

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

IARNACH TECHNOLOGIES LTD.,

Plaintiff,

v.

CHARTER COMMUNICATIONS, INC.,
CHARTER COMMUNICATIONS HOLDING
COMPANY, LLC, CHARTER
COMMUNICATIONS OPERATING, LLC,
SPECTRUM MANAGEMENT HOLDING
COMPANY, LLC, and SPECTRUM GULF
COAST, LLC,

Defendants.

Civil Action No. 2:24-cv-00230-JRG

JURY TRIAL DEMANDED

DEFENDANTS' PRELIMINARY INVADLITY AND INELIGIBILITY CONTENTIONS

I. INTRODUCTION

Pursuant to the Court’s Scheduling Order (Dkt. 32), Docket Control Order (Dkt. 55), the Patent Rules for the Eastern District of Texas, and the Court’s Standing Order Regarding Subject Matter Eligibility Contentions (“Standing Order”), defendants Charter Communications, Inc., Charter Communications Operating, LLC, Charter Communications Holding Company, LLC, Spectrum Management Holding Company, LLC, and Spectrum Golf Coast, LLC (collectively, “Defendants”) provide these preliminary invalidity and ineligibility contentions (collectively, “invalidity contentions”) to Plaintiff Iarnach Technologies Ltd. (“Plaintiff” or “Iarnach”) regarding the currently asserted claims of U.S. Patent No. 8,942,378 (the “378 patent”), U.S. Patent No. 9,287,982 (the “982 patent”), and U.S. Patent No. 9,674,035 (the “035 patent”) (collectively, the “Asserted Patents”). Defendants reserve the right to provide additional and/or supplemental contentions in view of additional information or documents received from third parties, that Defendants locate from ongoing investigations, or in response to any positions and actions Plaintiffs and/or the Court may take as the case progresses.

Plaintiff presently asserts the claims identified in the table below (collectively, the “Asserted Claims”).

Patent	Asserted Claims ¹
378 patent	1-4, 6-7, 9-12
982 patent	1-11
035 patent	1-18, 20-24, 26-30, 32

Defendants are providing invalidity contentions for the above-identified Asserted Claims. To the extent Iarnach is later permitted to assert additional claims, Defendants will amend and supplement these invalidity contentions to address any additional claims. Nothing in these

¹ Plaintiff’s Preliminary Infringement Contentions served July 12, 2024.

contentions constitutes an admission of validity as to any other non-asserted claims of the asserted patents.

Pursuant to P.R. 3-3 and the Standing Order and based on Defendants' investigation and knowledge developed to date, Defendants serve invalidity contentions in the form of (1) a chart setting forth where in the prior art references each element of the Asserted Claims is found, (2) an identification of any limitations Defendants contend are indefinite, lack written description, or are not enabled under Section 112, and (3) an identification of any claims Defendants contend are directed to ineligible subject matter under 35 U.S.C. § 101 and corresponding charts consistent with the Standing Order. Consistent with the requirements of the Patent Rules and the Standing Order, these contentions do not include bases for unenforceability and invalidity of the Asserted Patents that Defendants have outside of prior art or 35 U.S.C. §§ 101 and 112. Contemporaneously with these preliminary invalidity contentions, Defendants produce the prior art referenced herein.

Defendants incorporate by reference all prior art references, charts, theories, and disclosures served on Iarnach in any prior or pending court action or proceeding before the Patent Trial and Appeal Board, including but not limited to *Iarnach Technologies Ltd. v. AT&T Corp.*, 23-cv-00231-JRG (E.D. Tex.); *Iarnach Technologies Ltd. v. Verizon Business Networks Services, LLC*, Case No. 23-cv-00631-JRG (E.D. Tex.); *Charter Communications, Inc. v. Iarnach Technologies Ltd.*, IPR2024-01286 (PTAB); *Charter Communications, Inc. v. Iarnach Technologies Ltd.*, IPR2024-01287 (PTAB), as if recited herein.

As stated above, should Iarnach be permitted to assert more or different claims from the Asserted Patents, or any other patents, than it does now, Defendants will identify invalidity grounds and prior art as appropriate and will amend or supplement these invalidity contentions accordingly.

Defendants' invalidity contentions are based on information reasonably available at this

time and may require subsequent amendment, modification, and/or supplementation. Fact discovery has just begun, and Defendants have not obtained third-party discovery. Defendants also reserve the right to present additional knowledge and/or information regarding prior art located during the course of discovery or further investigation, for example from consultation with experts, prior art authors, and others. Defendants have not yet obtained deposition testimony from the named inventors of the Asserted Patents. Defendants expect that discovery will reveal not only additional prior art, but also related disclosures and evidence for many of the prior art references identified herein. As such, Defendants have not yet completed their investigation, discovery, or analysis of matters relating to the validity or enforceability of the Asserted Claims. Accordingly, nothing in these invalidity contentions should be construed as a statement that no other persons have discoverable information, that no other documents, data compilations, and/or tangible things exist that Defendants may use to support their claims or defenses, or that no other legal theories or factual bases will be pursued. Defendants reserve the right to amend, modify and/or supplement these invalidity contentions as additional information is discovered, identified, or otherwise appreciated, including testimony about the scope and content of the prior art and the claimed inventions.

Further, these invalidity contentions are based on Defendants' present understanding of Iarnach's preliminary infringement contentions served on July 12, 2024 ("preliminary infringement contentions"). Nothing in these invalidity contentions should be regarded as conceding that Iarnach's preliminary infringement contentions are legally or factually adequate or as necessarily reflecting the proper interpretation of the claims or an interpretation of the claims that Defendants agree with or propose. Defendants reserve the right to amend these contentions should Iarnach raise any new infringement theories in its final infringement contentions or provide any new applications and interpretation of the scope of the claims in those final infringement

contentions.

Nothing in these invalidity contentions shall be treated as an admission that any of Defendants' accused technology meets any limitation of the Asserted Claims. Defendants do not infringe any of the Asserted Claims. To the extent that any prior art reference identified by Defendants contains a claim element that is the same as or similar to an element in Defendants' accused technology, inclusion of that reference in Defendants' invalidity contentions shall not be deemed a waiver of any claim construction or non-infringement position. Any use of these invalidity contentions to support any allegation of infringement would be misleading, false, and wrong as a matter of law and fact.

Further, nothing in these contentions constitutes an admission concerning the priority dates, conception dates, or reduction to practice of the Asserted Claims of the Asserted Patents. Unless otherwise specified, the invalidity contentions set forth herein are based on the following purported priority dates as determined by their effective filing dates (the ultimate burden to establish any of these is on Iarnach):

- (1) January 25, 2010 for the 378 patent;
- (2) April 13, 2011 for the 982 patent; and
- (3) March 28, 2011 for the 035 patent.

II. IDENTIFICATION OF PRIOR ART

The concepts disclosed and claimed in each of the Asserted Patents are not new, and had been disclosed, used, offered for sale, sold, and practiced by others prior to the claimed priority dates of the patents. The prior art identified herein and in Exhibits A-C, individually or in combination, invalidates the Asserted Claims under 35 U.S.C. §§ 102 (a), (b), (e), (g) and 103. Because discovery is pending, Defendants expect to gather additional information about the identified prior art, and other prior art, through third party discovery or other discovery, and will

thus amend and supplement these invalidity contentions once they obtain that discovery and have reasonable time to analyze it in a meaningful way.

As described in more detail below, the claims of the Asserted Patents are also invalid under 35 U.S.C. §§ 101 and 112.

A. THE 378 PATENT

1. IDENTIFICATION OF INVALIDITY GROUNDS

Based on the reasons identified herein and the accompanying charts and references, a person having ordinary skill in the art would have found the Asserted Claims of the 378 patent invalid under 35 U.S.C. §§ 102 and/or 103. The 378 patent invalidity charts attached as Exhibit A set forth herein, for corresponding limitations of an asserted claim, exemplary disclosures from each identified reference in an invalidity ground below where applicable. Defendants reserve the right to amend their invalidity grounds or charts, or provide supplemental grounds or charts, based on any amendments to Plaintiff's infringement contentions, or information or documents that may be obtained as discovery begins including third party discovery.

Defendants provide the following identification of preliminary and exemplary invalidity grounds for the currently Asserted Claims of the 378 patent:

Claim No.	Exemplary Invalidity Grounds^{2, 3} under 35 U.S.C. §§ 102 and/or 103⁴
1	Platnic alone or in combination with Hirth, Murakami, Ishikawa, Yen, Ma, RFC 1112, and/or RFC 4601

² For brevity, each reference in this table is identified by its short cite, which is defined later in subsections II.A.2 and II.A.3 below.

³ To the extent the grounds identified in the below table for a particular asserted claim refer back to the grounds identified for another claim, the grounds disclose the particular asserted claim for the reasons identified in the corresponding claim charts for the particular asserted claim.

