

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CRADLEPOINT, INC.,
SIERRA WIRELESS, INC., and
THALES DIS AIS DEUTSCHLAND GMBH,
Petitioner,

v.

SISVEL INTERNATIONAL S.A.,
Patent Owner.

IPR2020-01071
Patent 8,364,196 B2

Before BARBARA A. PARVIS, AMANDA F. WIEKER, and
MONICA S. ULLAGADDI, *Administrative Patent Judges*.

ULLAGADDI, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Cradlepoint, Inc., Dell Inc., Sierra Wireless, Inc., Thales DIS AIS Deutschland GmbH, ZTE Corporation, and ZTE (USA) Inc. filed a Petition requesting an *inter partes* review of claims 1, 2, 4, and 13–18 of U.S. Patent No. 8,364,196 B2 (Ex. 1001, “the ’196 patent”). Paper 6 (“Pet.”). As Sisvel International S.A. (“Patent Owner”) and ZTE Corporation and ZTE (USA) Inc. entered into a settlement agreement resolving their disputes concerning the ’196 patent, we terminated the ZTE entities from the proceeding. Papers 34, 35, 36; Ex. 2008. Based on similar filings, we also terminated Dell Inc. from the proceeding. Papers 41, 42, 43; Ex. 2009. In this Decision, we collectively refer to the remaining entities—Cradlepoint, Inc., Sierra Wireless, Inc., and Thales DIS AIS Deutschland GmbH—as “Petitioner.”

Patent Owner filed a Preliminary Response. Paper 10 (“Prelim. Resp.”). We instituted an *inter partes* review on all challenged claims on all grounds set forth in the Petition. Paper 11 (“Institution Decision” or “Inst. Dec.”).

Patent Owner thereafter filed a Response to Petition (Paper 24, “PO Resp.”), Petitioner filed a Reply (Paper 29, “Pet. Reply”), and Patent Owner filed a Sur-Reply (Paper 30, “PO Sur-Reply”). An oral hearing was held on October 20, 2021, and a transcript of the hearing (Paper 40, “Tr.”) has been entered into the record.

II. BACKGROUND

A. *Related Proceedings*

The parties identify the following matters related to the ’196 patent:

Sisvel International SA et al. v. ZTE (USA), Inc. et al., Case No. 3:19-cv-01694 (N.D. Tex.) (filed July 15, 2019);

Sisvel International SA v. Dell Inc., Case No. 1:19-cv-01247 (D. Del.) (filed July 1, 2019);

Sisvel International SA v. AnyData Corporation, Case No. 1:19-cv-01140 (D. Del.) (filed June 20, 2019);

Sisvel International SA v. Blu Products, Inc., Case No. 1:19-cv-01141 (D. Del.) (filed June 20, 2019, transferred to S.D. Fla. as Case No. 1:20-cv-20813);

Sisvel International SA v. Cradlepoint, Inc., Case No. 1:19-cv-01142 (D. Del.) (filed June 20, 2019);

Sisvel International SA v. Honeywell International, Inc., Case No. 1:19-cv-01143 (D. Del.) (filed June 20, 2019);

Sisvel International SA v. Verifone Systems, Inc., Case No. 1:19-cv-01144 (D. Del.) (filed June 20, 2019);

Sisvel International SA v. Xirgo Technologies, LLC, Case No. 1:19-cv-01145 (D. Del.) (filed June 20, 2019);

Sisvel International SA et al. v. Tesla, Inc., Case No. 1:19-cv-02288 (D. Del.) (filed Dec. 17, 2019);

Sisvel International S.A. v. Blu Products, Inc., Case No. 1:20-cv-20813 (S.D. Fla.) (filed Feb. 25, 2020); and

u-blox AG et al. v. Sisvel International SA et al., Case No. 3:20-cv-00494 (S.D. Cal.) (filed Mar. 16, 2020). Pet. vii–viii; Paper 7, 1–2.

Patent Owner also identifies IPR2020-01070 (challenging U.S. Patent No. 7,433,698, which is a parent to the '196 patent) as a related matter. Paper 7, 2–3.

B. The '196 Patent

The '196 patent is titled “Cell Reselection Signalling Method” and addresses problems associated with connecting a mobile station to a cellular

telecommunications network in the presence of network congestion.

Ex. 1001, code (54). The '196 patent discloses “cell reselection in a cellular telecommunication[s] system,” in which “a connection setup rejection message is used to direct a mobile communication means to attempt a new connection with certain parameter values such as a certain carrier frequency.” *Id.* at code (57). Connection rejection message 30 accordingly may include information 100 about a preferred channel for the next connection attempt, and frequency information 110. *Id.* at 4:63–67, 5:1–2.

C. Challenged Claims

Petitioner challenges claims 1, 2, 4, and 13–18 of the '196 patent. Claims 1 and 18 are independent and are reproduced below.

1. An apparatus, where the apparatus is configured:
 - to receive a connection rejection message in a mobile cellular network, the connection rejection message comprising a value of at least one parameter;
 - to set a reception frequency for a connection setup procedure based on the value of the at least one parameter of the connection rejection message; and
 - to select, for the connection setup procedure, a channel transmitting on the reception frequency based on the at least one parameter of the connection rejection message.

Ex. 1001, 8:2–11.

18. An apparatus, where the apparatus is configured:
 - to receive a connection rejection message in a mobile cellular network, the connection rejection message comprising a value of at least one parameter;
 - to set a reception frequency for a connection setup procedure based on the value of the at least one parameter of the connection rejection message;
 - to select a channel transmitting on the reception frequency; and
 - to initiate the connection setup procedure.

Id. at 8:64–9:6.

D. Asserted Grounds of Unpatentability

Petitioner challenges claims 1, 2, 4, and 13–18 as follows. *See* Pet. 15–16.

Ground	Claim(s) Challenged	35 U.S.C. § ¹	Reference(s)/Basis
1	1, 4, 14, 18	§ 102(b)	Kallin ²
2	1, 4, 14, 18	§ 102(e)	Kissee ³
3	1, 2, 4, 13, 14, 18	§ 103(a)	Ericsson ⁴
4	1, 4, 14–16, 18	§ 102(e)	C.S0005 ⁵
5	1, 2, 4, 13, 14, 18	§ 103(a)	TS 25.331, ⁶ Kallin
6	1, 2, 4, 13, 14, 18	§ 103(a)	TS 25.331, Kissee
7	1, 2, 4, 13, 14, 18	§ 103(a)	TS 25.331, C.S0005
8	17	§ 103(a)	Kallin, Birgersson ⁷
9	17	§ 103(a)	Kissee, Birgersson
10	17	§ 103(a)	Ericsson, Birgersson
11	17	§ 103(a)	C.S0005, Birgersson
12	17	§ 103(a)	TS 25.331, Kallin,

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), amended 35 U.S.C. §§ 102 and 103, effective March 16, 2013. Because the application from which the ’196 patent issued was filed before this date, the pre-AIA version of § 102 and §103 applies.

² U.S. Patent 5,287,545, issued Feb. 15, 1994 (Ex. 1005, “Kallin”).

³ U.S. Patent 6,567,665 B1, issued May 20, 2003 (Ex. 1006, “Kissee”).

⁴ *Specification of RRC Procedure: RRC Connection Establishment*, TSGR2#6(99)813, Ericsson/TSG-RAN Working Group 2, 1–5 (Aug. 16–20, 1999) (Ex. 1007, “Ericsson”).

⁵ *Upper Layer (Layer 3) Signaling Standard for cdma2000 Spread Spectrum Systems*, 3rd Generation Partnership Project 2 (3GPP2) C.S0005–0 Version 1.0, 1–1 to 3–445 (July 1999) (Ex. 1008, “C.S0005”).

⁶ *3rd Generation Partnership Project; Technical Specification Group Radio Access Network; RRC Protocol Specification (3G TS 25.331 version 3.1.0 Release 1999)*, 3G TS 25.331 V3.1.0, 3rd Generation Partnership Project (3GPP), 1–282 (Jan. 2000) (Ex. 1009, “TS 25.331”).

⁷ International Patent Application Publication No. WO 98/58506, published Dec. 23, 1998 (Ex. 1010, “Birgersson”).

Ground	Claim(s) Challenged	35 U.S.C. § ¹	Reference(s)/Basis
			Birgerson
13	17	§ 103(a)	TS 25.331, Kisse, Birgerson
14	17	§ 103(a)	TS 25.331, C.S0005, Birgerson
15	15–17	§ 103(a)	Kallin, AAPA ⁸
16	15–17	§ 103(a)	Kisse, AAPA
17	15–17	§ 103(a)	Ericsson, AAPA
18	15–17	§ 103(a)	C.S0005, AAPA
19	15–17	§ 103(a)	TS 25.331, Kallin, AAPA
20	15–17	§ 103(a)	TS 25.331, Kisse, AAPA
21	15–17	§ 103(a)	TS 25.331, C.S0005, AAPA

Petitioner relies on the First and Second Declarations of Dr. R. Michael Buehrer (Exs. 1004, 1024) in support of its arguments.

Patent Owner relies on the First and Second Declarations of Mr. Regis Bates (Exs. 2001, 2006) in support of its arguments.

III. ANALYSIS

A. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented 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;

⁸ U.S. Patent 8,364,196, issued Jan. 29, 2013 (Ex. 1001).

(3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987).

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). The burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in an *inter partes* review). Furthermore, Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Thus, to prevail in an *inter partes* review, Petitioner must explain how the prior art discloses the subject matter of the challenged claims or how the proposed combinations of prior art would have rendered the challenged claims unpatentable. We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

Petitioner contends:

A person of ordinary skill in the art (POSITA) at the time of the alleged invention (January 17, 2000) would have had a bachelor's degree in electrical engineering or a similar discipline, with at least three years of relevant industry or research experience (or additional education), including experience with cellular telecommunication systems, including designing or implementing user equipment or network equipment or signaling protocols therefor. A POSITA's skill set would have included designing or configuring physical, link, and network layers of user equipment (e.g., mobile phones) and network equipment (e.g., base stations) to enable bi-directional communications according to various protocols, including the RRC [Radio Resource Control] protocol.

Pet. 19 (citing Ex. 1004 ¶¶ 22–24). Patent Owner contends:

[A] person having ordinary skill at the time of invention—January 17, 2000—in the relevant art would be one with a bachelor's degree in electrical engineering, computer sciences, or telecommunications, along with three to five or more years of practical experience in the field. A combination of more experience in the field and less education or more education and less experience in the field would also suffice.

Although Patent Owner's proposed level of skill in the art is similar to Petitioners' proposal, Patent Owner includes the qualification that a combination of more experience in the field and less education, or more education and less experience in the field would also suffice. Petitioners' expert, Dr. Buehrer, admitted that it would be possible for experience to replace education for a person of ordinary skill in the art.

