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Paper 57
Entered: September 8, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

PERSONALIZED MEDIA COMMUNICATIONS LLC,
Patent Owner.

IPR2016-00754
IPR2016-01520
Patent 8,559,635 B1

Before KARL D. EASTHOM, KEVIN F. TURNER, and GEORGIANNA W. BRADEN, *Administrative Patent Judges*.

TURNER, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision on Remand
Determining Some Challenged Claims Unpatentable
35 U.S.C. §§ 144, 318

INTRODUCTION

A. Background

On March 14, 2016, Apple Inc. ("Petitioner") filed a petition to institute an *inter partes* review of claims 1–4, 7, 13, 18, 20, 21, 28–30, 32 and 33[1] of U.S. Patent No. 8,559,635 B1 ("the '635 Patent"). IPR2016-00754, Paper 1 ("754-Pet."). Personalized Media Communications LLC ("Patent Owner") filed a preliminary response (IPR2016-00754, Paper 7), and pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review on four grounds:

Reference(s)	Basis	Claim(s)	Proceeding
Guillou[2]	§ 102	7, 21, 29	IPR2016-00754
Guillou	§ 103	4, 13, 28, 30	IPR2016-00754
Aminetzah[3]	§ 103	21, 28–30	IPR2016-00754
Aminetzah, Bitzer[4]	§ 103	4	IPR2016-00754

IPR2016-00754, Paper 8 ("754-DI"), 42[5]. After institution of trial, Patent Owner then filed a Response (IPR2016-00754, Paper 15; "754-PO Resp."), to which Petitioner filed a Reply (IPR2016-00754, Paper 23; "754-Pet. Reply"). In addition, Patent Owner also filed a Contingent Motion to Amend (IPR2016-00754, Paper 16), to which Petitioner filed an Opposition (IPR2016-00754, Paper 24), to which Patent Owner then filed a Reply to Petitioner's Opposition to the Contingent Motion (IPR2016-00754, Paper

[1] Patent Owner subsequently disclaimed claims 1 and 2 of the '635 Patent (IPR2016-00754, Ex. 3001), such that we need not consider those claims with respect to the instituted grounds.
[2] US Patent No. 4,337,483, filed Jan. 31, 1980 (Ex. 1006) ("Guillou").
[3] US Patent No. 4,388,643, filed Apr. 6, 1981 (Ex. 1008) ("Aminetzah").
[4] US Patent No. 3,743,767, filed Oct. 4, 1971 (Ex. 1009) ("Bitzer").
[5] Under Board practice at the time, not all grounds and claims proffered in the Petition were instituted.

27). An oral argument was held on June 6, 2017, and we issued a Final Written Decision (IPR2016-00754, Paper 41; "754-FWD"), determining all subject claims to be unpatentable and denying Patent Owner's Contingent Motion to Amend. 754-FWD, 72. Patent Owner sought rehearing (IPR2016-00754, Paper 42), which was denied (IPR2016-00754, Paper 43). Thereafter, Patent Owner appealed our decision to the Court of Appeals for the Federal Circuit (IPR2016-00754, Paper 44), where that appeal was remanded from the Federal Circuit for further proceedings in light of *United States v. Arthrex*, 141 S. Ct. 1970 (2021). Patent Owner then filed a Request for Director Review (IPR2016-00754, Paper 48; "754-RDR"), and the Commissioner for Patents, Performing the Functions and Duties of the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, addressed that request along with the request made with respect to the additional proceeding, discussed below.

On July 30, 2016, Petitioner filed another petition to institute an *inter partes* review of claims 3, 4, 7, 13, 18, 20, 21, 28–30, 32, and 33 of the '635 Patent. IPR2016-01520, Paper 1 ("1520-Pet."). Patent Owner filed a preliminary response (IPR2016-01520, Paper 5), and pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review on four grounds:

Reference(s)	Basis	Claim(s)	Proceeding
Chandra[6]	§ 102	13, 18, 20, 32	IPR2016-01520
Chandra, Nachbar[7].	§ 103	33	IPR2016-01520
Seth-Smith[8]	§ 102	4, 7	IPR2016-01520
Campbell[9]	§ 103	3	IPR2016-01520