⁴ Defendants contend that any combination of references identified in this table as a ground invalidates the relevant asserted claim under 35 U.S.C. § 103. In addition, each reference identified alone as a ground invalidates the relevant asserted claim under 35 U.S.C. §§ 102 and 103, as "it is well settled that a disclosure that anticipates under § 102 also renders the claim invalid under

Claim No.	Exemplary Invalidity Grounds ^{2, 3} under 35 U.S.C. §§ 102 and/or 103 ⁴
	Hirth alone or in combination with Platnic, Murakami, Ishikawa, Yen, Ma, RFC 1112, and/or RFC 4601 Murakami alone or in combination with Platnic, Hirth, Ishikawa, Yen, Ma, RFC 1112, and/or RFC 4601 Ishikawa alone or in combination with Platnic, Hirth, Murakami, Yen, Ma, RFC 1112, and/or RFC 4601
2	See grounds of claim 1
3	See grounds of claim 1 Grounds of claim 1 in combination with Platnic, Hirth, Ishikawa, or Ma
4	See grounds of claim 1 Grounds of claim 1 in combination with RFC 1112
6	See grounds of claim 1 Grounds of claim 1 in combination with Platnic, Hirth, or Murakami
7	See grounds of claim 1
9	See grounds of claim 1
10	See grounds of claim 1 Grounds of claim 1 in combination with Platnic, Hirth, Ishikawa, or Ma
11	See grounds of claim 1 Grounds of claim 1 in combination with Platnic, Hirth, or Murakami
12	See grounds of claim 1 Grounds of claim 1 in combination with RFC 1112

2. IDENTIFICATION OF INVALIDITY DUE TO ANTICIPATION

The table below lists the prior art references that anticipate one or more of the Asserted Claims of the 378 patent under 35 U.S.C. § 102. The invalidity charts attached as Exhibit A demonstrate where each limitation of the Asserted Claims is found in the references listed below, either expressly or inherently in the larger context of the passage, as understood by a person having

§ 103, for anticipation is the epitome of obviousness.” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (internal citations and quotations omitted) (finding no error in § 103 invalidity determination based on a single reference).

ordinary skill in the art. The following references are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

Reference	Filing Date / Priority Date	Short Cite
U.S. Patent Application No. 2008/0144622A1	February 16, 2006	Platnic
U.S. Patent Application No. 2009/0262937A1	March 31, 2009	Hirth
Japanese Patent Application No. JP 2004-343243A	December 2, 2004	Murakami
Japanese Patent Application No. JP 2007-228292A	September 6, 2007	Ishikawa

3. IDENTIFICATION OF INVALIDITY DUE TO OBVIOUSNESS

The tables below list prior art references that render one or more of the Asserted Claims of the 378 patent invalid as obvious under 35 U.S.C. § 103, alone or in combination with the knowledge of a person having ordinary skill in the art and/or other prior art. The invalidity charts attached as Exhibit A demonstrate where each limitation of the Asserted Claims is found in the references listed below, either expressly or inherently in the larger context of the passage, as understood by a person having ordinary skill in the art. The following references are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

a. Prior Art Patents and Patent Publications That Render Obvious the Asserted Claims of the 378 Patent

Patent or Patent Publication No.	Filing Date / Priority Date	Date of Issue or Publication	Short Cite
U.S. Patent Application No. 2008/0144622A1	February 16, 2006	June 19, 2008	Platnic
U.S. Patent Application No. 2009/0262937A1	March 31, 2009	October 22, 2009	Hirth
Japanese Patent Application No. JP 2004- 343243A	May 3, 2003	December 2, 2004	Murakami

Patent or Patent Publication No.	Filing Date / Priority Date	Date of Issue or Publication	Short Cite
Japanese Patent Application No. JP 2007-228292A	February 2, 2006	September 6, 2007	Ishikawa
U.S. Patent Application No. 2002/0150097	February 21, 2001	October 17, 2002	Yen
International Patent Application No. WO 2007/045130A1	December 30, 2005	April 26, 2007	Ma

b. Prior Art Publications That Render Obvious the Asserted Claims of the 378 Patent

Title	Date of Publication	Author/Publisher	Short Cite
Host Extensions for IP Multicasting	August 1989	Steve Deering, Stanford University	RFC 1112
Protocol Independent Multicast – Sparse Mode (PIM-SM): Protocol Specification	August 2006	The Internet Society	RFC 4601

c. Motivations for Combining Prior Art

The 378 patent is invalid in view of the combinations of references disclosed above. A person having ordinary skill in the art at the priority date (a “POSITA”) of the 378 patent would have naturally consulted each of these references and combined the teachings, for at least the reasons provided below. Accordingly, a POSITA would have been motivated to combine elements of the references identified above, recognizing that the combination would be a predictable use of elements known in the art to solve known problems by using known techniques, resulting in expected outcomes. Defendants’ expert(s) will further explain the motivation to combine prior art and why the asserted claims of the asserted patents are invalid as obvious in accordance with the case schedule. Nothing herein is intended to limit or preclude such future expert opinion.

A POSITA at the priority date of the 378 patent would have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them for at least the following exemplary reasons. To the extent a

reference does not disclose a limitation of the Asserted Claims, the limitation is obvious in view of that reference combined with the knowledge of a POSITA alone, or with any of the references identified as a combination below and set forth in the attached Exhibit A charts. The corresponding limitation for each identified reference includes exemplary disclosures to the extent that reference discloses the limitation in its respective invalidity chart.

A POSITA would have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them for at least the following exemplary reasons.⁵

(1) General state of the art.

The specification of the 378 patent admits that the basic steps recited in the Asserted Claims were well-known, conventional activities, with which a POSITA would have been familiar. (*See* 378 patent at 1:14-47 (describing prior art passive optical networks (PONs), including optical network units (ONUs) and optical line terminals (OLTs), using encryption mechanisms, such as AES and triple stirring encryption, in Gigabit-Capable Passive Optical Network (GPON) and Ethernet Passive Optical Network (EPON) systems, and registration and activation of user ONU devices with the OLT to receive multicast service data).) Each of the references identified in the tables above further describe what was known in the state of the art.

(2) Multicast encryption using a common key

By 2010, the concept of using a common key to encrypt multicast data for delivery to authorized users in a passive optical network was commonplace and would have been well known

⁵ In *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious, because a court “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at 418. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the “interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418.

to a POSITA. Many prior art references describe PON systems, including a back-office system, an optical line terminal (OLT), and multiple optical network units (ONUs), that provided encrypted multicast data and a common encryption-decryption key only to successfully activated ONUs. Such security measures ensure that only registered ONUs receive and can use the common key to decrypt the multicast data, thereby preventing unauthorized access.

Multiple prior art references using a common key to encrypt multicast data for delivery to authorized users in a PON were in use and known to those skilled in the art. For example, Platnic describes a PON system including at least one OLT and multiple ONUs (or Optical Network Terminations ONTs) that use the IGMP protocol to deliver multicast data encrypted with a common key along a multicast channel to registered ONUs. (*See, e.g.*, Platnic at Abstract, ¶¶ [0009]-[0012] (describing process of adding a customer to a multicast group and delivering encrypted multicast data to the customer), ¶¶ [0014]-[0018] (describing PON system, including IGMP router as part of OLT, ONUs), ¶¶ [0023]-[0026] (describing encrypting multicast data “using a multicast churning key”), ¶¶ [0061]-[0065] (describing entitlement criteria for access to common multicast key), ¶ [0104] (OLT analyzing “entitlement information with respect to the ONT1 end customer information. If the customer is not entitled to any multicast transmission and/or if its not entitled to the specified channel 1, the OLT will reject the request”).)

Platnic’s OLT can generate and send the common multicast key via a separate management channel to all registered ONUs in the multicast group. (*See id.* at ¶ [0048] (“The code key message can be transmitted to the particular end customer by using a unicast (churned or non-churned) connection.”), ¶ [0050] (“In a specific case, when the multicast churning key is directly inserted in the message sent to the ONT, the churning information can be equal to the churning key.”), ¶ [0101] (noting that “the code key message is transmitted via a control channel or a management channel, in contrast to the multicast channels transmitted as data traffic”), ¶ [0104] (describing a

“code key message [that] comprises access data containing both the service information and an encrypted churning key in the form of churning information which can be obtained by applying shared information to a churning key selected or produced by OLT”).) Platnic’s registered ONUs use the received common key to decrypt the multicast data. (*See, e.g., id.* at ¶ [0086] (describing “dechurning said multicast channel using the churning key”), ¶ [0102] (describing ONU “obtain[ing] the code key for de-churning the received multicast channel”), ¶ [0105] (“Box 86 indicates an operation of de-churning (descrambling) of the multicast channel with the aid of the churning key obtained at box 84.”).)

A POSITA would have known that methods for encrypting multicast data in a PON system to prevent unauthorized access, such as Platnic’s method of encrypting multicast data using a common key sent via a separate management channel, would have the beneficial results of improving the overall security and commercial profitability of a PON system. (*See, e.g., id.* at ¶ [0008] (explaining “an object of the invention to provide a method and a system enabling multicast transmission of multicast services in a communication network, for example comprising a PON (passive optical network), and with various levels of security”).)

Other references demonstrate that a POSITA would have been aware of the benefits of encrypting multicast data using a common key in a PON system. For example, Hirth describes “a system for decrypting data frames in an Ethernet passive optical network (EPON)” in which the OLT generates and sends a common key to all requesting ONUs for decryption of multicast data. (*See* Hirth at Abstract (describing “a system for decrypting data frames in an Ethernet passive optical network (EPON)”; “decrypt[ing] the data frame based on the local input block and the session key”, ¶ [0083] (“In the case of multicast logical links, the OLT initiates key exchange and generates the new key value.”), ¶ [0088] (same), ¶ [0099] (describing the use of a common key for encrypting multicast data, including “a key exchange for multicast channels, wherein all receiving

devices use the same key” using an OAM message format, if available).)