PO Resp. 8–9 (Ex. 2001 ¶ 27; Ex. 2006 ¶ 22; Ex. 2007, 28:15–29:13).

We agree that Patent Owner's proposed level of ordinary skill in the art is broader than Petitioner's because it is based on a combination of differing proportions of education and experience. The findings and conclusions rendered in this Decision do not turn on selecting a particular definition for the level of ordinary skill in the art. We determine, on this record, that the level of ordinary skill proposed by Patent Owner is

consistent with the '196 patent and the asserted prior art. As such, we adopt Patent Owner's proposal and apply it in reaching our findings and conclusions.

C. Claim Construction

In *inter partes* review proceedings based on petitions filed on or after November 13, 2018, such as this one, we construe claims using the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), as articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny. *See* 37 C.F.R. § 42.100(b).

In its Petition, Petitioner asserts that the only terms requiring express construction are “apparatus,” as recited in the preambles of independent claims 1 and 18, and “RRC CONNECTION REJECT message,” as recited in dependent claim 2. Pet. 19–20.

Patent Owner contends that “connection rejection message” and “reception frequency” require express construction. PO Resp. 10–11.

1. “*apparatus*”

Petitioner contends that the claimed apparatus does not invoke 35 U.S.C. § 112, 6th paragraph. Pet. 19–20. In our Institution Decision, we determined that Petitioner’s contentions were persuasive. Inst. Dec. 9–10 (concluding that “the apparatus recited in [the claims] . . . does not recite means-plus-function language” and finding that “the prior art teaches mobile stations performing the recited functions”). Patent Owner indicates that it “agrees with Petitioners[] that the plain and ordinary meaning of the term ‘apparatus’ applies.” PO Resp. 9. Based on the entirety of the record developed during trial, we agree that the claimed apparatus does not invoke 35 U.S.C. 112, 6th paragraph for the reasons set forth in our Institution Decision, which we adopt and do not repeat herein. Inst. Dec. 9–10 (citing *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (en banc in relevant part)). As the meaning of this term is not in dispute, we need not expressly construe this term further. See *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (explaining that construction is needed only for terms that are in dispute, and only as necessary to resolve the controversy).

2. “*RRC CONNECTION REJECT message*”

Petitioner contends that the ’196 patent does not define the “RRC CONNECTION REJECT message” recited in claim 2, “nor does it mention a specific standard or version for the RRC protocol,” but that “it describes the RRC CONNECTION REJECT message as an example of the connection rejection message 30 that it references.” Pet. 20–21 (citing Ex. 1001, 3:20–23, 4:63–64, 5:35–37, 7:1–3, 7:56–60). Petitioner contends that, accordingly, “[f]or purposes of this proceeding only, this term should be construed as including the ‘RRC CONNECTION REJECT message’ defined

in TS 25.331v.3.1.0, which was the version, at the earliest asserted priority date, of the 3G standard that describes the RRC protocol.” *Id.* at 21 (citing Ex. 1004 ¶ 93). Petitioner points to Section 10.1.36 of TS 25.331 as describing the contents of the RRC CONNECTION REJECT message. *Id.* (citing Ex. 1009, 140); *see also* Pet. Reply 2–3 (citing Ex. 1026 (claim construction positions taken in a related litigation)).

Patent Owner indicates that it “agrees with this construction as the ’196 patent references the ‘RRC specification of the third-generation cellular networks.’” PO Resp. 9–10 (citing Ex. 1001, 2:45–46; Ex. 2006 ¶ 41). As the meaning of this term is not in dispute, we need not expressly construe this term. *Nidec*, 868 F.3d at 1017.

3. “*connection rejection message*”

Patent Owner contends that “this term should be construed as ‘a message from a GSM [Global System for Mobile Communications] or UMTS [Universal Mobile Telecommunications System] telecommunications network rejecting a connection request from a mobile station.’” PO Resp. 10 (citing Ex. 1001, 1:25–26, 1:37–40, 2:15–19; 2:45–52, 3:47–53, 5:50–52, 7:41–43 (disclosing that the “invention is applicable in many different cellular telecommunication systems, such as the UMTS system or the GSM system”), 7:49–53; Ex. 2006 ¶ 43). According to Patent Owner, “[s]ince the ’196 patent does not disclose that the invention is applicable to any networks other than the GSM and UMTS networks, and primarily discusses 3G networks, the invention is thus limited to these two networks.” *Id.* (citing Ex. 1001, 1:25, 2:17, 2:46); *see id.* at 11 (citing Ex. 2006 ¶ 45). Patent Owner explains that the “’196 patent also contains numerous references to the RRC protocols, which a POSITA would understand refers to TS 25.331, a 3GPP technical specification.” *Id.* at 11 (citing Ex. 1001, code (57), Fig. 2,

2:45–48; 3:21–22; 4:10; 4:63–64; 5:36–37; 5:53–61; 7:1–3; Ex. 2006 ¶ 45); *see id.* (citing Ex. 1001, 7:44–46).

Petitioner contends that “[n]o express construction is needed” and that “[t]he intrinsic evidence does not provide a definition and it is not a term of art.” Pet. Reply 3 (citing Ex. 1024 ¶ 12). Petitioner disputes Patent Owner’s construction, arguing that “[a] POSITA would have understood that the connection rejection message is not limited to use with GSM or UMTS cellular networks.” *Id.* at 4 (citing Ex. 1024 ¶ 12; Ex. 1001 7:41–47, claims 1–2). According to Petitioner, “Patent Owner concedes the alleged invention ‘is applicable in many different cellular telecommunication systems,’ but turns this language on its head to argue that ‘[s]ince the ’196 patent does not disclose that the invention is applicable to any other than the GSM and UMTS networks, and primarily discusses 3G networks, the invention is thus limited to these two networks.’” *Id.* (citing PO Resp. 10). Petitioner explains that “[t]his argument also mistakes a GSM network for a 3G network” when “GSM is a 2G network.” *Id.* (Ex. 1024 ¶ 13); *compare* Ex. 2001 ¶¶ 42–43 (Mr. Bates referring, in his First Declaration, to GSM as a 2G network), *with id.* ¶ 46 (Mr. Bates referring, in his Second Declaration, to GSM as a 3G network).

We are persuaded that the claimed “connection rejection message” is not limited to GSM or UMTS telecommunications networks. Patent Owner does not identify, nor are we able to discern, any disclaimer or explicit definition of “connection rejection message” in the ’196 patent that justifies importing a requirement for a GSM or UMTS telecommunications network. Patent Owner attempts to support its construction with this disclosure from the specification of the ’196 patent: “The invention is applicable in many different cellular telecommunication systems, such as the UMTS system or

the GSM system.” Ex. 1001, 7:41–43. We determine that this language is permissive, not mandatory. At most, this sentence explains that the cellular telecommunication system *can be* a UMTS system or GSM system, not that the cellular telecommunication system *must be* a UMTS system or GSM system. Our determination is supported by the very next sentence of the ’196 patent, which Petitioner points out: “[t]he invention is applicable *in any such cellular telecommunication system*, in which the cellular telecommunication network sends a rejection message as a response to a connection setup request from a mobile station, if the network is unable to provide the requested connection.” *Id.* at 7:44–47 (emphasis added); *see id.* at 4:51–53 (disclosing the “the term mobile station is intended to cover any mobile communication means”), 7:53–56 (disclosing that “the term radio network controller in the claims is intended to cover all corresponding functional entities regardless of the term used for the entity in the particular cellular telecommunication system”).

We do not adopt Patent Owner’s proposed construction because there is insufficient evidence of record that supports limiting the meaning of “connection rejection message” in the proposed manner because the specification explicitly states that the invention should *not* be limited as proposed by Patent Owner. *See, e.g., id.* at 7:44–47. Even if supported by the ’196 patent, the fact that embodiments, or even every embodiment, discusses only 3G or GSM cellular networks does not support reading such limitation into the claims. *See Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1330 (Fed. Cir. 2012) (“‘[I]t is . . . not enough that the only embodiment, or all of the embodiments, contain a particular limitation’ to limit a claim term beyond its ordinary meaning.” (quoting *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002))). Although the

claims may encompass a message from a GSM or UMTS cellular network, we are unpersuaded by Patent Owner’s arguments that such a narrow construction is required. We apply the plain meaning of “connection rejection message” as a message that rejects a connection as we concluded in our Final Written Decision in IPR2020-01070. *See also Cradlepoint, Inc. v. Sisvel Int’l S.A.*, IPR2020-001070, Paper 53 at 14 (PTAB Dec. 13, 2021) (concluding that “connection rejection message” should be construed according to its plain meaning).

4. “reception frequency”

Patent Owner “proposes that this term should be construed as ‘a reception frequency comprising multiple channels.’” PO Resp. 11. According to Patent Owner, “[t]his construction is supported by the specification of the ’196 patent, which refers separately to channels and frequencies.” *Id.* (citing Ex. 1001, 4:26–47). Patent Owner further contends that “claims 1 and 18 use both the terms ‘channel’ and ‘reception frequency’ indicating that ‘channel’ is a subset of the reception frequency.” *Id.* at 11–12 (citing Ex. 1001, 8:8–10 (“to select, for the connection setup procedure, a channel transmitting on the reception frequency”)). According to Patent Owner, “[u]nder the doctrine of claim differentiation, different claim terms should not be construed with the same meaning.” *Id.* at 12 (citing *Digital-Vending Servs. Int’l, LLC v. Univ. of Phoenix, Inc.*, 672 F.3d 1270, 1275 (Fed. Cir. 2012) (“claims are interpreted with an eye toward giving effect to all terms in the claim”)). Patent Owner further contends that “[t]his is consistent with the understanding of a POSITA that a reception frequency comprises multiple channels, which can be selected by the mobile station.” *Id.* (citing Ex. 2006 ¶ 47).

Petitioner contends that “[n]o express construction is needed for this proceeding” and that “[t]his term should be given its plain and ordinary meaning, i.e., a frequency on which data is received.” Pet. Reply 5 (citing Ex. 1024 ¶ 15). Petitioner argues that, “despite agreeing to this plain meaning in a related litigation (Ex. 1026, 19), Patent Owner now seeks to narrowly construe the term as ‘a reception frequency comprising multiple channels.’” *Id.* (citing PO Resp. 11); *see* Ex. 1026, 19–20 (Patent Owner and Petitioner agreeing to the Court construing the claimed “reception frequency for a connection setup procedure” as “a frequency on which data is received for a connection setup procedure” and the claimed “channel transmitting on the reception frequency” as “a channel transmitting on the frequency on which data is received for the connection setup procedure”). Petitioner further contends that “[t]here is no support for importing the ‘multiple channels’ limitation into this term.”