IPR2016-01520, Paper 7 ("1520-DI"), 58[10]. After institution of trial, Patent Owner then filed a Response (IPR2016-01520, Paper 17; "1520-PO Resp."), to which Petitioner filed a Reply (IPR2016-01520, Paper 26; "1520-Pet. Reply"). In addition, Patent Owner also filed a Contingent Motion to Amend (IPR2016-01520, Paper 16), to which Petitioner filed an Opposition (IPR2016-01520, Paper 25), to which Patent Owner then filed a Reply to Petitioner's Opposition to the Contingent Motion (IPR2016-01520, Paper 30), Petitioner filed a Sur-Reply (IPR2016-01520, Paper 36) supporting the Opposition. An oral argument was held on October 26, 2017, and we issued a Final Written Decision (IPR2016-01520, Paper 38; "1520-FWD"), determining all subject claims to be unpatentable and denying Patent Owner's Contingent Motion to Amend. 1520-FWD, 66[11]. Patent Owner sought rehearing (IPR2016-01520, Paper 39), which was denied (IPR2016-

[6] US Patent No. 4,817,140, filed Nov. 5, 1986 (Ex. 1041) ("Chandra").
[7] Daniel Nachbar, *When Network File Systems Aren't Enough: Automatic Software Distribution Revisited*, USENIX Conference Proceedings, June 9-13, 1986 (Ex. 1042) ("Nachbar").
[8] US Patent No. 4,886,770, filed Aug. 14, 1986 (Ex. 1043) ("Seth-Smith").
[9] US Patent No. 4,536,791, PCT filed Mar. 31, 1981 (Ex. 1044) ("Campbell").
[10] Under Board practice at the time, not all grounds and claims proffered in the Petition were instituted.
[11] Because of the prior decision (754-FWD), consideration of claims 4, 7, and 13 of the '635 Patent in that latter decision (1520-FWD) were dismissed, but are now under consideration.

01520, Paper 40). Thereafter, Patent Owner appealed our decision to the Court of Appeals for the Federal Circuit (IPR2016-01520, Paper 41), where that appeal was remanded from the Federal Circuit for further proceedings in light of *United States v. Arthrex*, 141 S. Ct. 1970 (2021). Patent Owner then filed a Request for Director Review (IPR2016-01520, Paper 45; "1520-RDR"), and the Commissioner for Patents, Performing the Functions and Duties of the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, considered the requested issues of the IPR2016-00754 and IPR2016-01520 cases together.

In the Order Granting Request for Director Review (IPR2016-00754, Paper 50; "Granting Order"), issued March 3, 2022, it was discussed that "[i]n both decisions, the Board construed the terms 'encrypted' and 'decrypted,' determining that neither term was limited to scrambling and descrambling operations on digital information, but could also include scrambling and descrambling on analog information." Granting Order, 2. Patent Owner argued that review was appropriate because the Board erred by adopting erroneous claim constructions for "encrypted" and "decrypted." 754-RDR, 4–9. The Granting Order also details that

> Patent Owner argues that the Board applied a similar analysis in its final written decision in *Apple Inc. v. Personalized Media Communications, LLC*, IPR2016-00755, Paper 42 (PTAB Feb. 14, 2019), which the U.S. Court of Appeals for the Federal Circuit reversed in relevant part on the issue of claim construction. *See* [754-RDR] at 1–2, 4–18 (citing *Personalized Media Communications, LLC v. Apple Inc.*, 952 F.3d 1336, 1339 (Fed. Cir. 2020) (construing the term "encrypted digital information transmission including encrypted information" as limited to digital information) ("*PMC*")).

Granting Order, 2–3[12]. The argument was found persuasive, determining that "[t]he Board's claim construction analysis for the terms 'encrypted' and 'decrypted' in the cases is substantially similar to the Board's related analysis of the term 'encrypted digital information transmission including encrypted information' at issue in the Federal Circuit case noted above." *Id.* at 3. Based on that, the prior Final Written Decisions (754-FWD, 1520-FWD) were vacated, and the cases remanded "for the Board to address its claim construction for the terms 'encrypted' and 'decrypted' in light of the Federal Circuit's decision in *PMC*. *See PMC*, 952 F.3d at 1339–46." *Id.*

Subsequently, we set a briefing schedule (IPR2016-00754, Paper 51; "Briefing Order"), with the parties arguing the "applicability of the grounds identified above in view of the claim construction set forth by the U.S. Court of Appeals for the Federal Circuit." Briefing Order, 3. Thereafter, Petitioner filed its Brief on Remand (IPR2016-00754, Paper 52; "Pet. Brief on Remand"), Patent Owner filed its Responsive Brief on Remand (IPR2016-00754, Paper 53; "PO Resp. Brief on Remand"), Petitioner filed its Reply Brief on Remand (IPR2016-00754, Paper 55; "Pet. Reply Brief on Remand"), and Patent Owner filed its Sur-Reply Brief on Remand (IPR2016-00754, Paper 56; "PO Sur-Reply Brief on Remand").