Murakami describes “a method for multicast communication in a PON system” in which the central office and OLT monitor the system and “control[s] the setting of logical links for multicasting” data and “distribute[s] encryption keys for use in the multicast communication[s].” (Murakami at ¶ [0012].) Like the OLT in Platnic’s PON system, Murakami’s OLT can generate and deliver multicast encryption keys to registered ONUs by a secure management channel. (See Murakami at ¶¶ [0031]-[0032] (describing ONU registration, OLT key generation, and key exchange process), ¶¶ [0039]-[0040] (same).) Ishikawa describes a similar PON system in which the OLT includes “a multicasting encrypt generator for generating a multicast encrypt key,” “an encrypter [] for encrypting multicast frames for a multicast group,” and “selecting a multicast encrypt key corresponding to a multicast identifier of the multicast group.” (Ishikawa at Abstract, ¶¶ [0039]-[0041] (describing OLT’s “logical link control unit” and “multicast encryption key generating unit”), ¶ [0044], ¶ [0052] (describing ONU registration); *see also*, Yen at ¶¶ [0036]-[0037] (disclosing that “the OLT can itself generate a multicast churning key. The OLT can then deliver the self-generated multicast key by sending to each subscribing ONTs the XOR product between the generated multicast churning key and the respective ONT’s own churning keys.”); Ma at 2 (describing EPON system in which “(2) The OLT transmits a multicast key (Key for Multicast) encrypted by the corresponding unicast key to the ONU;” “(3) Repeat[ing] steps (1) and (2) so that the ONUs in the group get the multicast key;” and “(4) The OLT encrypts the multicast service by using the multicast key and sends it to the ONU in the group;” and “(5) The ONU decrypts the encrypted multicast service by using the multicast key to obtain the multicast service.”).)

A POSITA would have been familiar with, and been motivated to combine, the aforementioned prior art references, features, and techniques using a common key to encrypt multicast data for delivery to authorized users in a passive optical network, as known techniques

and methods for doing so in related communication networks, and recognized the benefits of increased efficiency and overall system performance by applying those techniques to a DOCSIS system implementing a PON, as combinations of prior art elements according to known methods to yield predictable results and simple substitution of one known element for another to obtain predictable results.

(3) Using an encryption key timer or aging time

A POSITA would have been aware that updating keys according to a timer or aging time would logically translate to increased levels of security in a PON system delivering encrypted data and cryptographic keys to ONUs, and been aware of prior art references disclosing various techniques and methods for doing so. Platnic, for example, explains that in its secure PON system, the “multicast churning key can be periodically refreshed” or “be periodically modified and resent to the relevant end customer(s) receiving the suitable multicast channel (members of the multicast group).” (Platnic at ¶ [0057].) Hirth recognizes the importance of updating encryption keys to a system’s security by using a “switch_counter value” that indicates a key change, explaining that “[i]t is important that the new key becomes active in the OLT and an ONU synchronously with transmission and reception of the same message.” (Hirth at ¶¶ [0101]-[0110].) Ishikawa’s PON system includes a similar security feature to “update a multicast encryption key at a predetermined cycle.” (Ishikawa at ¶ [0042], ¶ [0066].) Murakami’s PON system updates common multicast keys to accommodate new ONUs. (See Murakami at ¶¶ [0039]-[0040].)

A POSITA would have been motivated to combine any of the references disclosing multicast encryption using a common key with any of the references disclosing an encryption key timer or aging time, and vice versa, and would have found it obvious to do so. As demonstrated above, the benefits of multicast encryption using a common key in PON systems were well known. A POSITA would have been well-aware that periodic updates to encryption keys, including the

use of a set period of time, key timer, or an aging time for a key's validity, would increase the level of security for multicast systems delivering encrypted data and cryptographic keys. A POSITA would have known that even the highest level of cryptographic keys are susceptible to cracking if not changed within a reasonable amount of time for the cryptographic algorithm employed, and been motivated to employ known methods of updating common keys used in secure communication systems. A POSITA would have naturally looked to then-existing references disclosing an encryption key timer or aging time such as those described herein. A POSITA would have found it obvious to select and combine features from such references in order to provide increased system security and performance. Such combinations are combinations of prior art elements according to known methods to yield predictable results and simple substitution of one known element for another to obtain predictable results.

(4) Sending a channel identifier and using different common keys for each channel

A POSITA would have been aware of prior art references that disclose the use of channel identifiers for respective multicast channel to improve system security, management, and efficiency. For example, a POSITA would have been aware of prior art references such as Platnic that assign multicast channel keys on a “per channel” or “per-package (group of channels) [basis], thus to allow controlling entitlements at a channel or a package level.” (Platnic at ¶ [0029]; *see also, id.* at ¶ [0039] (describing a “Flow identifier” as the “multicast channel number”) ¶ [0104] (“the function of the channel/flow identification is fulfilled by the field Flow ID.”).) Murakami similarly uses logical link identifiers (LLIDs) as multicast channel identifiers and employs different common keys within its PON system. (*See* Murakami at ¶¶ [0024]-[0025], Fig. 3.) Hirth's PON system also uses LLIDs and includes a channel identifier in data packets sent to registered ONUs. (*See* Hirth at ¶ [0009] (“each ONU is assigned one or more Logical Link

Identifiers (LLIDs), and a data packet transmitted by the OLT typically specifies an LLID of the destination ONU.”), ¶ [0050], ¶ [0061]; *see also*, Ishikawa at ¶ [0021] (using LLIDs and sending LLID as notification to ONU)

A POSITA would have been motivated to combine any of the references disclosing multicast encryption using a common key with any of the references disclosing sending a channel identifier and using different common keys for each channel, and vice versa, and would have found it obvious to do so. As demonstrated above, the benefits of multicast encryption using a common key in PON systems were well known. A POSITA would have recognized the benefit of including a channel identifier in multicast communications in PON systems employing multiple secure channels with different registered users in multicast groups, and further recognized the benefit of assigning different common keys to different multicast channels, to provide increased levels of security and service, multicast channel access, flexible multicast groups, and improve overall system efficiency. A POSITA would have naturally looked to then-existing references disclosing a channel identifier and using different common keys for each channel such as those described herein. A POSITA would have found it obvious to select and combine features from such references in order to provide increased system security and performance. Such combinations are combinations of prior art elements according to known methods to yield predictable results and simple substitution of one known element for another to obtain predictable results.

4. INVALIDITY UNDER § 112

The Asserted Claims are invalid under 35 U.S.C. § 112. The specification of the 378 patent fails to disclose many of the limitations recited by the claims, and thus lacks a written description to adequately convey to a POSITA that the inventor possessed the alleged invention. For example, the 378 patent specification does not disclose a “common key” or provide any description for “all different multicast services.” (cl. 1 and all dependents). The 378 patent further does not enable

one of skill in the art to practice the alleged scope of the claims without undue experimentation. For example, the 378 patent does not enable one of skill in the art to practice the scope of the claims as set forth in Iarnach's preliminary infringement contentions. In addition, the Asserted Claims of the 378 patent and the specification lack any specific detail which would enable a POSITA to make, use, or practice what is claimed.

At least the following claims of the 378 patent, and all claims depending on these claims, are invalid for failing to meet the requirements of 35 U.S.C. § 112 because they recite the following text:

Claim Element	Patent (Claims)	§ 112 Grounds
"common key"	1-11	Lack of written description pursuant to pre-AIA § 112, para. 1; Lack of enablement pursuant to pre-AIA § 112, para. 1.
"all different multicast services"	1, 9	Lack of written description pursuant to pre-AIA § 112, para. 1; Lack of enablement pursuant to pre-AIA § 112, para. 1.

5. INVALIDITY UNDER § 101

The Asserted Claims of the 378 patent do not comply with the requirements of 35 U.S.C. § 101 under the two-step framework articulated in *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014). Defendants incorporate by reference its Motion to Transfer, or in the Alternative, Motion to Dismiss (Dkt. 31), its Motion to Dismiss Second Amended Complaint (Dkt. 47), and its Reply in support of its Motion to Dismiss Second Amended Complaint (Dkt. 65). Defendants' Eligibility Contentions for the 378 patent are attached as Exhibit E pursuant to the Court's Standing Order.

B. THE 982 PATENT

1. IDENTIFICATION OF INVALIDITY GROUNDS

Based on the reasons identified herein and the accompanying charts and references, a person having ordinary skill in the art would have found the Asserted Claims of the 982 patent invalid under 35 U.S.C. §§ 102 and/or 103. The 982 patent invalidity charts attached as Exhibit B set forth herein, for corresponding limitations of an asserted claim, exemplary disclosures from each identified reference in an invalidity ground below where applicable. Defendants reserve the right to amend their invalidity grounds or charts, or provide supplemental grounds or charts, based on any amendments to Plaintiff's infringement contentions, or information or documents that may be obtained as discovery begins including third party discovery.