Petitioner persuasively contends that “[t]he ’196 patent’s description . . . reflecting that channels and frequencies are technically different (although related), does not warrant limiting the claimed ‘reception frequency’ to having multiple channels.” *Id.* at 6 (citing Ex. 1001, 4:32–53; Ex. 1024 ¶ 16). We are also persuaded, as Petitioner contends, that “the use in claims 1 and 18 of ‘channel’ and ‘reception frequency’ is not at odds with interpreting the reception frequency as relating to, *e.g.*, a single channel because the ‘channel’ can be determined from the ‘reception frequency.’” *Id.* Petitioner further argues, and we agree, that “Patent Owner’s claim differentiation argument fails” because the doctrine of “[c]laim differentiation merely supports treating ‘channel’ different[ly] from ‘reception frequency,’ which the Petition did—[claim differentiation] does not support creating out of whole cloth a limitation that the reception

frequency includes ‘multiple channels.’” *Id.* (citing Ex. 1024 ¶ 16) (Ex. 1001, 4:32–53).

Here, similar to the determination in the Final Written Decision in IPR2002-01070 with respect to the parent to the ’196 patent, Patent Owner identifies no disclaimer or explicit definition of ‘reception frequency’ in the ’196 patent that justifies importing a requirement that the reception frequency comprise multiple channels. We do not discern that, and Patent Owner does not explain how, separately referring to channels and frequencies supports its proposed construction. *See* PO Resp. 11 (citing Ex. 1001, 4:26–47) (Patent Owner arguing that its “construction is supported by the specification of the ’196 patent, which refers separately to channels and frequencies”). The specification of the ’196 patent states: “in the following explanation and especially in the claims the term channel is used to cover a cell as well as *a specific channel* according to specific frequency, code, etc. parameters.” Ex. 1001, 4:37–40 (emphasis added). If anything, this disclosure tends to support a conclusion that a reception frequency encompasses *a specific channel* rather than requiring multiple channels as in Patent Owner’s proposed construction. As such, we determine that there is insufficient evidence of record to support Patent Owner’s proposed construction in the passage from the specification that Patent Owner cites. *See also Cradlepoint*, IPR2020-01070, Paper 53 at 15–16.

Having considered the entirety of the record developed during trial, we determine that the claimed “reception frequency” does not exclude a single channel, as Petitioner contends.

D. Ground 1–Anticipation By Kallin

Petitioner contends that claims 1, 4, 14, and 18 are unpatentable as anticipated under 35 U.S.C. § 102 by Kallin. Patent Owner disputes

Petitioner’s contentions. For the reasons that follow, we are persuaded that Petitioner establishes that these claims are unpatentable as anticipated by Kallin.

1. Overview of Kallin (Ex. 1005)

Kallin is entitled “Method of and Apparatus for Advanced Directed Retry” and describes a process for redirecting a mobile station that sends a service request to a cell of a cellular mobile radiotelephone system when there are no available voice channels in the cell. Ex. 1005, codes (54), (57), 2:21–25. The mobile station is redirected by a (mobile) switching center that sends a directed retry message, the contents of which are illustrated in Figure 1b, reproduced below. *Id.* at 2:35–38.

Fig. 1b

$T_1 T_2$ = 10	SCC = 11	CHANPOS	CHANPOS	CHANPOS	RSVD = 000	P
2	2	7	7	7	3	12

$T_1 T_2$ = 10	SCC = 11	CHANPOS	CHANPOS	CHANPOS	RSVD = 000	P
2	2	7	7	7	3	12

Figure 1b illustrates the contents of a directed retry message sent from a mobile services center to a mobile station.⁹ *Id.* at 2:1–3. The main portion of the directed retry message identifies three channels of three neighboring cells in terms of an offset relative to a first access channel used in the system. *Id.* at 2:50–53. Another portion of the directed retry message identifies three additional channels. *Id.* at 2:54–56. “In response to the

⁹ Kallin refers to the same element with the terms switching center and mobile services center.

directed retry message, the mobile station monitors received signal strengths on each of the identified channels and selects” the channel with the strongest received signal strength “to reattempt its previous service request.” *Id.* at 2:56–60.

A call access method that uses the directed retry message is depicted in Figure 5, reproduced below. *Id.* at 2:12–14.

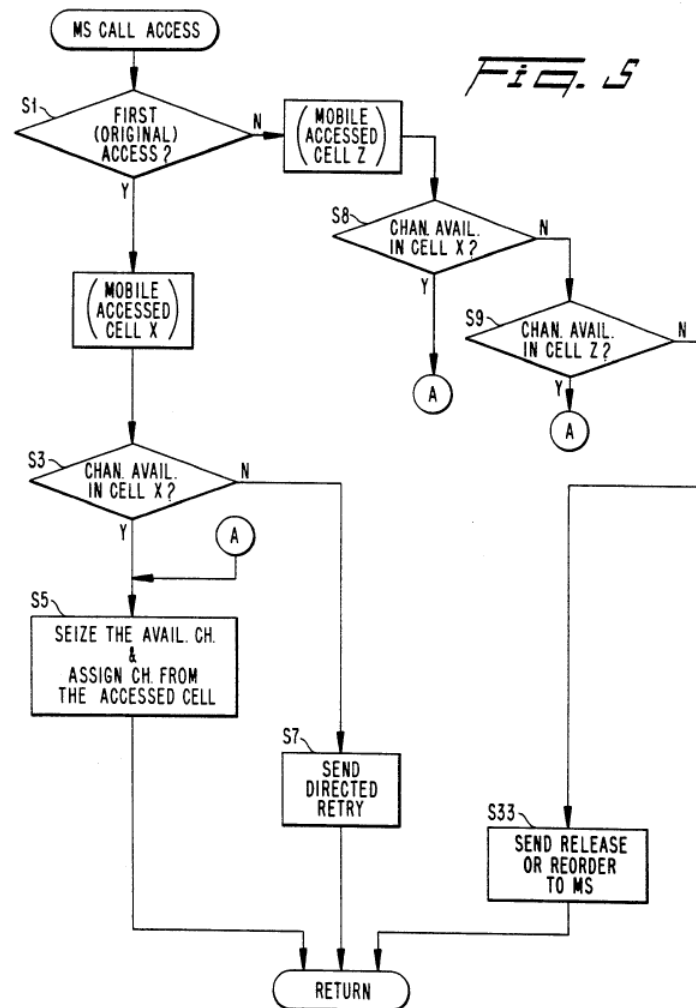


Figure 5 depicts how, when an access request is received, it is determined whether the access is an original access or a directed retry access (step s1). *Id.* at 5:5–7. “If the access is an original access, an idle channel is sought in the cell (‘cell X’) in which the mobile station is located (step S3).”

Id. at 5:7–10. “If a channel is available, it is seized and assigned to the mobile station (step S5); otherwise, a directed retry message is sent to the mobile station (step S7).” *Id.* at 5:10–13.

In the ’196 patent, “[i]f the access attempt is determined to be a directed retry access, an idle channel is sought in the neighboring cell [cell Z] selected by the mobile station in response to the directed retry message. . . .” *Id.* at 5:14–18. “First, cell X is checked for available voice channels.” *Id.* at 5:18–19. The ’196 patent explains that “[i]f congestion has been alleviated in cell X with the result that an idle channel is found (step S8), the channel is seized and assigned . . . to the mobile station” (step S5). *Id.* at 5:19–23. “If no channel is available in cell X, cell Z is checked” (step S9) and, “if a channel is available in cell Z, the channel is seized and assigned . . . to the mobile station” (step S5). *Id.* at 5:23–26. To avoid unduly burdening the operation of cell Z, the number of channels in cell Z that may be reserved for directed retries can be limited to a proportion of the channels allocated to cell Z. *Id.* at 5:34–43.

“If an idle channel cannot be found in either original cell X or selected neighbor cell Z, then a reorder or release message is sent to the mobile station to inform the caller that service is temporarily unavailable” (step 33). *Id.* at 5:27–30.

2. Independent Claim 1

a) Petitioner’s Arguments

“An apparatus, where the apparatus is configured:”

Petitioner contends that, “[t]o the extent the preamble is limiting, Kallin discloses it” in its description of “a plurality of mobile stations MS located within a cell 11 of a cellular mobile radiotelephone system” and the mobile stations “attempting to access the system through a switching

center 15.”¹⁰ Pet. 22 (citing Ex. 1005, 2:21–34). According to Petitioner, “[e]ach of Kallin’s mobile stations corresponds to the claimed ‘apparatus.’” *Id.* (citing Pet. § IV.D.1; Ex. 1004 ¶ 164).

Patent Owner does not specifically address the preamble of independent claim 1. *See generally* PO Resp.

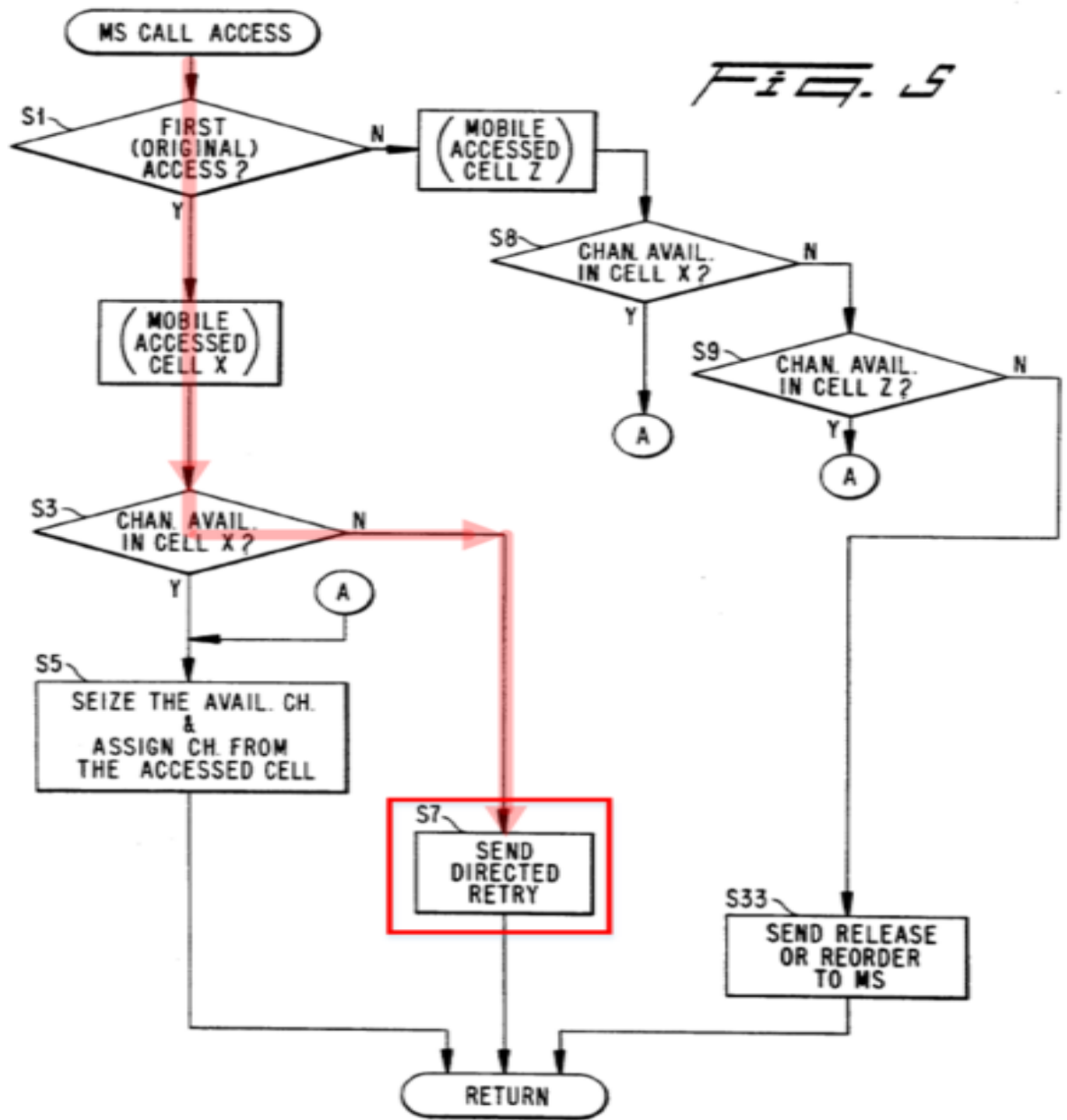
Having reviewed the cited evidence and Dr. Buehrer’s testimony, we are persuaded that Petitioner’s contentions with respect to the preamble are sufficiently supported.

