

⁶ Ryu, KR 2005/0053377, published Jun. 8, 2005 (English translation) (Ex. 1008).

⁷ Yamaura et al., US 2003/0224731 A1, published Dec. 4, 2003 (Ex. 1011).

II. ANALYSIS

A. Claim Construction

Because the Petition was filed after November 13, 2018, we construe the challenged claims using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2019). This rule adopts the same claim construction standard used by federal district courts, which follow *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Under this standard, the words of a claim are generally given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill⁸ at the time of the invention, in the context of the entire patent including the specification. See *Phillips*, 415 F.3d at 1312–13.

For purposes of determining whether to institute trial, we construe the term “single service” as described below. We need not address the constructions of any other terms. See, e.g., *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

⁸ Petitioner asserts, and Patent Owner does not dispute, that a “person of ordinary skill in the art (‘POSITA’) with respect to the claimed subject matter in the ‘577 Patent would have had a Bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and around two years of experience in the design or development of telecommunication systems, or the equivalent, [and] [a]dditional educational or industrial experience could qualify if those additional aspects compensate for a deficit in one of the other aspects of the requirements stated above.” Pet. 10; Ex. 1003, ¶15. We adopt this undisputed description of the level of ordinary skill in the art.

Claim 1 recites “the processor is configured to combine at least a portion of the received downlink data from the first communication channel and the second communication channel to produce data for a *single service*.” Ex. 1001, 24:48–51 (emphasis added). Petitioner does not propose a construction for “single service.” Pet. 10–15; Reply 1. Patent Owner argues that “single service” should be construed as a “data service” such as email, streaming, or a video call, and not a service *provider* (such as “AT&T Wireless, Verizon Wireless, etc.”). Prelim. Resp. 9. Patent Owner argues that Petitioner has effectively (if not expressly) interpreted “single service” as meaning a single service provider, which Patent Owner argues is an incorrect construction and not supported by the evidence. *Id.* Petitioner replies that its Petition does not refer to any particular service provider, and states that Patent Owner’s argument is a “red herring.” Reply 1.

We agree with and adopt Patent Owner’s construction of “single service.” As Patent Owner asserts, the ’577 patent consistently describes a single service as comprising integrated *data* that has been divided up for communication across different channels, and does not mean a communications “service provider.” For example, the ’577 patent discloses:

For an exemplary embodiment of channel aggregation, each wireless communication link 106 may be comprised of two or more aggregated (communication) channels 110. As illustrated in particular for wireless link 106(m), a single service 112 is being communicated using multiple aggregated channels 110. More specifically, a first channel 110(1) and a second channel 110(2) are channel-aggregated for communications via wireless link 106(m) for single service 112. Although only two channels 110(1) and 110(2) and a single service 112 are explicitly illustrated, channel aggregation may be implemented using any number of two or more communication channels and may involve more than one service. In an example embodiment, integrated data is divided into first data and second data. The

first data is transmitted on a first channel. The second data is simultaneously transmitted on a second channel such that the first data and the second data are transmitted in a coordinated manner by aggregating the first channel and the second channel.

Ex. 1001, 5:43–61.

The foregoing passage describes the transmission of data, and does not distinguish any particular service *providers*. Similarly, Figure 1 of the '577 patent illustrates a network environment in which the “single service” 112 is distinct from the network(s) 108 (i.e., single service is distinct from network provider). *See supra*; *see also* Ex. 1001, 5:55–61; *id.* at 15:8–23, 3:61–63 (“The channel aggregation module is to formulate an integrated data set for a single service from the first data set and the second data set.”).

Further, the '577 patent distinguishes producing data for a “single service” from using aggregated channels on an “entire service” basis, in which “all data of *one service* for a particular subscriber station is sent over a first channel, and all data of *another service* for the particular subscriber station is sent over a second channel.” Ex. 1001, 16:22–33 (emphases added). Specifically, dividing on an “entire service basis” involves “a predefined ordering scheme . . . for those services that can have data packets for the same service take different paths.” *Id.*

Petitioner does not offer any evidence contradicting Patent Owner’s arguments that “single service” should be construed as a data service and not a service *provider*. For the foregoing reasons, we adopt Patent Owner’s proposed construction of this term. Based on our analysis of Petitioner’s contentions below, we need not address the parties’ proposed constructions of other terms. *See Nidec Motor Corp.*, 868 F.3d at 1017.

B. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) any secondary considerations,⁹ if in evidence. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

*C. Alleged Obviousness over Gorokhov
(Claims 1, 3–6, 8–12, 14–17, 19–22)*

Petitioner asserts claims 1, 3–6, 8–12, 14–17, and 19–22 of the ’577 patent are unpatentable under 35 U.S.C. § 103(a) based on the teachings of Gorokhov. Pet. 16–43.

1. Overview of Gorokhov

Gorokhov¹⁰ discloses “wireless resource allocation,” and specifically, “assigning and using resources corresponding to discontinuous portions of

⁹ The parties do not present arguments or evidence of secondary considerations.

¹⁰ The parties dispute whether Gorokhov qualifies as prior art under 35 U.S.C. § 102(e), and specifically, whether Gorokhov’s provisional applications sufficiently support the claim(s) and relevant disclosures in Gorokhov. *See, e.g.*, Prelim. Resp. 38–55; Reply 1; *Dynamic Drinkware v. Nat’l Graphics*, 800 F.3d 1375, 1378–79 (Fed. Cir. 2009). These issues are moot, in view of our determination that Petitioner has not sufficiently shown

bandwidth.” Ex. 1004, 2:55–56. As disclosed in Gorokhov, “[t]he disjoint portions of bandwidth allocated for use to a terminal may be separated by a carrier band, e.g., 1.25 MHz or more, which is not available for use, e.g., because it is owned by another service provider.” *Id.* at 2:64–3:1. Some embodiments are implemented “using OFDM signals wherein a wireless terminal may generate or receive an OFDM symbol including subcarriers.” *Id.* at 3:1–3.

2. *Independent Claims 1 and 12*

Claim 1 recites “the processor is configured to combine at least a portion of the received downlink data from the first communication channel and the second communication channel to produce data for a single service.” Ex. 1001, 24:47–51. Claim 12, the only other independent claim in the ’577 patent, similarly recites “combining at least a portion of the received downlink data from the first communication channel and the second communication channel to produce data for a single service.” *Id.* at 26:4–7. For the reasons explained below, we determine that Petitioner has not sufficiently demonstrated how Gorokhov teaches or suggests these claim elements. *See* Prelim. Resp. 55–63.

Petitioner argues that “combining” data is disclosed in Gorokhov’s description of assigning first and second communication channels, wherein the wireless terminal then “receives the data streams on the disjoint portions of bandwidth, and demodulates, deinterleaves, and decodes the stream to recover the transmitted traffic data.” Pet. 31–32 (citing Ex. 1004, 3:36–37, 10:31–34, 16:39–44, 18:7–13). Petitioner further argues that Gorokhov

that Gorokhov teaches or suggests all of the elements of any challenged claim.

teaches that data is produced as part of the recited “single service” because “a service provider’s base station uses non-contiguous channels to transmit to a wireless terminal because there are sometimes gaps in the licensed spectrum that a specific provider can use (e.g., a different provider uses it).” Pet. 32 (citing Ex. 1004, 2:49–51, 13:15–19). Petitioner also argues that “Gorokhov teaches performing FFTs on the input data streams [citing Ex. 1004, 7:32–37] and a [person of ordinary skill] would understand that the data would need to be combined in some form (whether to perform a single FFT or two FFTs).” Pet. 32 (citing Ex. 1003, ¶¶ 74–75).

Petitioner’s explanations, however, do not sufficiently demonstrate that Gorokhov teaches or suggests the recited “single service.” First, as discussed above in section II.A, we construe “single service” to refer to a specific data service, not a service provider. Thus, Gorokhov’s description of “different provider[s]” using different parts of the wireless spectrum does not equate to teaching “produc[ing] data for a single service” as recited in claim 1. As Patent Owner argues, Gorokhov repeatedly discloses the creation of discontinuous bands due to a “communications service provider not being licensed in that bandwidth at that location.” Prelim. Resp. 57; Ex. 1004, 13:15–19; *see also id.* at 2:49–51 (“where the discontinuous bands were separated by a bandwidth corresponding to the width of a service provider’s carrier, e.g., 1.25 MHz or more in some cases”). Service providers creating discontinuous bands, however, is not producing “data for a single service,” as recited in claim 1.