Defendants provide the following identification of preliminary and exemplary invalidity grounds for the currently Asserted Claims of the 982 patent:

Claim No.	Exemplary Invalidity Grounds ^{6, 7} under 35 U.S.C. §§ 102 and/or 103 ⁸
1	Bernstein alone or in combination with Tsuge, Noel, Wan, Wang, Jinhui, Bourgart, and/or DPOE-SP-MULPI 1.0 Tsuge alone or in combination with Bernstein, Noel, Wan, Wang, Jinhui, Bourgart, and/or DPOE-SP-MULPI 1.0 Wang alone or in combination with Bernstein, Tsuge, Noel, Wan, Jinhui, Bourgart, and/or DPOE-SP-MULPI 1.0

⁶ For brevity, each reference in this table is identified by its short cite, which is defined later in subsections II.B.2 and II.B.3 below.

⁷ To the extent the grounds identified in the below table for a particular asserted claim refer back to the grounds identified for another claim, the grounds disclose the particular asserted claim for the reasons identified in the corresponding claim charts for the particular asserted claim.

⁸ Defendants contend that any combination of references identified in this table as a ground invalidates the relevant asserted claim under 35 U.S.C. § 103. In addition, each reference identified alone as a ground invalidates the relevant asserted claim under 35 U.S.C. §§ 102 and 103, as "it is well settled that a disclosure that anticipates under § 102 also renders the claim invalid under § 103, for anticipation is the epitome of obviousness." *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (internal citations and quotations omitted) (finding no error in § 103 invalidity determination based on a single reference).

Claim No.	Exemplary Invalidity Grounds ^{6, 7} under 35 U.S.C. §§ 102 and/or 103 ⁸
	Jinhui in combination with Bernstein, Tsuge, Noel, Wan, Wang, Bourgart, and/or DPOE-SP-MULPI 1.0 Bourgart alone or in combination with Bernstein, Tsuge, Noel, Wan, Wang, Jinhui, and/or DPOE-SP-MULPI 1.0 DPOE-SP-MULPI 1.0 alone or in combination with Bernstein, Tsuge, Noel, Wan, Wang, Jinhui, and/or Bourgart
2	<i>See</i> grounds of claim 1 Grounds of claim 1 in combination with Noel, Wan, or Bourgart
3	<i>See</i> grounds of claim 1 Grounds of claim 1 in combination with Wang
4	<i>See</i> grounds of claim 1
5	<i>See</i> grounds of claim 1
6	<i>See</i> grounds of claim 1
7	<i>See</i> grounds of claim 1
8	<i>See</i> grounds of claim 1 Grounds of claim 1 in combination with Noel, Wan, or Bourgart
9	<i>See</i> grounds of claim 1 Grounds of claim 1 in combination with Noel, Wan, or Bourgart
10	<i>See</i> grounds of claim 1
11	<i>See</i> grounds of claim 1

2. IDENTIFICATION OF INVALIDITY DUE TO ANTICIPATION

The table below lists the prior art references that anticipate one or more of the Asserted Claims of the 982 patent under 35 U.S.C. § 102. The invalidity charts attached as Exhibit B demonstrate where each limitation of the Asserted Claims is found in the references listed below, either expressly or inherently in the larger context of the passage, as understood by a person having ordinary skill in the art. The following references are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

Reference	Filing Date / Priority Date	Short Cite
U.S. Patent No. 8,831,425	January 9, 2008	Bernstein
U.S. Patent No. 8,160,448	March 17, 2009	Tsuge
U.S. Patent No. 8,416,816	September 2, 2008	Bourgart
DPoE-SP-MULPI v1.0-I01-110225	February 25, 2011	DPoE-SP-MULPI 1.0
Chinese Patent Application Publication No. CN 10-1282178	April 6, 2007	Jinhui
International Patent Application Publication No. WO 2009/143782	December 3, 2009	Wang

3. IDENTIFICATION OF INVALIDITY DUE TO OBVIOUSNESS

The tables below list prior art references that render one or more of the Asserted Claims of the 982 patent invalid as obvious under 35 U.S.C. § 103, alone or in combination with the knowledge of a person having ordinary skill in the art and/or other prior art. The invalidity charts attached as Exhibit B demonstrate where each limitation of the Asserted Claims is found in the references listed below, either expressly or inherently in the larger context of the passage, as understood by a person having ordinary skill in the art. The following references are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

a. Prior Art Patents and Patent Publications That Render Obvious the Asserted Claims of the 982 Patent

Patent or Patent Publication No.	Filing Date / Priority Date	Date of Issue or Publication	Short Cite
U.S. Patent No. 8,831,425	January 9, 2008	September 9, 2014	Bernstein
U.S. Patent No. 8,160,448	March 17, 2009	April 17, 2012	Tsuge
U.S. Patent Application Publication No. 2008/0253771	May 18, 2007	October 16, 2008	Noel
U.S. Patent Application Publication No. 2009/0300160	August 10, 2009	December 3, 2009	Wan
U.S. Patent No. 8,416,816	September 2, 2008	April 16, 2009	Bourgart
International Patent Application Publication No. WO 2009/143782	May 27, 2009	December 3, 2009	Wang

Patent or Patent Publication No.	Filing Date / Priority Date	Date of Issue or Publication	Short Cite
Chinese Patent Application Publication No. CN 10-1282178	April 6, 2007	October 8, 2008	Jinhui

b. Prior Art Publications That Render Obvious the Asserted Claims of the 982 Patent

Title	Date of Publication	Author/Publisher	Short Cite
DPoE-SP-MULPIv1.0-I01-110225	February 25, 2011	CableLabs	DPoE-SP-MULPI 1.0

c. Motivations for Combining Prior Art

The 982 patent is invalid in view of the combinations of references disclosed above. A POSITA of the 982 patent would have naturally consulted each of these references and combined the teachings, for at least the reasons provided below. Accordingly, a POSITA would have been motivated to combine elements of the references identified above, recognizing that the combination would be a predictable use of elements known in the art to solve known problems by using known techniques, resulting in expected outcomes. Defendants' expert(s) will further explain the motivation to combine prior art and why the asserted claims of the asserted patents are invalid as obvious in accordance with the case schedule. Nothing herein is intended to limit or preclude such future expert opinion.

A POSITA at the priority date of the 982 patent would have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them for at least the following exemplary reasons. To the extent a reference does not disclose a limitation of the Asserted Claims, the limitation is obvious in view of that reference combined with the knowledge of a POSITA alone, or with any of the references identified as a combination below and set forth in the attached Exhibit B charts. The corresponding limitation for each identified reference includes exemplary disclosures to the extent that reference

discloses the limitation in its respective invalidity chart.

A POSITA would have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them for at least the following exemplary reasons.⁹

(1) General state of the art.

The specification of the 982 patent admits that the basic steps recited in the Asserted Claims were well-known, conventional activities, with which a POSITA would have been familiar. (*See* 982 patent at 1:17-32 (describing prior art passive optical network (PON) system implementing DPOE, including “an optical network unit (ONU),” “an optical line terminal (OLT),” “a virtual coaxial cable modem (VCM),” and a “back-office management system”), 1:33-2:38 (describing prior art ONU registration and automatic configuration procedures).) Each of the references identified in the table above further describe what was known in the state of the art.

(2) Auto-configuration of devices in a DPOE system

By 2011, the concept of auto-configuring multiple devices in a DOCSIS passive optical network system (DPOE) was commonplace and would have been well known to a POSITA. Many prior art references describe DPOE and PON systems, including a back-office system, an optical line terminal (OLT), and multiple optical network units (ONUs), that provided features to automatically configure OLT and ONU devices within the system. A POSITA would have recognized the benefits of automating the configuration of a DPOE or PON system, including the OLT and ONU devices within such systems to respond more efficiently to changes, avoid human

⁹ In *KSR*, the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious, because a court “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the “interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418.

error, improve overall performance, and reduce system downtime.

Multiple prior art references providing for auto-configuration of devices in a DPOE or PON system were in use and known to those skilled in the art. For example, Bernstein describes a DPOE system that auto-configures the OLT and ONU devices within the system via a configuration file provided by the DPOE back-office. (*See, e.g.*, Bernstein at 5:31-40 (describing downloading configuration information from the back-office system via TFTP, which “is then translated and used for configuring schedulers/classifiers or other features on the OLT 18 and ONU 24”), Fig. 3.) Bernstein discloses a translator which is used to convert the information in the configuration file in a manner to allow for configuring the OLT locally and for configuring the user ONU devices remotely. (*See id.* at 2:44-53 (“The DPON system 40 includes a translator that converts DOCSIS parameters obtained from the MSO network 16 into PON parameters.”), 3:31-36 (describing a “translation function shown in FIG. 3 then translates the information obtained by the cable modem proxy 60 during the registration or post registration sessions into corresponding PON parameters”), 3:53-56 (“A DOCSIS-to-PON translator 84 is then used for converting any of the parameters 61 obtained by the cable modem proxy 60 into associated PON parameters 63 that can be used by the OLT 18 and ONU 24.”), 4:4-14 (describing conversion process for OLT configuration), 4:34-45 (describing conversion process for ONU configuration).)