“to receive a connection rejection message in a mobile cellular network, the connection rejection message comprising a value of at least one parameter;

to set a reception frequency for a connection setup procedure based on the value of the at least one parameter of the connection rejection message; and”

Petitioner contends that, in Kallin, “when a mobile station attempts to access the system at a time of congestion such that a channel is not available, the system sends a directed retry message that is received by the mobile station and that message indicates that the connection request is being rejected.” *See* Pet. 22–23 (citing Ex. 1005, 1:36–40, 2:34–38, 4:30–34). Petitioner points to the path leading to a directed retry message in an annotated version of Kallin’s Figure 5, reproduced below. *Id.* at 22–23.

¹⁰ We need not determine whether the preamble is limiting because Petitioner shows sufficiently that it is satisfied by the prior art.



Petitioner's annotated version of Kallin's Figure 5 depicts steps of a call access method that determines the availability of a channel in the mobile station's current cell. Pet. 23 (citing Ex. 1005, 2:12–14, 5:3–13). According to Petitioner, if no channel is available in the current cell, the system sends a directed retry message to the mobile station. *Id.*; see Ex. 1005, Fig. 5.

Petitioner relies on Kallin's Figure 1b to illustrate the format of the directed retry message. Pet. 24 (citing Ex. 1005, 2:1–3, 2:37–42, 2:50–56,

Fig. 1b). Based on this figure and the accompanying disclosure in Kallin, Petitioner argues that “[t]he value, for identifying a possible channel, of any of the six 7-bit frequency parameters in Kallin’s directed retry messages teaches ‘the connection rejection message comprising a value of at least one parameter,’ as claimed.” *Id.* at 25 (citing Ex. 1004 ¶¶ 167–168).

Petitioner’s annotations point out the fields that indicate possible channels within the directed retry message. *Id.* at 24.

Petitioner further contends that “Kallin discloses monitoring received signal strengths of frequencies (claimed ‘reception frequency’) indicated by the 7-bit frequency parameters of the directed retry message to choose a strongest frequency for reattempting access to the network.” *Id.* at 25 (citing Ex. 1005, 1:40–43, 2:56–60, 4:34–37); *see id.* (citing Ex. 1004 ¶ 169).

Having reviewed the cited evidence and Dr. Buehrer’s testimony, we are persuaded that Petitioner’s contentions with respect to the “receiv[ing]” and “set[ting]” limitations are sufficiently supported. We address Patent Owner’s arguments in Section III.D.2.b.

“to select, for the connection setup procedure, a channel transmitting on the reception frequency based on the at least one parameter of the connection rejection message.”

Petitioner contends “Kallin teaches that determining a strongest received frequency results in selecting a corresponding channel for requesting service in a reattempt to establish a connection to the network.” Pet. 26 (citing Ex. 1005, 1:34–50, 2:21–60, 4:29–37, claims 1, 8, 12); *see id.* (citing Ex. 1004 ¶¶ 170–171).

Having reviewed the cited evidence and Petitioner’s contentions, we are persuaded that Petitioner’s contentions with respect to the “select[ing]” limitation are sufficiently supported.

b) Analysis of Patent Owner's Arguments

Patent Owner distinguishes Kallin from the “connection rejection message” recited in the claims of the ’196 patent based on Kallin’s disclosure of “a directed retry message for use in the 1G cellular networks called the Advanced Mobile Phone System (AMPS).” PO Resp. 12 (citing Ex. 1005, code (57); Ex. 2006 ¶ 49). According to Patent Owner, “[n]ot only are these [messages] different from the connection rejection message disclosed in the ’196 patent, but they also exist on incompatible networks.” *Id.* at 13.

Claim 1 recites a mobile cellular network that is not limited to a particular mobile cellular network. Having reviewed the entirety of the record developed during trial, and as discussed in the Claim Construction section above, there is insufficient evidence that supports limiting claim 1 to any particular mobile cellular network, or limiting the claimed “connection rejection message” to a specific type of message defined by a specification of the 3G network standard, contrary to Patent Owner’s argument.¹¹ *Supra* § III.C.3. As we indicated in our Institution Decision, “the ’196 patent even states that ‘[t]he *invention is applicable in any such cellular telecommunication system*, in which the cellular telecommunication network sends a rejection message as a response to a connection setup request from a mobile station, if the network is unable to provide the requested connection.’” Inst. Dec. 16–17 (quoting Ex. 1001, 7:43–47) (citing Ex. 1001, 7:56–60).

¹¹ We note, however, that the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We determine that the “connection rejection message” recited in claim 1 does not exclude a directed retry message as disclosed in Kallin, nor is the claimed “mobile cellular network” limited to a 3G network as argued by Patent Owner. Stated differently, the claimed “mobile cellular network” does not exclude a 1G AMPS cellular network as disclosed in Kallin. Patent Owner’s arguments—that the claimed “connection rejection message” excludes Kallin’s directed retry message and that the cellular network disclosed in Kallin is incompatible with the 3G network disclosed in the ’196 patent—are unavailing.

Based on the entirety of the record developed during trial, we are persuaded that the cited portions of Kallin and Dr. Buehrer’s testimony support Petitioner’s contentions so as to establish unpatentability of independent claim 1 under 35 U.S.C. § 102 as anticipated by Kallin by a preponderance of the evidence.

3. Dependent Claims 4 and 14

Patent Owner does not present separate arguments with respect to dependent claims 4 and 14. *See generally* PO Resp.

Claim 4 recites that the apparatus of claim 1 is “further configured to initiate the connection setup procedure.” Petitioner contends that this limitation is met “by Kallin’s mobile station reattempting a request to access.” Pet. 26 (citing Ex. 1005, 1:40–43, 2:56–60, 4:34–37; Ex. 1004 ¶ 172).

Claim 14 recites that the apparatus of claim 1 is “embodied in a mobile terminal.” Petitioner contends that this limitation is “met by Kallin’s mobile station.” *Id.* (citing Ex. 1005, 2:21–38, Fig. 1A; Ex. 1004 ¶ 173).

Based on the entirety of the record developed at trial, we are persuaded that the cited portions of Kallin and Dr. Buehrer’s testimony

sufficiently support Petitioner’s contentions so as to establish unpatentability of claims 4 and 14 under 35 U.S.C. § 102 by Kallin by a preponderance of the evidence.

4. Independent Claim 18

Petitioner’s arguments for independent claim 18 refer, in large part, to its arguments for independent claim 1 and dependent claim 4. Pet. 27 (citing Pet. § V.A.1–2; Ex. 1004 ¶¶ 174–178). Patent Owner does not present separate arguments for independent claim 18. *See generally* PO Resp. For substantially the same reasons discussed above, we are persuaded that the cited portions of Kallin and Dr. Buehrer’s testimony sufficiently support Petitioner’s contentions so as to establish unpatentability of claim 18 under 35 U.S.C. § 102 as anticipated by Kallin by a preponderance of the evidence.

E. Ground 2–Anticipation over Kissee

Petitioner contends that claims 1, 4, 14, and 18 are unpatentable as anticipated under 35 U.S.C. § 102 by Kissee. Patent Owner disputes Petitioner’s contentions. For the reasons that follow, we are persuaded that Petitioner establishes that these claims are unpatentable as anticipated by Kissee.

1. Overview of Kissee (Ex. 1006)

Kissee is directed to a method and apparatus for redirecting calls in an overloaded cell of a wireless communications system. Ex. 1006, 1:10–13. Kissee describes a process for redirecting a call: (1) a mobile station sends an origination or page response and a mobile assisted channel allocation (MACA) report to a serving base substation (BSS) in a serving cell; (2) “[i]n response to these signals from the mobile station, an origination or page response with MACA information appended is sent to” a mobile service switching center (MSC), and “[t]he MSC uses the MACA information to

identify an adjacent cell to which the mobile station is to be redirected;” (3) “[a] directed retry message with the best adjacent channel information is sent to the BSS serving the mobile station from the MSC”; and (4) “[t]he directed retry message is then relayed from the BSS digital control channel (DCCH) to the mobile station.” *Id.* at 14:3–23. “The directed retry message contains adjacent channel information used by the mobile station to reselect an adjacent cell.” *Id.* at 14:23–25. “In particular, the directed retry message includes a list of one or more cells selected by the MSC based on information returned from the mobile station.” *Id.* at 14:25–28.

2. Independent Claim 1

a) Petitioner’s Arguments

Petitioner relies on the directed retry message of Kissee’s wireless communications system in substantially the same manner it relied on the directed retry message of Kallin’s cellular mobile radiotelephone system. *Compare* Pet. 21–27, with *id.* at 27–32. According to Petitioner,

Kissee’s 2G system is similar to Kallin’s 1G system, but Kissee discloses that the network, instead of the mobile station, identifies a best cell for a connection and sends a rejection message (e.g., directed retry message) that indicates the channel for the best cell, so that the mobile station simply tunes to that channel for reattempting a connection.