B. Related Proceedings

Patent Owner indicates that the '635 Patent is the subject of a lawsuit: *Personalized Media Communications, LLC v. Apple, Inc.*, No. 2:15-cv-1366-

[12] The relationship between the '635 Patent and the subject patent in the Federal Circuit Decision will be discussed further below

JRG–RSP (E.D. Tex. filed July 30, 2015). IPR2016-00754, Paper 49; IPR2016-01520, Paper 46.

C. The '635 Patent

The '635 Patent is titled "Signal Processing Apparatus and Methods" and generally relates to a unified system of programming communication. IPR2016-00754, Ex. 1003, Abs. The challenged claims relate to methods of controlling the decryption of programming at a subscriber station or a receiver station. Independent claims 3, 18, and 21 are considered representative and are reproduced below:

> 3. A method of controlling a remote transmitter station to communicate program material to a subscriber station and controlling said subscriber station to process or output a unit of programming, said method comprising the steps of:
>
> receiving a control signal which operates at the remote transmitter station to control the communication of a unit of programming and one or more first instruct signals and communicating said control signal to said remote transmitter station;
>
> receiving a code or datum identifying a unit of programming to be transmitted by the remote transmitter station, said remote transmitter station transferring said unit of programming to a transmitter;
>
> receiving at said remote transmitter station one or more second instruct signals which operate at the subscriber station to identify and decrypt said unit of programming or said one or more first instruct signals, said remote transmitter station transferring said one or more second instruct signals to said transmitter; and
>
> transmitting from said remote transmitter station an information transmission comprising said unit of programming, said one or more first instruct signals, and said one or more second instruct signals, said one or more first instruct signals being transmitted in accordance with said control signal.

Id. at 286:29–53.

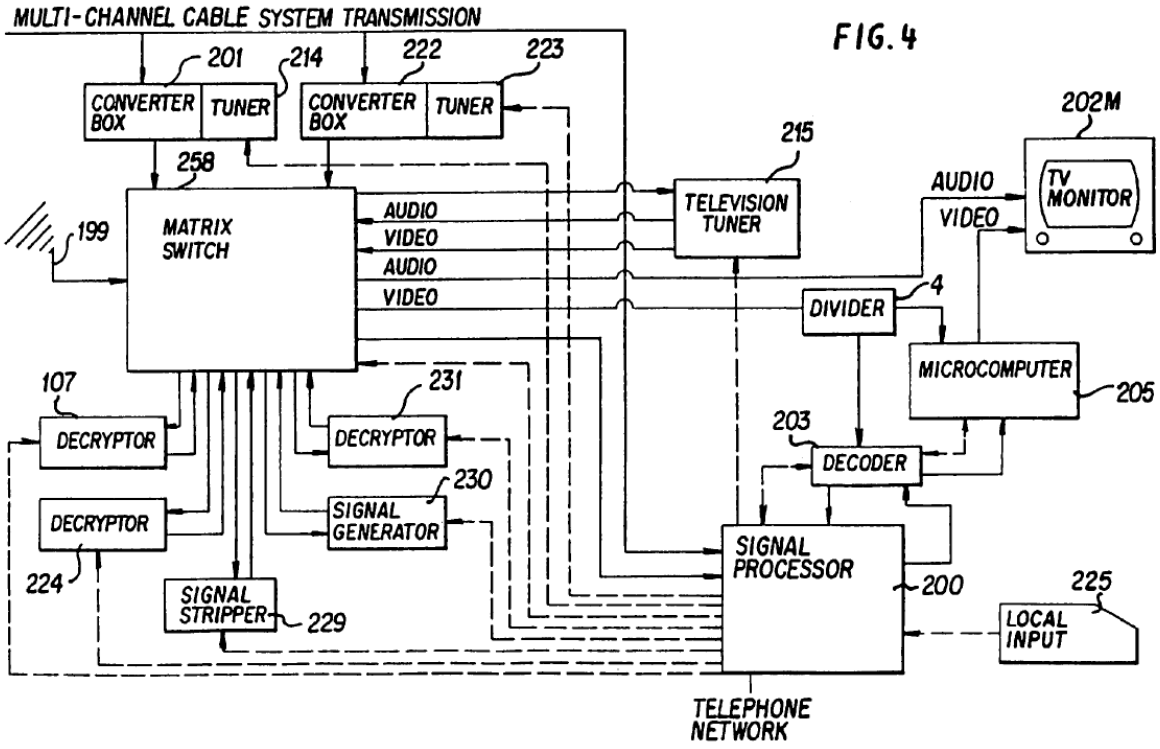
> 18. A method of processing signals at a receiver station comprising the steps of:
>
> receiving at least one encrypted digital information transmission, wherein the at least one encrypted digital information transmission is unaccompanied by any non-digital information transmission;
>
> locating code;
>
> passing said code to a processor;
>
> controlling a decryptor that decrypts encrypted digital data to decrypt in a specific fashion on the basis of said code;
>
> decrypting a portion of said at least one information transmission in said specific fashion; and
>
> passing said decrypted portion of said at least one encrypted digital information transmission to one of said processor and an output device.