Tsuge discloses a similar DOCSIS over PON system that includes a method for auto-configuring OLT and ONU devices using control signals and configuration settings that are converted into PON system configuration parameters specific for each device. (*See* Tsuge at Abstract, 11:57-12:2 (“The CM setting information is set in the OLT itself and converted into an ONU setting information signal 543 as a kind of ONU apparatus control signal 124.”), 14:63-15:15 (describing the conversion and configuration process in which “the OLT 101 executes an OLT/ONU setting sequence by using the obtained CM setting information file (step 930)” and

“[t]he contents of the setting parameters are converted into the ONU setting information signal 543 or the settings to the OLT itself or into both of them [.]; “In the case where they are converted into the settings to the OLT itself, the settings are reflected to the OLT (step 934). In the case where they are converted into the ONU setting information signal 543, an ONU setting request message is transmitted to the ONU 102 as a setting target (step 931).”), Figs. 9, 13.) DPoE-SP-MULPIv1 also discloses configuring a virtual cable modem, ONU, and customer premises equipment as part of the initial DPOE specification. (*See* DPoE-SP-MULPIv1 at 16-17 (“5.2.3 vCM, DPoE ONU, and CPE Provisioning and Management”).)

Wang discloses a PON system in which the OLT receives a configuration file containing first and second configuration information for setting up a management and maintenance channel between the OLT and an ONU, respectively:

A method, device and system for setting up a management and maintenance channel in passive optical network system, the method includes: receiving configuration information send down from a network management device, the configuration information includes a first configuration information and a second configuration information; setting up a management and maintenance channel between optical line terminal and the network management device according to the first configuration information; sending down the second configuration information to a user side device, which the second configuration information is used for setting up a management and maintenance channel between the user side device and the optical line terminal.

(Wang at Abstract, 10 (“The follow-up configuration and maintenance channel establishment process is completed automatically by the optical line terminal interacting with the user-side device, which achieves soft-free adjustment, facilitates the commissioning of the user-side device, reduces the configuration error rate, and changes the device more simply. Saves manpower and reduces maintenance costs.”) Jinhui discloses an EPON system that provides a method for configuring and initializing an OLT and ONU simultaneously using a combined configuration file that includes both “OLT-level configuration data” and “ONU level configuration data.” (Jinhui at

4 (“The OLT of the EPON stores a plurality of configuration data, where the configuration data includes default configuration data, network management configuration data, and current configuration data, where each configuration data is further divided into: board-level configuration data and OLT-level configuration. Data and ONU level configuration data.”).)

A POSITA would have been familiar with, and been motivated to combine, such prior art features and techniques for auto-configuring devices, as known techniques and methods for doing so in related communication networks, and recognized the benefits of increased efficiency and overall system performance by applying those techniques to a DOCSIS system implementing a PON, as combinations of prior art elements according to known methods to yield predictable results and simple substitution of one known element for another to obtain predictable results.

(3) Configuration of ONU services

A POSITA would have been aware that a driving motivation for configuring the devices within a DPOE system is the need to configure the specific services provided or made available by those devices and would have been aware of prior art references disclosing various techniques and methods for doing so. For example, Noel discloses a PON system using a single configuration profile to configure the services and settings of multiple ONU devices at once. (See Noel at ¶ [0029] (describing “profiles 301 [which] are created for users in the network, and for each profile, a single profile is saved in a database 315 c, and assigned to multiple ONTs 330. The profile is then propagated to all of the ONTs 330 to which it is assigned.”), ¶ [0048] (“The profiles may include general ONT Settings profiles, Services settings profiles, and Call Features settings profiles. Once ONT models and profiles have been configured, new ONT configurations may be created, or existing ONT configurations may be modified (630).”))

Bourgart discloses a method for reconfiguring network termination (NT) devices via a line termination (LT) device in a communication network to manage resources shared by multiple NTs,

which “typically mean[] the bandwidth of the line.” (Bourgart at 4:9-17; *see also, id.* at 2:38-50, 2:51-55, 11:16-22 (“In an initialization phase 40, the LT receives, during a step 45, an instruction to modify the MAC layer format.”)). Wan discloses a PON management system that is adapted to generate a configuration file for an ONU (e.g., ONT) based on the specific “service information of a user and to send the configuration file to the one or more ONTs through the OLT.” (*See, e.g.,* Wan at ¶¶ [0025]-[0029], [0030] (explaining that “the management system generates a corresponding configuration file from the service information of a user and then sends the configuration file through an OLT to an ONT corresponding to the user, and finally the ONT performs corresponding configuration in accordance with the configuration file, thereby accomplishing service configuration for the ONT by way of the configuration file.”), ¶ [0068] (“The ONT is adapted to parse the configuration file in the format of XML, TXT or in other formats to obtain configuration data corresponding to the service information of the user and to perform corresponding configuration for hardware in the ONT in accordance with the obtained configuration data.”), ¶ [0069] (“Since the configuration file may be extended flexibly, the service configuration information in the configuration file may also be extended flexibly.”)).

A POSITA would have been motivated to combine any of the aforementioned references disclosing auto-configuring multiple devices in a DPOE or related communication system with any of the aforementioned references disclosing a device configuration update based on the services opened or made available by that device, and vice versa, and would have found it obvious to do so. As demonstrated above, the benefits of configuring multiple devices in a DPOE or related communication system were well known. A POSITA would have been well-aware that configuring network devices based on the services opened or made available by that device would increase efficiency, system performance, reduce downtime, and provide greater flexibility to the overall system. A POSITA would have known that configuring devices within a DPOE system

according to the services opened or made available by those devices would provide the same benefits to DPOE systems as in related communication systems, and been motivated to employ known techniques and methods in DPOE systems. A POSITA would have naturally looked to then-existing references disclosing a device configuration update based on the services opened or made available by that device such as those described herein. A POSITA would have found it obvious to select and combine features from such references in order to increase efficiency, system performance, reduce downtime, and provide greater flexibility to the overall system. Such combinations are combinations of prior art elements according to known methods to yield predictable results and simple substitution of one known element for another to obtain predictable results.

4. INVALIDITY UNDER § 112

The Asserted Claims are invalid under 35 U.S.C. § 112. The specification of the 982 patent fails to disclose many of the limitations recited by the claims, and thus lacks a written description to adequately convey to a POSITA that the inventor possessed the alleged invention. For example, the 982 patent specification does not disclose “configuring the OLT locally” (cl. 1 and all dependents) or “configuration information related to services opened by the ONU” (cls. 2, 8, 9). The 982 patent further does not enable one of skill in the art to practice the alleged scope of the claims without undue experimentation. For example, the 982 patent does not enable one of skill in the art to practice the scope of the claims as set forth in Iarnach’s preliminary infringement contentions. In addition, the Asserted Claims of the 982 patent and the specification lack any specific detail which would enable a POSITA to make, use, or practice what is claimed.

At least the following claims of the 982 patent, and all claims depending on these claims, are invalid for failing to meet the requirements of 35 U.S.C. § 112 because they recite the following text:

Claim Element	Patent (Claims)	§ 112 Grounds
“configuring the OLT locally”	1, 4, 7	Lack of written description pursuant to pre-AIA § 112, para. 1; Lack of enablement pursuant to pre-AIA § 112, para. 1.
“configuration information related to services opened by the ONU”	2, 8, 9	Lack of written description pursuant to pre-AIA § 112, para. 1; Lack of enablement pursuant to pre-AIA § 112, para. 1.

5. INVALIDITY UNDER § 101

The Asserted Claims of the 982 patent do not comply with the requirements of 35 U.S.C. § 101 under the two-step framework articulated in *Alice*. Defendants incorporate by reference its Motion to Transfer, or in the Alternative, Motion to Dismiss (Dkt. 31), its Motion to Dismiss Second Amended Complaint (Dkt. 47), and its Reply in support of its Motion to Dismiss Second Amended Complaint (Dkt. 65). Defendants’ Eligibility Contentions for the 982 patent are attached as Exhibit F pursuant to the Court’s Standing Order.

C. THE 035 PATENT

1. IDENTIFICATION OF INVALIDITY GROUNDS

Based on the reasons identified herein and the accompanying charts and references, a person having ordinary skill in the art would have found the Asserted Claims of the 035 patent invalid under 35 U.S.C. §§ 102 and/or 103. The 035 patent invalidity charts attached as Exhibit C set forth herein, for corresponding limitations of an asserted claim, exemplary disclosures from each identified reference in an invalidity ground below where applicable. Defendants reserve the right to amend their invalidity grounds or charts, or provide supplemental grounds or charts, based on any amendments to Plaintiff’s infringement contentions, or information or documents that may be obtained as discovery begins including third party discovery.

Defendants provide the following identification of preliminary and exemplary invalidity

grounds for the currently Asserted Claims of the 035 patent:

Claim No.	Exemplary Invalidity Grounds ^{10, 11} under 35 U.S.C. §§ 102 and/or 103 ¹²
1	Bernstein alone or in combination with Tsuge, Noel, Barrow, Wan, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Tsuge alone or in combination with Bernstein, Noel, Barrow, Wan, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Noel alone or in combination with Bernstein, Tsuge, Barrow, Wan, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Barrow alone or in combination with Bernstein, Tsuge, Noel, Wan, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Wan alone or in combination with Bernstein, Tsuge, Noel, Barrow, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Hajduczenia alone or in combination with Bernstein, Tsuge, Noel, Barrow, Wan, and/or DPOE-SP-OSSI 1.0 DPOE-SP-OSSI 1.0 alone or in combination with Bernstein, Tsuge, Noel, Barrow, Wan, and/or Hajduczenia Any ground listed above in combination with DOCSIS 4.0 or Bourgart
2	See grounds of claim 1
3	See grounds of claim 1 Grounds of claim 1 in combination with Wan, DOCSIS 4.0, Kou, and/or Korea Electronics
4	See grounds of claim 1 Grounds of claim 1 in combination with Bernstein, Tsuge, Noel, Barrow, Synnestvedt, or Hajduczenia.