Pet. 27 (citing Ex. 1006, code (57), 2:58–3:12, 7:18–56, 8:20–40, 10:51–12:11, 13:39–58, 14:15–51, 15:5–8, 15:22–43, 15:57–16:16, 16:31–49; Ex. 1004 ¶¶ 179–180).

Petitioner contends that Kissee’s cellular system 102 “rejects the attempt by sending a directed retry message that is received by the mobile station and that redirects the mobile station to another cell.” *Id.* at 28 (citing Ex. 1006, code (57), 2:51–65, 4:18–43, 7:9–35, 8:17–24, 10:51–11:36,

14:3–30, 16:7–9, 16:28–37, Figs. 4, 8, 13, 14, 16, 17 (step 1704); Ex. 1004 ¶ 183). Petitioner further contends that one of the parameters in directed retry message 800 “is retry channel 812, which includes channel information and specifies a channel of ‘the target cell to which the mobile station is to be redirected.’” *Id.* at 30 (citing Ex. 1006, 11:20–36, 14:19–30, 16:31–40). Petitioner also contends “Kissee discloses that retry channel 812 includes two parts of information: hyperband and channel.” *Id.* (citing Ex. 1006, 11:20–28). Finally, Petitioner contends “Kissee discloses using the channel information in retry channel 812 to select a target channel of a target cell for reattempting a connection and that the channel uses the reception frequency defined by the channel.” *Id.* at 31 (citing Ex. 1006, 11:20–36, 14:23–51, 16:9–13, 16:38–45; Ex. 1004 ¶¶ 189–190).

b) Analysis of Patent Owner’s Arguments

Patent Owner presents substantially the same arguments for Kissee as set forth with respect to Kallin. Patent Owner distinguishes Kissee based on its disclosure of “a directed retry message for use in *a 2G digital AMPS* cellular network” instead of in a 1G AMPS cellular network. PO Resp. 12 (citing Ex. 1006, 2:4–8; Ex. 2006 ¶ 53) (emphasis added). According to Patent Owner, “[n]ot only are these [messages] different from the connection rejection message disclosed in the ’196 patent, but they also exist on incompatible networks.” *Id.* at 13.

As discussed above in detail in Sections III.C.3 and III.D.2.b, the “connection rejection message” recited in claim 1 does not exclude a directed retry message, including the one disclosed by Kissee, nor is the claimed “mobile cellular network” limited to a 3G network as argued by Patent Owner. That is, the claimed “mobile cellular network” does not

exclude a 2G AMPS cellular network as disclosed in Kissee and as such, we find Patent Owner's arguments unavailing.

Based on the entirety of the record developed during trial, we are persuaded that the cited portions of Kissee and Dr. Buehrer's testimony sufficiently support Petitioner's contentions so as to establish unpatentability of independent claim 1 under 35 U.S.C. § 102 as anticipated by Kissee by a preponderance of the evidence.

3. Dependent Claims 4 and 14

Patent Owner does not present separate arguments with respect to dependent claims 4 and 14. *See generally* PO Resp.

Claim 4 recites that the apparatus of claim 1 is "further configured to initiate the connection setup procedure." Petitioner contends that this limitation is "met by Kissee's mobile station reattempting a request to access the network." Pet. 32 (citing Ex. 1006, 14:31–51, 16:9–16, 16:43–49, Figs. 13, 17; Ex. 1004 ¶ 191).

Claim 14 recites that the apparatus of claim 1 is "embodied in a mobile terminal." Petitioner contends that this limitation "is met by Kissee's mobile station including controller 312." *Id.* (citing Ex. 1006, 5:63–6:16, Fig. 3; Ex. 1004 ¶ 192).

We have reviewed the cited portions of Kissee and Dr. Buehrer's testimony and we are persuaded that Petitioner's contentions are sufficiently supported so as to establish unpatentability of claims 4 and 14 as anticipated by Kissee by a preponderance of the evidence.

4. Independent Claim 18

Petitioner's arguments for independent claim 18 refer, in large part, to its arguments for independent claim 1 and dependent claim 4. *See* Pet. 32 (Pet. § V.B.1-2; Ex. 1004 ¶¶ 193–197). Patent Owner does not present

separate arguments for independent claim 18. *See generally* PO Resp. For substantially the same reasons discussed above, we are persuaded that the cited portions of Kisse and Dr. Buehrer’s testimony sufficiently support Petitioner’s contentions so as to establish unpatentability of claim 18 as anticipated by Kisse by a preponderance of the evidence.

F. Ground 3—Obviousness over Ericsson

Petitioner contends that claims 1, 2, 4, 13, 14, and 18 are unpatentable under 35 U.S.C. § 103 as obvious over Ericsson. We do not reach this ground and determine whether these claims are obvious over Ericsson because we determine that these claims are obvious over the combination TS 25.331 and Kallin (Ground 5) and the combination TS 25.331 and Kisse (Ground 6). *Infra* § III.H. In final written decisions both before and after *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348 (2018), the Board has declined to reach grounds challenging claims that were already held unpatentable. *See, e.g., Sure-Fire Elec. Corp. v. Yongjiang Yin*, IPR2014-01448, Paper 56 at 25 (PTAB Feb. 22, 2016), *aff’d*, 702 F. App’x 981 (Fed. Cir. 2017); *SK Hynix Inc. v. Netlist, Inc.*, IPR2017-00692, Paper 25 at 40 (PTAB July 5, 2018). The Federal Circuit has acknowledged the Board’s discretion in this regard. *See Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, Nos. 2019-1594, -1604, -1605, 2020 WL 2071962, at *4 (Fed. Cir. Apr. 30, 2020) (non-precedential) (recognizing that the “Board need not address issues that are not necessary to the resolution of the proceeding” and, thus, agreeing that the Board has “discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”).

G. Ground 4—Anticipation over C.S0005

Petitioner contends that claims 1, 4, 14–16, and 18 are unpatentable as anticipated under 35 U.S.C. § 102 by C.S0005. Patent Owner disputes

Petitioner’s contentions. For the reasons that follow, we are persuaded that Petitioner establishes that these claims are unpatentable as anticipated by C.S0005.

1. Overview of C.S0005 (Ex. 1008)

C.S0005 is titled “Upper Layer (Layer 3) Signaling Standard for cdma2000 Spread Spectrum Systems” and dated July, 1999. Ex. 1008. Petitioner provides evidence that C.S0005 “was publicly accessible by October 31, 1999 on 3GPPP2’s website.” Pet. 10 (citing Ex. 1015 (Declaration of Dr. Raziq Yaqub, a member of 3GPPP2); Ex. 1004 ¶ 138).

C.S0005 describes signaling (e.g., messaging) flowing between mobile stations and base stations in a CDMA2000 network. Ex. 1008, 2-27, 2-28, Fig. 2.6-1. C.S0005 describes messages that are used to support both service negotiation and service option negotiation—an Origination Message, a General Page Message, a Page Response Message, and a Channel Assignment Message. *Id.* at 1-18, 2-174, 2-175.

The Origination Message is used by the mobile station to propose an initial service. *Id.* at 2-175. The General Page Message is used by the base station to propose an initial service configuration. *Id.* The Page Response Message is used by the mobile station to accept or to reject the initial service configuration proposed by the base station, or to propose an alternative initial service configuration. *Id.* The Channel Assignment Message is used by the base station to accept or to reject the initial service configuration proposed by the mobile station in an Origination Message or a Page Response Message, and to indicate which type of negotiation, either service negotiation or service option negotiation, is to be used during a call. *Id.* at 2-111, 2-133, 2-175.

2. Independent Claim 1

a) Petitioner's Arguments

Petitioner relies on C.S0005's Channel Assignment Message as teaching the claimed connection rejection message. *See, e.g.*, Pet. 43 (“The *Channel Assignment Message* corresponds to the claimed ‘connection rejection message’ because it rejects the mobile station’s attempt to communicate with the base station on the current channel by redirecting the mobile station to a different channel.”) (citing Ex. 1004 ¶ 229). Petitioner cites to the description in C.S0005 which states, “[t]he base station can use this message to accept or *reject* the initial service configuration proposed by the mobile station.” Ex. 1008, 2-175; *see* Pet. 42.

Petitioner discusses the Channel Assignment Message’s fields, including ASSIGN_MODE, FREQ_INCL, and CDMA_FREQ which it contends will specify “the CDMA Channel number corresponding to the CDMA frequency assignment for the CDMA Channel the mobile station is to use,” depending on their collective values. Pet. 43 (citing Ex. 1008, 3-116–3-123). According to Petitioner, “the mobile station shall perform a number of actions, including setting CDMACH [,] . . . CDMA_FREQ, tuning to the new Frequency Assignment, and measuring the strength of each pilot listed in the assignment,” and thereafter retransmitting an Origination Message or Page Response Message on the channel corresponding to CDMACH during a reconnection attempt. *Id.* at 44–45 (citing Ex. 1008, 1-23, 2-111–2-112 (section 2.6.3.3), 3-113–3-118 (section 3.7.2.3.2.8); Ex. 1004 ¶¶ 231, 234)).

b) Analysis of Patent Owner's Arguments

Patent Owner presents substantially the same arguments for C.S0005 as set forth with respect to Kallin and Kisse. Patent Owner distinguishes

C.S0005 based on its disclosure of “a Channel Assignment Message for use in *CDMA network*” instead of based on Kallin’s 1G cellular network and Kisse’s 2G AMPS cellular network. PO Resp. 12–13 (Ex. 1008, 2-175; Ex. 2006 ¶ 56). According to Patent Owner, “[n]ot only are these [messages] different from the connection rejection message disclosed in the ’196 patent, but they also exist on incompatible networks.” *Id.* at 13.

As discussed above in detail in Sections III.D.2.b and III.C.3, the “connection rejection message” recited in claim 1 does not exclude a channel assignment message including the one disclosed by C.S0005, nor is the claimed “mobile cellular network” limited to a 3G network as argued by Patent Owner. That is, the claimed “mobile cellular network” does not exclude a CDMA network as disclosed in C.S0005 and as such, we find Patent Owner’s arguments unavailing.

Based on the entirety of the record developed at trial, we are persuaded that the cited portions of C.S0005 and Dr. Buehrer’s testimony support Petitioner’s contentions so as to establish unpatentability of independent claim 1 under 35 U.S.C. § 102 as anticipated by C.S005 by a preponderance of the evidence.

3. *Dependent Claims 4 and 14–16*

Patent Owner does not present separate arguments for dependent claims 4 and 14–16. *See generally* PO Resp.