The term “single service” is not disclosed in Gorokhov. Prelim. Resp. 58. Further, although Gorokhov discloses that only a particular service provider can use certain licensed spectrum, a single service provider is not (for the reasons explained above) a “single service” as recited in claim

1. Petitioner argues that Gorokhov’s disclosure of “FFTs” (Fast Fourier Transforms) would have been understood by a person of ordinary skill to mean “data would need to be combined.” Pet. 32. Petitioner, however, provides no support for this argument other than a passage in Dr. Lo’s testimony that merely repeats Petitioner’s citations to Gorokhov (including Gorokhov’s general description of performing FFTs). Petitioner also asserts that “Gorokhov’s processor combines the downlink data from the disjoint portions of bandwidth (the first/second communication channel) to produce data *for a single service*.” Pet. at 31 (emphasis added). Again, however, Petitioner has not provided any citations or explanation regarding this alleged teaching in Gorokhov.

For the foregoing reasons, Petitioner has not demonstrated a reasonable likelihood of prevailing on its obviousness challenge to claims 1 and 12 based on Gorokhov.

3. Dependent Claims 3–6, 8–11, 14–17, 19–22

Claims 3–6, 8–11, 14–17, and 19–22 each depend from claim 1 or claim 12. Petitioner’s obviousness contentions rely on the same alleged teachings of Gorokhov for the “single service” limitation as discussed above. Thus, Petitioner’s contentions and arguments for these claims do not cure the deficiencies identified above, regarding claims 1 and 12.

Petitioner, therefore, has not shown a reasonable likelihood of prevailing on its obviousness challenge to claims 3–6, 8–11, 14–17, and 19–22 based on the teachings of Gorokhov.

*D. Alleged Obviousness over Gorokhov and Additional References
(Claims 2, 7, 10, 13, 18, 21)*

Claims 2, 7, 10, 13, 18, and 21 each depend from claim 1 or claim 12. Petitioner’s obviousness contentions rely on the same alleged teachings of

Gorokhov for the “single service” limitation as discussed above. Petitioner’s reliance on additional references for claims 2, 7, 10, 13, 18, and 21 does not relate to the “single service” limitation. Thus, Petitioner’s contentions and arguments for these claims do not cure the deficiencies identified above.

Petitioner, therefore, has not shown a reasonable likelihood of prevailing on its obviousness challenge to claims 2, 7, 10, 13, 18, and 21 based on Gorokhov and the additional references cited by Petitioner.

*E. Alleged Obviousness over Ryu and Yamaura
(Claims 1, 3–5, 11, 12, 14–16, 22)*

Petitioner asserts claims 1, 3–5, 11, 12, 14–16, and 22 of the ’577 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over the combined teachings of Ryu and Yamaura. Pet. 54–76.

1. Overview of Ryu

Ryu discloses “channel aggregation applied when a base station allocates an additional traffic channel to a terminal in order to increase throughput between the terminal and the base station in a wireless access network.” Ex. 1008, 1. Ryu discloses that “the transmission speed/reliability (performance) of different carriers allocated to a specific subscriber may vary, and the transmission speed/reliability of a specific carrier may vary across different subscribers.” *Id.* at 2. Ryu further discloses “a method of providing carrier aggregation between terminal and a base station.” *Id.*

2. Overview of Yamaura

Yamaura discloses a radio communication system for orthogonal frequency division multiplexing (“OFDM”) modulation. Ex. 1011 ¶ 2. The system reduces “loads in a base station or a terminal station when control

signals are transmitted from a base station to a terminal” as described therein. *Id.* at ¶ 31.

3. *Independent Claims 1 and 12*

Petitioner’s arguments and evidence regarding this alleged ground of obviousness, and our analysis thereof, are similar to the contentions based on Gorokhov. We again focus on the claim limitation “combine . . . to produce data for a single service” (claim 1) and “combining . . . to produce data for a single service” (claim 12). *See supra*. For the reasons explained below, we determine that Petitioner has not sufficiently shown that the combination of Ryu and Yamaura teaches or suggests these claim elements. *See Prelim. Resp.* 63–76.