¹⁰ For brevity, each reference in this table is identified by its short cite, which is defined later in subsections II.C.2 and II.C.3 below.

¹¹ To the extent the grounds identified in the below table for a particular asserted claim refer back to the grounds identified for another claim, the grounds disclose the particular asserted claim for the reasons identified in the corresponding claim charts for the particular asserted claim.

¹² Defendants contend that any combination of references identified in this table as a ground invalidates the relevant asserted claim under 35 U.S.C. § 103. In addition, each reference identified alone as a ground invalidates the relevant asserted claim under 35 U.S.C. §§ 102 and 103, as “it is well settled that a disclosure that anticipates under § 102 also renders the claim invalid under § 103, for anticipation is the epitome of obviousness.” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (internal citations and quotations omitted) (finding no error in § 103 invalidity determination based on a single reference).

Claim No.	Exemplary Invalidity Grounds ^{10, 11} under 35 U.S.C. §§ 102 and/or 103 ¹²
5	<i>See</i> grounds of claim 1
6	<i>See</i> grounds of claim 1
7	<i>See</i> grounds of claim 1 Grounds of claim 1 in combination with Wan, DOCSIS 4.0, Kou, and/or Korea Electronics
8	<i>See</i> grounds of claim 1 Grounds of claim 1 in combination with Bernstein, Tsuge, Noel, Barrow, Synnestvedt, or Hajduczenia.
9	<i>See</i> grounds of claim 1
10	<i>See</i> grounds of claim 1
11	<i>See</i> grounds of claim 1 Grounds of claim 1 in combination with Wan, DOCSIS 4.0, Kou, and/or Korea Electronics
12	<i>See</i> grounds of claim 1 Grounds of claim 1 in combination with Bernstein, Tsuge, Noel, Barrow, Synnestvedt, or Hajduczenia.
13	<i>See</i> grounds of claim 1
14	Bernstein in combination with Tsuge, Noel, Barrow, Bourgart, Wan, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Tsuge in combination with Bernstein, Noel, Barrow, Bourgart, Wan, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Noel in combination with Bernstein, Tsuge, Barrow, Bourgart, Wan, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Barrow alone or in combination with Bernstein, Tsuge, Noel, Bourgart, Wan, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Bourgart alone or in combination with Bernstein, Tsuge, Noel, Barrow, Wan, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Wan in combination with Bernstein, Tsuge, Noel, Barrow, Bourgart, Hajduczenia, and/or DPOE-SP-OSSI 1.0 Hajduczenia alone or in combination with Bernstein, Tsuge, Noel, Barrow, Bourgart, Wan, and/or DPOE-SP-OSSI 1.0 DPOE-SP-OSSI 1.0 alone or in combination with Bernstein, Tsuge, Noel, Barrow, Bourgart, Wan, and/or Hajduczenia Any ground listed above for claim 14 in combination with Synnestvedt, Kou, and/or

Claim No.	Exemplary Invalidity Grounds ^{10, 11} under 35 U.S.C. §§ 102 and/or 103 ¹²
	DPoE-SP-OSSI 1.0 Any ground listed above for claim 14 in combination with Bourgart, Barrow, and/or Koshy
15	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Wan, DOCSIS 4.0, Kou, and/or Korea Electronics
16	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Bernstein, Tsuge, Noel, Barrow, Synnestvedt, and/or Hajduczenia
17	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Wan, DOCSIS 4.0, Kou, and/or Korea Electronics
18	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Barrow or DPoE-SP-OSSI 1.0
20	<i>See</i> grounds of claim 14
21	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Wan, DOCSIS 4.0, Kou, and/or Korea Electronics
22	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Bernstein, Tsuge, Noel, Barrow, Synnestvedt, and/or Hajduczenia
23	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Wan, DOCSIS 4.0, Kou, and/or Korea Electronics
24	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Barrow or DPoE-SP-OSSI 1.0
26	<i>See</i> grounds of claim 14
27	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Wan, DOCSIS 4.0, Kou, and/or Korea Electronics
28	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Bernstein, Tsuge, Noel, Barrow,

Claim No.	Exemplary Invalidity Grounds^{10, 11} under 35 U.S.C. §§ 102 and/or 103¹²
	Synnestvedt, and/or Hajduczenia
29	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Wan, DOCSIS 4.0, Kou, and/or Korea Electronics
30	<i>See</i> grounds of claim 14 Grounds of claim 14 in combination with Barrow or DPoE-SP-OSSI 1.0
32	<i>See</i> grounds of claim 14

2. IDENTIFICATION OF INVALIDITY DUE TO ANTICIPATION

The table below lists the prior art references that anticipate one or more of the Asserted Claims of the 035 patent under 35 U.S.C. § 102. The invalidity charts attached as Exhibit C demonstrate where each limitation of the Asserted Claims is found in the references listed below, either expressly or inherently in the larger context of the passage, as understood by a person having ordinary skill in the art. The following references are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

Reference	Filing Date / Priority Date	Short Cite
U.S. Patent No. 8,831,425	January 9, 2008	Bernstein
U.S. Patent No. 8,160,448	March 17, 2009	Tsuge
U.S. Patent Application Publication No. 2008/0253771	May 18, 2007	Noel
U.S. Patent No. 7,519,690	February 28, 2002	Barrow
U.S. Patent Application Publication No. 2009/0300160	August 10, 2009	Wan
U.S. Patent No. 8,416,816	September 2, 2008	Bourgart
DPoE-SP-OSSIv1.0-I01-110225	February 25, 2011	DPOE-SP-OSSI 1.0
U.S. Patent No. 7,519,690	March 9, 2011	Hajduczenia

3. IDENTIFICATION OF INVALIDITY DUE TO OBVIOUSNESS

The tables below list prior art references that render one or more of the Asserted Claims of the 035 patent invalid as obvious under 35 U.S.C. § 103, alone or in combination with the

knowledge of a person having ordinary skill in the art and/or other prior art. The invalidity charts attached as Exhibit C demonstrate where each limitation of the Asserted Claims is found in the references listed below, either expressly or inherently in the larger context of the passage, as understood by a person having ordinary skill in the art. The following references are prior art under at least 35 U.S.C. §§ 102(a), (b), or (e).

a. Prior Art Patents and Patent Publications That Render Obvious the Asserted Claims of the 035 Patent

Patent or Patent Publication No.	Filing Date / Priority Date	Date of Issue or Publication	Short Cite
U.S. Patent No. 8,831,425	January 9, 2008	September 9, 2014	Bernstein
U.S. Patent No. 8,160,448	March 17, 2009	April 17, 2012	Tsuge
U.S. Patent Application Publication No. 2008/0253771	May 18, 2007	October 16, 2008	Noel
U.S. Patent Application Publication No. 2009/0300160	August 10, 2009	December 3, 2009	Wan
U.S. Patent No. 8,416,816	September 2, 2008	April 16, 2009	Bourgart
U.S. Patent No. 7,519,690	March 9, 2011	November 13, 2014	Hajduczenia
U.S. Patent No. 7,519,690	February 28, 2002	April 14, 2009	Barrow
U.S. Patent No. 6,598,057	December 22, 1999	July 22, 2003	Synnestvedt
Chinese Patent Application Publication No. CN 10-1924958A	June 9, 2009	December 22, 2010	Kou
Korean Patent Application Publication No. KR 2003-0097158	June 19, 2002	December 31, 2003	Korea Electronics

b. Prior Art Publications That Render Obvious the Asserted Claims of the 035 Patent

Title	Date of Publication	Author/Publisher	Short Cite
DPoE-SP-OSSIV1.0-I01-110225	February 25, 2011	CableLabs	DPoE-SP-OSSI 1.0
Remote Incremental Linking for Energy-Efficient Reprogramming of Sensor Networks	2005	Joel Koshy, IEEE	Koshy
A Proposal for DOCSIS 4.0	February 1, 2008	Alon Bernstein and Steve Gorshe, CableFax	DOCSIS 4.0

c. Motivations for Combining Prior Art

The 035 patent is invalid in view of the combinations of references disclosed above. A

POSITA of the 035 patent would have naturally consulted each of these references and combined the teachings, for at least the reasons provided below. Accordingly, a POSITA would have been motivated to combine elements of the references identified above, recognizing that the combination would be a predictable use of elements known in the art to solve known problems by using known techniques, resulting in expected outcomes. Defendants' expert(s) will further explain the motivation to combine prior art and why the asserted claims of the asserted patents are invalid as obvious in accordance with the case schedule. Nothing herein is intended to limit or preclude such future expert opinion.