Claim 4 depends from claim 1 and recites that the apparatus “further configured to initiate the connection setup procedure.” Petitioner contends that this limitation “is met by C.S0005’s disclosure that, when ASSIGN_MODE equals ‘001’ and RESPOND equals ‘1,’ the mobile station is configured to retransmit an *Origination Message* or *Page Response Message* after processing the channel assignment to set CDMACH to

CDMA_FREQ and tune to the new Frequency Assignment.” Pet. 45–46 (citing Ex. 1008, 2-111—2-112, 3-113—3-118; Ex. 1004 ¶ 235). Petitioner also contends that this limitation is “also met by C.S0005’s disclosure of the mobile station being configured to enter the Traffic Channel Initialization Substrate of the Mobile Station Control on the Traffic Channel State after tuning to the new frequency in the *Channel Assignment Message*.” *Id.* at 46 (citing Ex. 1008, 2-113–2-114; Ex. 1004 ¶ 235).

Claim 14 depends from claim 1 and recites that the apparatus is “embodied in a mobile terminal.” Petitioner contends that this limitation is “met by C.S0005’s mobile station.” *Id.* (citing Ex. 1008, 1-10; Ex. 1004 ¶ 236).

Claim 15 depends from claim 1 and recites that “the apparatus is embodied in a dual-mode terminal.” Petitioner contends that this limitation “is met by C.S0005’s ‘dual-mode mobile station’ having analog and CDMA modes.” *Id.* at 46–47 (citing Ex. 1008, i, xxxii–xxxiii; Ex. 1004 ¶ 237).

Claim 16 depends from claim 1 and recites that “the apparatus is embodied in a multimode terminal.” Petitioner contends that this limitation “is met by C.S0005’s ‘dual-mode mobile station’ having analog and CDMA modes.” *Id.* at 48 (citing Ex. 1008, i, xxxii–xxxiii; Ex. 1004 ¶ 238.)

We have reviewed the cited portions of C.S0005 and Dr. Buehrer’s testimony and we are persuaded that Petitioner’s contentions are sufficiently supported so as to establish unpatentability of claims 4 and 14–16 as anticipated by C.S0005 by a preponderance of the evidence.

4. Independent Claim 18

Petitioner’s arguments for independent claim 18 refer, in large part, to its arguments for independent claim 1 and dependent claim 4. *See* Pet. 47 (citing Pet. § V.D.1–2; Ex. 1004 ¶¶ 239–243). Patent Owner does not present separate arguments for independent claim 18. *See generally* PO Resp. For substantially the

same reasons discussed above, we are persuaded that the cited portions of C.S0005 and Dr. Buehrer's testimony sufficiently support Petitioner's contentions so as to establish unpatentability of claim 18 as anticipated by C.S0005 by a preponderance of the evidence.

H. Grounds 5 and 6—3GPP TS 25.331 in view of Kallin and 3GPP TS 25.331 in view of Kisse

Petitioner contends that claims 1, 2, 4, 13, 14, and 18 are unpatentable under 35 U.S.C. § 103 over 3GPP TS 25.331 in view of Kallin and over 3GPP TS 25.331 in view of Kisse. Patent Owner disputes Petitioner's contentions. For the reasons that follow, we are persuaded that Petitioner establishes that these claims are unpatentable as obvious over 3GPP TS 25.331 in view of Kallin and over 3GPP TS 25.331 in view of Kisse.

1. Independent Claim 1

Petitioner contends that "Grounds 5 and 6 start with the same base reference (TS 25.331v.3.1.0) and result in the same modification based on similar disclosures of Kallin and Kisse" and thus, "these grounds are addressed together," although "it should be understood that where both combinations are referenced as teaching an element, each teaches that element separately." Pet. 47 (citing Ex. 1004 ¶ 272). Petitioner relies on TS 25.331v.3.1.0 to describe the RRC protocol and the RRC CONNECTION REJECT message and on the disclosures in Kallin and Kisse of frequency-related information in a connection rejection message. *See id.* at 48–50, 57–60.

a) Petitioner's Arguments

In particular, Petitioner contends that "TS 25.331v.3.1.0 describes the procedure for establishing an RRC connection between user equipment (UE) and a UTRAN." Pet. 49 (citing Ex. 1009, 22–35 (sections 7–8.1.3)). Petitioner further contends that "TS 25.331v.3.1.0's disclosure of the UE being configured to receive

the RRC CONNECTION REJECT message in a mobile cellular network corresponds to the claimed ‘to receive a connection rejection message in a mobile cellular network.’” *Id.* at 50 (citing Ex. 1004 ¶¶ 250, 279). Petitioner contends that “TS25.331-Kallin and TS25.331-Kissee modify the RRC CONNECTION REJECT message to include the ‘Frequency-related IE’ having frequency-related information (e.g., frequency or channel number) for use by the UE for a subsequent connection attempt.” *Id.* (citing Pet. §V.E.1.c.; Ex. 1004 ¶¶ 251–259, 279–288).

With respect to Kallin, Petitioner contends “Kallin discloses that the switching center sends a directed retry message ‘to the mobile station attempting access together with a list of the frequencies of all of the congested cell’s neighboring cells’” and that “[t]he mobile station then monitors reception on each of the neighboring cell’s frequencies and chooses the strongest received frequency on which to reattempt access.” *Id.* at 50–51 (citing Ex. 1005, 1:36–43, 2:21–60, Figs. 1a, 1b). Petitioner further contends that “Kallin also discloses that ‘[i]n response to the directed retry message, the mobile station monitors received signal strengths on each of the identified channels and selects the strongest received channel to reattempt its previous service request’ and that ‘[i]n response [to the directed retry message], the mobile station will then select the strongest of the candidate frequencies sent in the directed retry message over which to again send an access request.’” *Id.* at 51 (citing Ex. 1005, 2:56–60, 4:34–37).

With respect to Kissee, Petitioner cites the disclosed mobile station as “(i) receiving a directed retry message including retry channel 812 having channel information, (ii) setting a channel based on the channel information and channel definitions, and (iii) retuning to a frequency of the channel to reattempt and complete a network connection.” *Id.* (citing Ex. 1006, code (57), 2:51–3:12, 3:36–

4:13, 7:18–56, 8:20–40, 10:51–12:11, 13:39–58, 14:15–51, 15:5–8, 15:22–43, 15:57–16:16, 16:31–49, Figs. 4, 8–17).

According to Petitioner, in the proposed combination,

there is a downlink channel ([the] claimed “channel transmitting on the reception frequency”) that uses the reception frequency that is set. A POSITA would have understood that the UE in TS25.331-Kallin and TS25.331-Kissee selects, for reattempting the RRC connection establishment procedure, the downlink channel based on the “Frequency-related IE” of the modified RRC CONNECTION REJECT message (claimed “to select, for the connection setup procedure, a channel transmitting on the reception frequency based on the at least one parameter of the connection rejection message”), as is taught by Kallin and Kissee.

Pet. 55 (citing Ex. 1004 ¶¶ 250–262, 279–291; Pet. § V.E.1.c; Ex. 1005, 1:36–43, 2:21–3:11, 4:30–37; Ex. 1006, 11:20–36, 14:23–51, 16:9–13, 16:38–45).

Having reviewed the cited portions of 3GPP TS 25.331, Kallin, and Kissee as well as the testimony of Dr. Buehrer, we are persuaded that Petitioner’s contentions that each of the combinations—3GPP TS 25.331 in view of Kallin and 3GPP TS 25.331 in view of Kissee—teach the limitations recited in claim 1 are sufficiently supported.

b) Petitioner’s Rationale for Combining

Petitioner presents the following reasons for combining 3GPP TS 25.331 with Kallin and for combining 3GPP TS 25.331 with Kissee.

“*First*, a POSITA would have been motivated to combine TS 25.331v.3.1.0 with either Kallin or Kissee in this manner *to enable the mobile station to more efficiently connect to the network (e.g., UTRAN) during times of congestion.*”

Pet. 52 (citing Ex. 1005, 1:12–51, 2:21–38; Ex. 1006, 1:36–2:65; Ex. 1004 ¶¶ 254, 283) (emphasis added).

Second, “[a] POSITA would also have been motivated to allow the network to control how the mobile station reattempts to connect for purposes of reducing interference.” *Id.* (citing Ex. 1005, 1:7–51; Ex. 1006, 8:8–16; Ex. 1004 ¶¶ 254, 283) (emphasis added).

Third, “modifying the RRC CONNECTION REJECT message to include the ‘Frequency-related IE’ would have avoided the need for an additional signal to provide information for selecting a different cell thereby providing bandwidth and timing advantages that improve the user experience.” *Id.* (citing Ex. 1006, 8:30–41; Ex. 1004 ¶¶ 254, 283) (emphasis added).

Fourth, “Kallin’s teaching that the directed retry message includes a main portion for identifying channels and/or frequencies for a reattempt (Ex. 1005, 1:34–45, 2:21–64, 4:30–37) and Kisse’s teaching that the directed retry message includes a channel for a best target cell (Ex. 1006, 11:20–36, 14:19–30, 16:32–37) would have taught a POSITA to include similar frequency-related information in the similar RRC CONNECTION REJECT message.” *Id.* at 53 (citing Ex. 1004 ¶¶ 253, 282) (emphasis added). *Fifth*, “TS25.331-Kallin and TS25.331-Kisse are also obvious because Kallin’s and Kisse’s techniques of using a directed retry message having frequency-related information for a connection reattempt would improve TS 25.331v.3.1.0’s UE in the same way that Kallin’s and Kisse’s techniques were used to improve their respective mobile stations (which are TS 25.331v.3.1.0’s UE) by improving the success rate and speed of connecting to a network.” *Id.* at 53–54 (citing Ex. 1006, 8:30–41; Ex. 1004 ¶¶ 256, 285) (emphasis added).

Petitioner also contends that a skilled artisan would have had a reasonable expectation of success when combining TS 25.331v.3.1.0 and Kallin and TS 25.331v.3.1.0 and Kisse. Specifically, Petitioner contends:

A POSITA would have had the programming and telecommunication network design skills for configuring the network to generate the modified RRC CONNECTION REJECT message and configuring the UE to set a value for the reattempt based on frequency-related information in the modified message.

* * *

A POSITA would have expected to successfully combine TS 25.331v.3.1.0 with either Kallin or Kissee given the POSITA's skills and the simplicity of the combinations. [Ex. 1004 (Buehrer Decl.) ¶¶ 221, 246]. A POSITA would have expected TS25.331-Kallin and TS25.331- Kissee to result in a functional and improved RRC connection establishment procedure.

Id. at 54–55 (citing Ex. 1004 ¶¶ 256, 285; Ex. 1006, 8:30–41).