Id. at 288:10–25.

> 21. A method for decryptor activation in a network comprising:
>
> receiving a transmission comprising encrypted materials;
>
> decrypting under first processor control a first portion of said encrypted materials in said transmission;
>
> inputting said first portion of said encrypted materials to a decryptor;
>
> decrypting under second processor control a second portion of said encrypted materials based on said step of decrypting said first portion of said encrypted materials.

Id. at 288:61–289:3.

The ’635 Patent describes access control to transmitted content at a receiver station. IPR2016-00754, Ex. 1003, Abs. Figure 4 of the ’635 Patent, reproduced below, illustrates a receiver station:



As shown above in Figure 4, the '635 Patent discloses a receiver station having signal processor 200 to control tuners 214, 215, and 223, the switching of matrix switch 258, and decrypting by decryptors 107, 224, and 230. *Id*. at 148:30–35. In one example described in the Specification, the "Wall Street Week" program is transmitted to the receiver station by a cable television head end. *Id*. at 149:23–26. Prior to transmission, the cable head end "encrypts the digital audio information of said transmission, in a fashion well known in the art, using particular cipher algorithm C and cipher key Ca, then transmits the information of said program on cable channel 13." *Id*. at 149:26–30. Furthermore, a SPAM message consisting of an "01" header, local-cable-enabling-message (#7), is transmitted with instructions that enable the "Wall Street Week" programming. *Id*. at 150:24–33. Executing the instructions causes controller 20 to receive the cable channel transmission, select the information of a cipher key Ca from among the

information portion, and transfer the cipher key to decryptor 107. *Id*. at 152:10–16, 44–48. Once the cipher key is received by decryptor 107, decryptor 107 then decrypts "using said key information and selected decryption cipher algorithm C, and output[s] the decrypted information of the audio portion of the 'Wall Street Week' program transmission." *Id*. at 152:48–51.

Subsequently, a second SPAM message that consists of an "01" header provides "1st-stage-enable-WSW-program" instructions as the information segment information. *Id*. at 153:38–43. Executing the "1st-stage-enable-WSW-program" instructions causes controller 20 to affect a first stage of decrypting the video information of the "Wall Street Week" program transmission. *Id*. at 153:66–154:2. Controller 20 selects the decryption cipher key Ba and transfers it to selected decryptor 224. *Id*. at 154:28–30. Controller 20 causes decryptor 224 to commence decrypting the received information using decryption cipher key Ba and decryption cipher algorithm B. *Id*. at 154:28–33.

A third SPAM message provides "2nd-WSW-program enabling-message" instructions, causing the controller to affect a second stage of decrypting the digital video information of "Wall Street Week." *Id*. at 156:62–157:5. The second stage of decrypting the video information of the "Wall Street Week" program transmission is completed using the decryption cipher key Aa. *Id*. at 158:22–29. Finally, controller 20 causes the receiver station to commence the transfer of the decrypted television information of the "Wall Street Week" program to microcomputer 205 and monitor 202M. *Id*. at 159:55–59.