A POSITA at the priority date of the 035 patent would have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them for at least the following exemplary reasons. To the extent a reference does not disclose a limitation of the Asserted Claims, the limitation is obvious in view of that reference combined with the knowledge of a POSITA alone, or with any of the references identified as a combination below and set forth in the attached Exhibit C charts. The corresponding limitation for each identified reference includes exemplary disclosures to the extent that reference discloses the limitation in its respective invalidity chart.

A POSITA would have understood the references listed above, alone or in combination, to contain explicit and/or implicit teaching, suggestion, and/or rationales to combine them for at least the following exemplary reasons.¹³

¹³ In *KSR*, the Supreme Court held that prior art need not disclose the precise teachings of a patented invention to render it obvious, because a court “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418. Under *KSR*, an explanation for why a combination of prior art items renders a claim obvious may be found in the “interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418.

(1) General state of the art.

The specification of the 035 patent admits that the basic steps recited in the Asserted Claims were well-known, conventional activities, with which a POSITA would have been familiar. (*See* 035 patent at 1:17-46 (describing prior art ethernet passive optical network (EPON) system implementing DPOE, including provisioning an “optical network unit” (ONU) using a “DOCSIS back-office system”), 3:7-26 (describing prior art DPOE architecture standard published by CableLabs and configurations updates in DPOE systems), 3:27-53 (describing ONU configuration updates in prior art DPOE systems), 4:51-5:8 (describing default DPOE ONU configuration process).) Each of the references identified in the tables above further describe what was known in the state of the art.

(2) Updating the configuration of an ONU device

As discussed above for the 982 patent, by 2011, the concept of automatically configuring network devices in a DOCSIS passive optical network system (DPOE) was commonplace and would have been well known to a POSITA. Many prior art references describe EPON systems, including a back-office system, an optical line terminal (OLT), and multiple optical network units (ONUs), that provided features to configure an ONU device within the system, including updating that configuration to enable additional services or features. A POSITA would have recognized the benefits of updating the configuration of an EPON system, including the OLT and ONU devices within such systems, to respond more efficiently to changes, avoid human error, improve overall performance, and reduce system downtime.

Multiple prior art references, including Bernstein, Tsuge, Noel, Wan, Bourgart, and DPOE v1.0 discussed in the motivation to combine section for the 982 patent above, which is incorporated herein by this reference, provided methods and techniques for automatically configuring network devices in an EPON system, and updating those configurations, that were in use and known to

those skilled in the art. A POSITA also would have been aware of other prior art references disclosing additional methods and techniques for automatically configuring, and updating the configurations of, network devices in an EPON system. For example, Barrow discloses a “method for dynamically updating configuration files” for a customer premises-located integrated services hub (ISH). (*See* Barrow at 2:55-67 (“As the controller for the ISH, it requires configuration files to set parameters for the various interfaces for the POTS ports, Ethernet ports, etc. However, the necessary configuration and binary files are not known until the ISH is installed in a customer premises, such as a private residence.”); 7:59-8:9 (explaining that “the configuration file downloaded in the system initialization process provides operating parameters for the various system modules, e.g. POTS module 51 and Ethernet module 67. For various reasons, these parameters may need to be changed or updated.”), 9:3-22 (describing a configuration “update process [that] is intended to allow dynamic reconfiguration. That is, it should occur without shutting down the system for rebooting and without interfering with current active functions.”).) Upon successful completion of the device reconfiguration, the prior configuration binary file for the ISH device is overwritten in memory. (*Id.* at 7:1-11 (“At the time the ISH is manufactured, the basic file is stored in the first space. When the new binary file is received, it is stored in the second. If the binary file is later replaced with an improved version, it will be written over the first space.”))

Hajduczenia discloses a DPOE system providing a method for initializing and configuring “a Demarcation device and an optical network unit device (ONU) that is connected to the Demarcation device” via a “service configuration file from the back-office system [] to update communication services provided by the ONU.” (*See* Hajduczenia at Abstract, ¶¶ [0026]-[0031] (describing “an automated Demarcation device configuration process”), FIG. 3.) DPoE-SP-OSSI 1.0 discloses configuring an ONU network device in an EPON system, including updating an

existing configuration, and deleting the old configuration upon successful reconfiguration. (*See* DPoE-SP-OSSI 1.0 at 32 (“A vCM MUST support system configuration by configuration file, configuration-file-based SNMP encoded objects, and SNMP Set operations.”), 33 (“6.5.2.4 CM Configuration Files, TLV-11 and MIB OIDs/Values”).)

A POSITA would have been familiar with, and been motivated to combine, such prior art features and techniques for automatically configuring, and updating the configurations of, network devices in an EPON system as known techniques and methods for doing so in related communication networks, and recognized the benefits of increased efficiency and overall system performance by applying those techniques to an EPON system, as combinations of prior art elements according to known methods to yield predictable results and simple substitution of one known element for another to obtain predictable results.

(3) Validating the configuration file and validating the availability of shared resources

A POSITA would have been aware that automatically configuring the devices within an EPON system could be improved through the use of existing methods and techniques for validating the configuration file and validating the availability of shared resources within an EPON system and would have been aware of prior art references disclosing various techniques and methods for doing so. For example, Synnestvedt notes that validating the binary configuration file and validating the entries therein provides increased integrity to the device and overall system. (Synnestvedt at Abstract (noting that “the binary configuration file can also be validated, providing increased integrity”), 17:66-18:30 (validating “the TLV entries” in the configuration file).) DPoE-SP-OSSI 1.0 also included validation steps for confirming the integrity of the downloaded vCM image. (*See* DPoE-SP-OSSI 1.0 at 33 (“In the case where the vCM successfully downloads an image that is determined to be corrupted, the vCM MUST reject the corrupted image.”).

Hajduczenia performs a similar integrity check of the configuration files loaded on its DPoE system devices. (*See* Hajduczenia at ¶ [0064] (“In the fifth stage, the Demarcation device, upon receipt of the configuration file, parses the received configuration file, verifies for any potential errors and processes it, performing its local configuration, opening necessary communication paths between the Demarcation device and the DPoE ONU across the MI interfaces as needed.”).)

A POSITA would have been aware of prior art references including steps for validating the availability of shared resources within an EPON system and would have recognized the benefits of implementing resource validation in such a system. Bourgart, for example, discloses validating the availability of shared resources, including line bandwidth, in conjunction with device configuration updates. (*See, e.g.*, Bourgart at 4:9-17 (explaining that the LT “broadcasts to at least one of the network-termination devices management data to manage an allocation of a resource shared between the network-termination devices ‘Shared resource’ typically means the bandwidth of the line.”).) Barrow similarly discloses checks for available resources as part of the process for applying a configuration update. (*See* Barrow at 3:3-20 (“When a new configuration file is received by the update module, it stores the new configuration file and issues a check function call to each of the other modules. Each module checks the new configuration file against its current parameters, determines if any changes require it to reboot, and notifies the update module if reboot is needed.”), 8:46-60 (“Then each module compares the new parameters to the previously stored parameters to see if any changes have actually been made. Each parameter used in a module is designated as to whether or not it can be dynamically changed or requires a system reboot.”).) DPoE-SP-OSSI 1.0 included validation steps to confirm whether the ONU possessed sufficient resources to implement the intended changes in the configuration file. (*See* DPoE-SP-OSSI 1.0 at 34 (“If the CM configuration file contains SNMP OIDs that are not supported by the vCM, then the vCM MUST ignore those SNMP varbinds and treat them as if they were not

present.”), 92 (describing validation event triggered “if there are not enough resources on the DPoE System to support the modem configuration file”).)

A POSITA would have been motivated to combine any of the references disclosing automatically configuring, and updating the configurations of, network devices in an EPON or related communication system with any of the references disclosing the concepts of validating the configuration file and validating the availability of shared resources, and vice versa, and would have found it obvious to do so. As demonstrated above, the benefits of automatically configuring, and updating the configurations of, network devices in an EPON or related communication system were well known. A POSITA would have been well-aware that configuring network devices using known techniques for validating the configuration file and validating the availability of shared resources would increase efficiency, system performance, reduce downtime, and provide greater flexibility to the overall system. A POSITA would have naturally looked to then-existing references disclosing the concepts of validating the configuration file and validating the availability of shared resources such as those described herein. A POSITA would have found it obvious to select and combine features from such references in order to increase efficiency, system performance, reduce downtime, and provide greater flexibility to the overall system. Such combinations are combinations of prior art elements according to known methods to yield predictable results and simple substitution of one known element for another to obtain predictable results.

(4) Using a management information database (MIB) and dynamic host control protocol (DHCP)

A POSITA would have been aware that automatically configuring the devices within a DPOE system could be improved through the use of existing methods and techniques for managing and communicating with devices within an EPON system is the need to configure the specific

services provided or made available by those devices and would have been aware of prior art references disclosing various techniques and methods for doing so.