Petitioner's reasons for combining the cited teachings of the references and for reasonable expectation of success set forth in Grounds 5 and 6 are the same or substantially similar to each other. In view of Petitioner's contentions, the cited portions of 3GPP TS 25.311, Kallin, and Kissee, and Dr. Buehrer's testimony, we find Petitioner's reasons for combining the references and reasonable expectation of success to be persuasive and well-supported.

c) Patent Owner's Arguments

Patent Owner argues that “a POSITA would not have been motivated to add a frequency related field to the RRC CONNECTION REJECT message in TS 25.331 v.3.1.0” because “Kallin is directed to a 1G AMPS network” and “Kissee is directed to a 2G cellular network referred as digital AMPS (D-AMPS)” and that, even though these networks are “referred to as ‘digital,’ both 1G AMPS and 2G D[-]AMPS are considered analog networks, unlike GSM and UMTS networks which are true digital networks.” PO Resp. 16 (citing Ex. 2006 ¶¶ 60, 62). As such, Patent Owner argues that “a POSITA would not have been motivated to combine the directed retry message of Kallin or Kissee with the 3G digital networks addressed in TS 25.331 v.3.1.0.” *Id.* (citing Ex. 2006 ¶ 62).

More particularly, Patent Owner asserts that “a POSITA would not have been motivated to combine Kallin or Kissea with TS 25.331 v.3.1.0 because the networks are incompatible.” *Id.* (citing Ex. 2006 ¶ 62); *see also id.* at 16–17 (citing Ex. 2007, 65:22–66:8, 66:22–67:16; 69:15–20, 80:13–16) (Dr. Buehrer’s testimony that Patent Owner characterizes as “refus[ing] to opine on whether the directed retry messages of Kallin could be incorporated into TS 25.331 v.3.1.0” and “admit[ing] that mobile stations (phones) designed to work on a 1G or 2G networks, could not operate on a 3G network”).

With respect to a 1G AMPS network, Patent Owner further asserts that “directed retry messages are not the ‘analog’ of the RRC CONNECTION REJECT message used in 3G networks” because, “[i]n the 1G AMPS network, the central mobile switching center (‘MSC’) communicates possible channels . . . in a ‘directed retry message’” and “[t]he mobile station then selects the channel with the strongest signal.” PO Resp. 17 (citing Ex. 2006 ¶¶ 39, 61). According to Patent Owner, “[t]he 1G AMPS network also permits the mobile station to select a channel not suggested by the MSC if a stronger signal is located,” and that “[t]his process may involve several rounds of communication between the mobile station and the MSC, and the selection of the channel is left entirely up to the mobile station.” *Id.* Patent Owner contends that “[t]his is fundamentally different from the RRC CONNECTION REJECT message, in which the network directs the mobile station to a particular frequency *and conducts no further communication.*” *Id.* (citing Ex. 1001, code (57), 3:16–23, 5:50–61; Ex. 2006 ¶ 61) (emphasis added).

With respect to a 2G D-AMPS networks, Patent Owner contends “[i]n the 2G D-AMPS network the mobile unit sends information to the tower (specifically, through a base station controller or ‘BSC’ that can control multiple towers), which

then communicat[es] with the network MSC regarding which channels are available.” *Id.* at 17–18 (citing Ex. 2001 ¶ 41). Patent Owner further explains that “[t]he BSC/MSC can then direct the mobile station to a specific channel” and “if the mobile station has a stronger signal from a different channel it may communicate that information to the BSC, and the BSC may then direct the mobile station to that channel,” and further that, “[l]ike the 1G AMPS network, this process involves several rounds of communications between the mobile station and the MSC, and the decision of which channel to connect to is ultimately left to the mobile station.” *Id.* at 18.

Patent Owner also argues that

[i]t also would not have been obvious for a person of ordinary skill to modify the RRC CONNECTION REJECT message to include additional frequency information “to set a reception frequency for a connection setup procedure based on the value of the least one parameter of the connection rejection message,” as required by claims 1 and 18 of the ’196 patent. (Ex. 2006 at ¶ 60.) As discussed above, Kallin and Kisse address earlier cellular network standards (1G and 2G respectively), which do not include a connection rejection message at all. (Ex. 2006 at ¶ 61.) Those references rely on a directed retry message, which performs different functions. (*Id.* at ¶ 61.) A person of ordinary skill would not have been motivated to combine the disparate “directed retry” and “connection rejection”

Id.

d) Analysis of Patent Owner’s Arguments

Patent Owner’s “incompatibility arguments” setting forth distinctions between 3G (’196 patent), 1G (Kallin), and 2G (Kisse) cellular networks and between analog (Kallin and Kisse) and digital (’196 patent) networks are unavailing—the proper consideration is what the references would have taught or suggested to those of ordinary skill in the art not whether the structure disclosed in a reference may be bodily incorporated into the structure of another reference. *See*

In re Keller, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference . . . Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”); *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973) (“Combining the teachings of references does not involve an ability to combine their specific structures.”).

As such, Patent Owner’s arguments concerning Dr. Buehrer’s testimony “admit[ing] that mobile stations (phones) designed to work on a 1G or 2G networks, could not operate on a 3G network” and concerning Dr. Buehrer’s “refusal” “to opine on whether the directed retry messages of Kallin could be incorporated into TS 25.331 v.3.1.0” do not undermine Petitioner’s challenges. *See* PO Resp. 16–17 (citing Ex. 2007, 65:22–66:8, 66:22–67:16; 69:15–20, 80:13–16); *see also id.* at 18–19 (Patent Owner arguing that a POSITA “would not have been motivated to combine the disparate ‘directed retry’ and ‘connection rejection’ technologies with the TS 25.331 standard to achieve the invention of claims 1 and 18”). Instead, we find applicable the passage from *KSR*, 550 U.S. at 417 that says, “when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious.”

Moreover, in the present proceeding, Petitioner relies on TS 25.331 for its teaching of the claimed “connection rejection message” and on Kallin and Kisse for their respective teachings of including frequency-related information in a connection rejection message. Petitioner’s challenge does not rely on bodily incorporating Kallin’s and Kisse’s directed retry message into the cellular network specified in TS 25.331 or otherwise combining Kallin’s and Kisse’s cellular network with that of TS 25.331.

Patent Owner's arguments are also unavailing because, as discussed above, we are not persuaded that the claimed "mobile cellular network" is limited to a particular type of network including, for example, a 3G network. We are also not persuaded that the claimed "connection rejection message" set forth in claim 1 is limited to a particular type of message corresponding to a particular network. *Supra* § III.C.3. As such, we do not determine that the teachings of Kallin and Kissee are excluded.

With regard to Patent Owner's arguments distinguishing the claimed "connection rejection message" from the directed retry message in Kallin and Kissee, the claimed "connection rejection message" is not limited to "direct[ing] the mobile station to a particular frequency and conduct[ing] *no further communication*," as Patent Owner contends. *See* PO Resp. 17. The challenged claims are not limited to any particular number of communications, but are open-ended "comprising" claims that can include any number of additional steps beyond the steps of receiving, setting a reception frequency, and selecting a channel, to which claim 1 is directed.

We further find unavailing Patent Owner's arguments that the directed retry messages in Kallin and Kissee are distinguishable from the claimed "connection rejection message" based on the fact that Kallin's and Kissee's mobile station can "select a channel not suggested by the MSC if a stronger signal is located" and thus, the decision of "select[ing] . . . the channel *is left entirely up to the mobile station*." PO Resp. 17 (emphasis added). This is because claim 1 broadly recites that "select[ing], for the connection setup procedure, a channel transmitting on the reception frequency *based on the at least one parameter* of the connection rejection message." That is, the claim language "based on" does not require that

the “connection rejection message” exclude selection by a *mobile station* of a particular reception frequency and/or a particular channel.

For the foregoing reasons, we find Patent Owner’s arguments unavailing. Instead, we are persuaded that the cited portions of TS 25.331, Kallin, and Kissee and Dr. Buehrer’s testimony sufficiently support Petitioner’s contentions so as to establish unpatentability of claim 1, by a preponderance of the evidence, as obvious over the combination of TS 25.331 and Kallin, as well as obvious over the combination of TS 25.331 and Kissee.

2. Dependent Claims 2, 4, 13, and 14

Patent Owner does not present separate arguments for dependent claims 2, 4, 13, and 14. *See generally* PO Resp.

Claim 2 depends from claim 1 and recites that “the connection rejection message is a RRC CONNECTION REJECT message.” Petitioner contends that “the RRC CONNECTION REJECT message of TS 25.331v.3.1.0 with frequency-related information added . . . meets the claimed ‘RRC CONNECTION REJECT message.’” Pet. 55 (citing Ex. 1009, 140; Pet. § IV.D.2; Ex. 1004 ¶¶ 263, 292).

Claim 4 depends from claim 1 and recites that the apparatus is “further configured to initiate the connection setup procedure.” Petitioner contends that this limitation “is met by the UE in TS25.331-Kallin and TS25.331-Kissee, which reattempts an RRC connection establishment procedure, as taught by Kallin’s and Kissee’s disclosures of reattempting a request to access the network.” *Id.* at 56 (citing Pet. §§ V.E.1.c–d; Ex. 1005, 1:40–43, 2:56–60, 4:34–37; Ex. 1006, 14:31–51, 16:9–16, 16:43–49, Figs. 13, 17; Ex. 1004 ¶¶ 264, 293).

Claim 13 depends from claim 2 and recites that the apparatus is “further configured: to start the connection setup procedure based at least on the value of the at least one parameter of the connection rejection message.” Petitioner

contends that “the frequency-related information in the ‘Frequency-related IE’ of the modified RRC CONNECTION REJECT message of TS25.331-Kallin and TS25.331-Kissee would have been used to reattempt the RRC connection establishment procedure based on Kallin’s and Kissee’s teachings to reattempt a connection. *Id.* (citing Ex. 1005, 1:36–43, 2:56–60, 4:34–37; Ex. 1006, 14:31–51, 16:9–16, 16:43–49, Figs. 13, 17; Ex. 1004 ¶¶ 265, 294).

Claim 14 depends from claim 1 and recites that the apparatus is “embodied in a mobile terminal.” Petitioner contends that “TS 25.331v.3.1.0’s UE encompasses a mobile station, which corresponds to the claimed ‘apparatus.’” *Id.* at 57 (citing Pet. § V.E.1.a). According to Petitioner, “TS25.331-Kallin’s and TS25.331-Kissee’s mobile station may be in the form of a mobile terminal . . .” *Id.*

We have reviewed the cited portions of Kissee, Kallin, TS 25.331, and Dr. Buehrer’s testimony sufficiently support Petitioner’s contentions so as to establish unpatentability of claims 2, 4, 13, and 14 as obvious over TS 25.331 in view of Kallin, and over TS 25.332 in view of Kissee, by a preponderance of the evidence.