Petitioner argues that Ryu teaches the “combine” limitation of claims 1 and 12 as follows:

Ryu’s core network (single service) transmits data that is recombined at the end user device (wireless device configured to combine received downlink data from the first/second communication channel). . . . [A]n aggregation control message . . . is sent to aggregate traffic channels to send data over. Before the aggregation message is sent, the “core network . . . transmits user data to the L3 layer of the base station . . . [and] [t]he base station . . . determines whether to perform carrier aggregation.” [Exhibit 1008, ¶ 49]. If carrier aggregation is to be performed, the base station sends an aggregation control message, and sends the data that it received from the core network.

Pet. 69 (emphasis added). Petitioner asserts that a person of ordinary skill in the art “would understand that the carrier aggregated data would be combined at the end user device, and would have been from a single service from the core network.” Pet. 69 (citing Ex. 1003 ¶163).

Petitioner’s argument, however, again conflates a service *provider*

with a “single service” as recited in claims 1 and 12. *See* Pet. 69 (“Ryu’s core network (*single service*) transmits data.”); *supra* Sect. II.A. Although Petitioner argues that a person of ordinary skill “would [have] under[stood]” carrier aggregated data “would have been from a single service,” this argument implies that a “service” is in fact a service *provider*, and in any event, Petitioner has not sufficiently explained the support for this argument. The brief portion of Dr. Lo’s expert testimony cited by Petitioner merely repeats Petitioner’s unsupported argument, without explaining where the relevant teaching is found in Ryu. Pet. 69 (citing Ex. 1003 ¶ 163).

Like Gorokhov, Ryu does not refer to a “single service,” or to producing data for a single service. Rather, Ryu distinguishes between single *carrier* and multi-*carrier* systems. Ex. 1008 ¶ 4 (“In a multi-subscriber, single carrier communication system that uses time division multiplexing (TDM), channels can be shared by multiple subscribers in time division. . . . [T]he transmission speed/reliability (performance) of different carriers allocated to a specific subscriber may vary, and the transmission speed/reliability of a specific carrier may vary across different subscribers.”). Petitioner does not rely on Yamaura for the “single service” limitation.

For the foregoing reasons, Petitioner has not demonstrated a reasonable likelihood of prevailing on its obviousness challenge to claims 1 and 12 based on the combination of Ryu and Yamaura.

4. *Dependent Claims 3–5, 11, 14–16, 22*

Claims 3–5, 11, 14–16, and 22 each depend from claim 1 or claim 12. Petitioner’s obviousness contentions rely on the same alleged teachings of Ryu for the “single service” limitation as discussed above. Thus,

Petitioner's contentions and arguments for these claims do not cure the deficiencies identified above.

Petitioner, therefore, has not demonstrated a reasonable likelihood of prevailing on its obviousness challenge to claims 3–6, 8–11, 14–17, and 19–22 based on the combination of Ryu and Yamaura.

F. Alleged Obviousness over Ryu, Yamaura, and Additional References (Claims 2, 7, 10, 13, 18, 21)

Claims 2, 7, 10, 13, 18, and 21 each depend from claim 1 or claim 12. Petitioner's obviousness contentions rely on the same alleged teachings of Ryu regarding the "single service" limitation of claims 1 and 12, as discussed above. Petitioner's reliance on additional references for claims 2, 7, 10, 13, 18, and 21 does not relate to the "single service" limitation. Thus, Petitioner's contentions and arguments for these claims do not cure the deficiencies identified above.

Petitioner, therefore, has not shown a reasonable likelihood of prevailing on its obviousness challenge to claims 2, 7, 10, 13, 18, and 21 based on the combination of Ryu, Yamaura, and the additional references cited by Petitioner.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has not shown a reasonable likelihood of prevailing on any ground presented, and we therefore deny institution.

IV. ORDER

Accordingly, it is

ORDERED that the Petition is *denied*, and no trial is instituted.

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