For example, Bernstein discloses using DHCP messages sent by the cable modem proxy to trigger an ONU device registration sequence. (*See* Bernstein at 5:4-11 (“A DHCP discover message is first sent by the cable modem proxy 60 to the DHCP server 50. The DHCP server 50 sends back a DHCP offer message and the CM proxy 60 responds with a DHCP registration message. The DHCP response sent back by the DHCP server 50 then confirms the IP address assigned to the CM proxy 60.”), Fig. 6).) Tsuge also discloses using DHCP for device discovery and packet transmission within its DPOE system. (Tsuge at 12:51-62 (“According to the DOCSIS standard, the DHCP is used and the packet transmission and reception are executed in order of a transmission of a Discovery message to the CM IP address allocation server 261 (step 631), a reception of an Offer message from the CM IP address allocation server 261 (step 632), a transmission of a Request message to the CM IP address allocation server 261 (step 633), and a reception of an Ack message from the CM IP address allocation server 261 (step 634).”).

Other references demonstrate that a POSITA would have been aware of the benefits of using DHCP in an EPON system. (*See, e.g.,* Noel at ¶ [0037] (“During ONT operation, an ONT 330 may send a request 302 to the Configuration Server 310 asking for the configuration associated with the ONT. The ONT 330 specifies in the request its Dynamic Host Configuration Protocol (DHCP) Client Identifier (its unique ONT name) as a Uniform Resource Identifier (URI) so the Configuration Server 310 may return the appropriate configuration 303 (e.g., in the form of an XML file) to the ONT 330.”); DOCSIS 4.0 (“The OLT (which emulates a CMTS) instantiates a ‘virtual cable modem,’ which does the actual protocol exchange with the back office applications (time of day, dynamic host configuration protocol, trivial file transfer protocol – ToD/DHCP/TFTP).”); Synnestvedt at 1:54-57 (“DHCP (‘Dynamic Host Configuration Protocol’)

is a network application protocol that assigns a temporary IP address to a network device automatically when the network device connects to the network.”), 13:41-50 (using DHCP messaging to query the DOCSIS version of the cable modem); Barrow at 6:22-34, 8:25-27 (discussing using DHCP in the initialization process); Barrow at 6:22-34 (“In step 102, the system issues a DHCP, dynamic host control protocol, request to the CO 30. In response to this request, the CO DHCP server provides the ISH with a unique IP address to identify the ISH itself. The DHCP server also supplies the name of the appropriate configuration file, the domain name of configuration file servers where configuration and binary files are stored and a list of IP addresses for domain name servers, DNSs, which can provide IP addresses for the configuration file servers.”); Hajduczenia at ¶ [0029] (“The Demarcation device reaches out to the back-office, announces its presence using, e.g., the Dynamic Host Configuration Protocol (DHCP), provides the backoffice system with additional information about itself, its capabilities etc., and requests a new service configuration file.”).

A POSITA would likewise have been aware of known methods and techniques for using a management information database (MIB) to store device configurations and trigger configuration updates, including Wan’s system implementing a MIB for device configuration management. (*See, e.g.*, Wan at ¶ [0009] (“In the OMCI mechanism, various data for management of the ONT by the OLT is extracted as Protocol-Independent Management Information Base (MIB), and a basic information unit of a MIB is a Management Entity (ME).”);

Other references demonstrate that a POSITA would have been aware of and recognized the benefits of using a MIB in an EPON system to store device configurations and trigger configuration updates. (*See, e.g.*, DOCSIS 4.0 (“A critical piece of back-office integration is the emulation of the cable modem and CMTS MIBs on the OLT.”); Korea Electronics at 2-3 (describing use of a MIB for configuration management, including “[t]ransmitting, by the OLT

subsystem, a MIB data synchronization request message to the ONT subsystem; [and] [c]omparing the MIB data synchronization value of the OLT subsystem with the MIB data synchronization value of the ONT subsystem”); Kou at 2 (“As shown in Figure 1, the OLT can obtain the MIB (Management Information Base) information related to the ONU, such as the ONU manufacturer, type, and software version, through the GET_request and the GET_response sent back by the ONU. According to the obtained software version, the OLT can determine whether the ONU needs to download new software and use the new software to update.”).)

A POSITA would have been motivated to combine any of the references disclosing automatically configuring, and updating the configurations of, network devices in an EPON or related communication system with any of the references disclosing the use of an MIB or DHCP communication, and vice versa, and would have found it obvious to do so. As demonstrated above, the benefits of automatically configuring, and updating the configurations of, network devices in an EPON or related communication system were well known. A POSITA would have been well-aware that configuring network devices using known techniques using an MIB or DHCP communication would increase efficiency, system performance, and provide greater flexibility to the overall system. A POSITA would have naturally looked to then-existing references disclosing using an MIB or DHCP communication such as those described herein. A POSITA would have found it obvious to select and combine features from such references in order to increase efficiency, system performance, and provide greater flexibility to the overall system. Such combinations are combinations of prior art elements according to known methods to yield predictable results and simple substitution of one known element for another to obtain predictable results.

4. INVALIDITY UNDER § 112

The Asserted Claims are invalid under 35 U.S.C. § 112. The specification of the 035 patent

fails to disclose many of the limitations recited by the claims, and thus lacks a written description to adequately convey to a POSITA that the inventor possessed the alleged invention. For example, the 035 patent specification does not disclose “monitoring the vCM for an indication of successful update of the ONU” (cls. 1, 9, 13), “detect[ing] a change to a management information base (MIB) entry” (cls. 15, 21, 27), “indicat[ing] an ongoing configuration update using a MIB entry during the updating operation” (cls. 17, 23, 29), and “delet[ing] the updated configuration file from a local memory after successful completion of the applying operation” (cls. 14, 24, 30). The 035 patent further does not enable one of skill in the art to practice the alleged scope of the claims without undue experimentation. For example, the 035 patent does not enable one of skill in the art to practice the scope of the claims as set forth in Iarnach’s preliminary infringement contentions. In addition, the Asserted Claims of the 035 patent and the specification lack any specific detail which would enable a POSITA to make, use, or practice what is claimed.

At least the following claims of the 035 patent, and all claims depending on these claims, are invalid for failing to meet the requirements of 35 U.S.C. § 112 because they recite the following text:

Claim Element	Patent (Claims)	§ 112 Grounds
“monitoring the vCM for an indication of successful update of the ONU”	1, 5, 9	Lack of written description pursuant to pre-AIA § 112, para. 1; Lack of enablement pursuant to pre-AIA § 112, para. 1.
“detect[ing] a change to a management information base (MIB) entry”	15, 21, 27	Lack of written description pursuant to pre-AIA § 112, para. 1; Lack of enablement pursuant to pre-AIA § 112, para. 1.
“indicat[ing] an ongoing configuration update using a MIB entry during the updating operation”	17, 23, 29	Lack of written description pursuant to pre-AIA § 112, para. 1; Lack of enablement pursuant to pre-AIA § 112, para. 1.
“delet[ing] the updated configuration file from a local memory after successful completion	18, 24, 30	Lack of written description pursuant to pre-AIA § 112, para. 1; Lack of enablement pursuant to

of the applying operation”		pre-AIA § 112, para. 1.
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5. INVALIDITY UNDER § 101

The Asserted Claims of the 035 patent do not comply with the requirements of 35 U.S.C. § 101 under the two-step framework articulated in *Alice*. Defendants incorporate by reference its Motion to Transfer, or in the Alternative, Motion to Dismiss (Dkt. 31), its Motion to Dismiss Second Amended Complaint (Dkt. 47), and its Reply in support of its Motion to Dismiss Second Amended Complaint (Dkt. 65). Defendants’ Eligibility Contentions for the 035 patent are attached as Exhibit G pursuant to the Court’s Standing Order.

III. SYSTEMS SUBJECT TO FURTHER DISCOVERY

Defendants list below systems that are subject to ongoing investigation and pending discovery. On information and belief, these systems anticipate and/or render obvious the Asserted Claims of the Asserted Patents, whether combined with the knowledge of a person having ordinary skill in the art alone, or in combination with one or more of another one of these systems or other references identified in these invalidity contentions. Defendants intend to pursue discovery in relation to these and other related systems and expect to amend or supplement these invalidity contentions with information to be provided by third parties.

Presently known systems subject to further discovery (which individually and/or collectively invalidate the Asserted Claims in conjunction with other references) include:

1. Mitsubishi Electric Systems;
2. Ribbon Communications Systems;
3. ZTE Corporation;
4. Broadcom Inc.;
5. Tellabs;

6. Vinci Systems;
7. Sprint Communications Company;
8. Huawei Technologies;
9. Cisco Technology, Inc.;
10. Hitachi, Ltd.; and
11. Shanghai Bell Co. Ltd.

Dated: September 5, 2024

Respectfully submitted,

By: /s/ Christopher L. Larson

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CERTIFICATE OF SERVICE

I hereby certify that on September 5, 2024, all counsel of record who have consented to electronic service are being served with a copy of this document via electronic mail per Local Rule CV-5.

/s/ Christopher L. Larson

Christopher L. Larson

PROOF OF SERVICE

The undersigned declares as follows:

I am a citizen of the United States and employed in New York County, State of New York.

I am over the age of eighteen years and not a party to the within-entitled action. My business address is Fenwick & West LLP, 902 Broadway, 18th floor, New York, NY 10010. On the date set forth below, I served a copy of the following document:

DEFENDANTS' PRELIMINARY INVADLITY AND ELIGIBILITY CONTENTIONS

on the interested parties in the subject action by placing a true copy thereof as indicated below, addressed as follows:

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Dated: September 5, 2024

By: /s/ Shannon M. Forde