3. Independent Claim 18

Petitioner’s arguments for independent claim 18 refer, in large part, to its arguments for independent claim 1 and dependent claim 4. *See* Pet. 57 (citing Pet. §§ V.E.1, V.E.3; Ex. 1004 ¶¶ 267–271, 296–300). Patent Owner does not present separate arguments for independent claim 18. *See generally* PO Resp. For substantially the same reasons discussed above, we are persuaded that the cited portions of Kissee, Kallin, 3GPP TS 25.331, and Dr. Buehrer’s testimony sufficiently support Petitioner’s contentions so as to establish unpatentability of claim 18 as obvious over 3GPP TS 25.331 in view of Kallin, and over 3GPP TS 25.332 in view of Kissee by a preponderance of the evidence.

I. Ground 7–3GPP TS. 25.331 in view of C.S0005

Petitioner contends that claims 1, 2, 4, 13, 14, and 18 are unpatentable over the combination of TS 25.331 and C.S0005. We do not determine whether these claims are obvious over TS 25.331 and C.S0005 because we determine that these claims are obvious over the combination TS 25.331 and Kallin (Ground 5) and the combination TS 25.331 and Kissee (Ground 6). *Supra* § III.H.

J. Grounds 8–14–Combinations in view of Birgeron

Petitioner contends that claim 17 is unpatentable under 35 U.S.C. § 103 over the following combinations: Kallin and Birgeron (Ground 8); Kissee and Birgeron (Ground 9); Ericsson and Birgeron (Ground 10); C.S0005 and Birgeron (Ground 11); TS 25.331, Kallin, and Birgeron (Ground 12); TS 25.331, Kissee, and Birgeron (Ground 13); and TS 25.331, C.S0005, and Birgeron (Ground 14). As discussed in further detail below, we conclude that Petitioner establishes unpatentability of claim 17 in Grounds 8, 9, and 11–13 by a preponderance of the evidence.

We do not reach Ground 10 because we determine that claim 17 is shown to be unpatentable in Grounds 8, 9, and 11–13, as discussed in detail below, and because we do not reach Ground 3 (*supra* § III.F) applying Ericsson alone to independent claim 1, from which claim 17 depends. Similarly, we do not reach Ground 14 because we determine that claim 17 is shown to be unpatentable in Grounds 8, 9, and 11–13, as discussed in detail below, and because we do not reach Ground 7. *Supra* § III.I (citing *SAS*, 138 S. Ct. at 1348; *Sure-Fire Elec.*, IPR2014-01448, Paper 56 at 25, *aff'd*, 702 F. App'x 981 (Fed. Cir. 2017); *SK Hynix*, IPR2017-00692, Paper 25 at 40; *Boston Sci. Scimed*, Nos. 2019-1594, -1604, -1605, 2020 WL 2071962, at *4 (non-precedential)).

a) Petitioner's Arguments

Claim 17 depends from claim 1 and recites that the apparatus “further compris[es] a subscriber identity module.” With respect to ground 8, Petitioner acknowledges that “Kallin does not expressly disclose a subscriber identity module (SIM)” and cites Birgeron as “disclos[ing] a cellular telephone having a control part 115 including a SIM interface communicating with a SIM card 122.” Pet. 65 (citing Ex. 1010, 23:11–24:8, Fig. 4; Ex. 1004 ¶ 331). Petitioner contends that

[i]t would have been obvious to combine Kallin and Birgeron, such that Kallin's mobile station MS comprises a SIM card (claimed “subscriber identity module”) like Birgeron's SIM card 122. One reason for this Kallin-Birgeron combination would have been to add memory capacity to Kallin's MS. In particular, a POSITA would have been motivated to make this modification to use the SIM card, instead of the mobile station's memory, to store downloaded data or software, as taught by Birgeron. As Birgeron explains, it would have been advantageous to use the SIM card because the “user then can change telephone (i.e. use the same SIM) without having to download software. Thus in this way software related to the user/subscriber in a simple way can be moved from one communication unit to another without the user having to repeat the downloading procedure.”

Id. at 65–66 (citing Ex. 1004 ¶¶ 332–335; Ex. 1010, 24:23–30).

Petitioner further contends that there is a reasonable expectation of success in combining Kallin and Birgeron because

[a] POSITA would have found Kallin-Birgeron to be predictable because the result is simply to add a SIM card to Kallin's MS just as it was added to Birgeron's telephone. And, a POSITA would have expected to successfully make this modification given the POSITA's skills, ease in which SIM cards are inserted into telephones, and that mobile phones with SIM cards were ubiquitous. Adding a SIM card to Kallin's MS improves its memory capacity in the same way it improved the similar telephone of Birgeron and merely combines known elements according to known methods with a predictable result.

Id. at 66 (citing Ex. 1004 ¶¶ 332–335).

With respect to grounds 9–14, Petitioner contends that

[i]t would have been obvious to combine Birgerson with each of Kisse, Ericsson, C.S0005, TS-25.331v3.1.0-Kallin, TS-25.331v3.1.0-Kisse, and TS-25.331v3.1.0-C.S0005, such that the apparatus of each (e.g., mobile station or UE) comprises a SIM card (claimed “subscriber identity module”) like Birgerson’s SIM card 122 for the same reasons Birgerson would have been combined with Kallin’s mobile station.

Id. (citing Pet. § V.G.1; Ex. 1010, 23:11–24:8, 24:23–30, Fig. 4; Ex. 1004 ¶¶ 336–356).

Petitioner’s reasons for combining the cited teachings of the references and for reasonable expectation of success for both asserted combinations of references are the same or substantially similar. In view of Petitioner’s contentions, the cited portions of Kallin, Kisse, and Dr. Buehrer’s testimony, we find that Birgerson teaches what Petitioner contends and Petitioner’s reasons for combining the references and reasonable expectation of success to be persuasive and well-supported.

b) Analysis of Patent Owner’s Arguments

Patent Owner contends that “Birgerson does not resolve the problems in Grounds 1-7” because “Birgerson does not disclose a connection rejection message, setting a reception frequency, or the process of reconnection, and Petitioners do not allege otherwise.” PO Resp. 22 (citing Ex. 2001 ¶ 81; Ex. 1010, 3). Patent Owner also contends that “[t]he only motivation provided by Petitioners for the combination is to add memory capacity” but that “the Petition cites only to a portion of Birgerson addressing the use of a SIM card for changing telephones, and does not cite any portion of Birgerson or any of the other references addressing the need for increased memory capacity. *Id.* at 22–23 (citing Pet. 65–66).

Patent Owner arguments are unavailing—Birgerson is not cited to cure the alleged deficiencies of Petitioner’s challenges in Grounds 1–7. Petitioner provides

multiple motivations, including adding memory capacity. For example, Petitioner persuasively argues that “a POSITA would have been motivated to make this modification to use the SIM card, instead of the mobile station’s memory, to store downloaded data or software, as taught by Birgerson” because “it would have been advantageous to use the SIM card because the . . . software related to the user/subscriber in a simple way can be moved from one communication unit to another without the user having to repeat the downloading procedure.” *Id.* at 65–66 (citing Ex. 1004 ¶¶ 332–335; Ex. 1010, 24:23–30).

Patent Owner takes issue with the fact that Petitioner does not cite an express teaching regarding “the need for increased memory capacity.” But *KSR* does not require an *express* teaching, suggestion, or motivation and as such, we find that Patent Owner’s arguments do not undermine Petitioner’s showing. We are persuaded that the cited portions of TS 25.331, Kallin, Kisse, C.S0005, and Birgerson, as well as Dr. Buehrer’s testimony sufficiently support Petitioner’s contentions so as to establish unpatentability of claim 17, by a preponderance of the evidence, as obvious over the combinations of: Kallin and Birgerson (Ground 8); Kisse and Birgerson (Ground 9); C.S0005 and Birgerson (Ground 11); TS 25.331, Kallin, and Birgerson (Ground 12); and TS 25.331, Kisse, and Birgerson (Ground 13).

K. Grounds 15–21–Combinations in view of AAPA

We do not reach Grounds 15–21 because we determine that Petitioner establishes unpatentability of claims 15 and 16 (Ground 4, *supra* § III.G), as well as claim 17 (Grounds 8, 9, and 11–13, *supra* § III.J). *Supra* § III.I (citing *SAS*, 138 S. Ct. at 1348; *Sure-Fire Elec.*, IPR2014-01448, Paper 56 at 25, *aff’d*, 702 F. App’x 981 (Fed. Cir. 2017); *SK Hynix*, IPR2017-00692, Paper 25 at 40; *Boston*

Sci. Scimed, Nos. 2019-1594, -1604, -1605, 2020 WL 2071962, at *4 (non-precedential)).

IV. CONCLUSION

For the foregoing reasons, we conclude that Petitioner establishes unpatentability of claims 1, 2, 4, and 13–18 of the '196 patent by a preponderance of the evidence.¹² Our conclusions regarding the challenged claims are summarized in the chart below:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims not shown Unpatentable
1, 4, 14, 18	102(b)	Kallin	1, 4, 14, 18	
1, 4, 14, 18	102(e)	Kissee	1, 4, 14, 18	
1, 2, 4, 13, 14, 18	103(a)	Ericsson		
1, 4, 14–16, 18	§102(e)	C.S0005	1, 4, 14–16, 18	
1, 2, 4, 13, 14, 18	§ 103(a)	TS 25.331, Kallin	1, 2, 4, 13, 14, 18	
1, 2, 4, 13, 14, 18	§ 103(a)	TS 25.331, Kissee	1, 2, 4, 13, 14, 18	
1, 2, 4, 13, 14, 18	§ 103(a)	TS 25.331, C.S0005		
17	§ 103(a)	Kallin, Birgerson	17	
17	§ 103(a)	Kissee, Birgerson	17	

¹² Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. §§ 42.8(a)(3), (b)(2).

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims not shown Unpatentable
17	§ 103(a)	Ericsson, Birgerson		
17	§ 103(a)	C.S0005, Birgerson	17	
17	§ 103(a)	TS 25.331, Kallin, Birgerson	17	
17	§ 103(a)	TS 25.331, Kisse, Birgerson	17	
17	§ 103(a)	TS 25.331, C.S0005, Birgerson		
15–17	§ 103(a)	Kallin, AAPA		
15–17	§ 103(a)	Kisse, AAPA		
15–17	§ 103(a)	Ericsson, AAPA		
15–17	§ 103(a)	C.S0005, AAPA		
15–17	§ 103(a)	TS 25.331, Kallin, AAPA		
15–17	§ 103(a)	TS 25.331, Kisse, AAPA		
15–17	§ 103(a)	TS 25.331, C.S0005, AAPA		
Overall Outcome			1, 2, 4, and 13–18	None

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 2, 4, and 13–18 of the '196 patent are shown to be unpatentable by a preponderance of the evidence; and

FURTHER ORDERED that, because this a Final Written Decision, parties to this proceeding seeking judicial review of this Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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