D. Scope of Consideration on Remand

Per the briefing on remand, Petitioner asserts that the above-discussed term, "encrypted digital information transmission including encrypted information," for which the Federal Circuit provided a construction in *PMC*, is different from the recitations of the instant claims and that no previous ground need be disturbed. Pet. Brief on Remand 5–18. Petitioner asserts that "[t]he Federal Circuit explicitly did not limit the basic concepts of 'encryption' and 'decryption' to digital-only operations," and that altering those construction to be digital-only "would be flatly inconsistent with the Federal Circuit's holding and reasoning." *Id*. at 4–5. Additionally, Petitioner asserts that challenged claims 18, 20, 32, and 33 already recite "all-digital" requirements, as do the prior art references applied against those claims. *Id*. at 7–10. Petitioner also asserts that claims 3, 4, 7, 13, 21, and 28–30 do not recite the "disputed term," construed by the Federal Circuit in *PMC*. *Id*. at 10–13. Lastly, Petitioner asserts that claims 4, 7, 13, 21, and 28–30 are unpatentable even under Patent Owner's alternative constructions of the "encrypt/decrypt" terms. *Id*. at 13–18.

In response, Patent Owner asserts that under the Federal Circuit's construction, the "encrypt/decrypt" terms, requires the upholding of validity of at least claim 3, alleging that Petitioner has tacitly acknowledged the same. PO Resp. Brief on Remand 3–9. In reply, Petitioner asserts that Patent Owner is misreading the scope and discussion of the Federal Circuit's decision, asserting that "the Federal Circuit did ***not*** reject the Board's construction of 'decrypt' or re-construe that term." Pet. Reply Brief on Remand 1. In response, Patent Owner asserts that the Federal Circuit adopted "the applicant's interpretation of encryption and decryption as the

basis for the [its] construction of the full phrase." PO Sur-Reply Brief on Remand 2.

Given the remarks and direction provided in the Granting Order, it is clear that we are ordered to "issue new final written decisions that address the Federal Circuit's claim construction in *Personalized Media Communications, LLC v. Apple Inc.*, 952 F.3d 1336 (Fed. Cir. 2020)." Granting Order 3. The patent considered in *PMC* was U.S. Patent No. 8,191,091 ("'091 patent), which issued from a patent application (No. 08/449,413), which was a continuation of patent application (No. 08/113,329), now U.S. Patent No. 7,856,650; the patent application that issued as the '635 Patent was also a continuation of patent application (No. 08/113,329), such that specifications of the '091 and '635 patents are the same. It would be myopic to construe only the identical claim term to those resolved by the Federal Circuit's decision. The Federal Circuit's analysis reflected, for the most part, that the actual claim language "does not preclude Patent Owner's interpretation, nor does it compel the Board's interpretation," determining upon multiple characteristics that the proposed constructions were equally plausible in view of the claim language. *PMC*, 952 F.3d at 1340–43. Considering the prosecution history of the subject patent in that case, the '091 patent, the Federal Circuit disagreed with the Board's legal analysis and determined that prosecution history statements need not reach the level of disavowal to inform the claim construction. *Id*. at 1344–46. The Federal Circuit added that "[d]uring prosecution, the applicant repeatedly and consistently voiced its position that encryption and decryption require a digital process in the context of the [patent, and] applicant never abandoned that position." *Id*. at 1345. As such, the

consideration of "encrypt" and "decrypt" terms need to be revisited in this decision on remand.

Similarly, the Granting Order notes that "[t]he Board's claim construction analysis for the terms 'encrypted' and 'decrypted' in the cases is substantially similar to the Board's related analysis of the term 'encrypted digital information transmission including encrypted information' at issue in the Federal Circuit case noted above." Granting Order 3. We would be remiss if we did not consider the Federal Circuit's analysis of those terms cited in the Granting Order, i.e., "encrypt," "decrypt," and related terms, in drafting this decision on remand. As such, we re-construe the claim terms containing "encrypt" and "decrypt" in the Claim Construction section below.

Patent Owner also argues that the Federal Circuit decision (*PMC*) "is also relevant for a more subtle but no less important reason: its emphasis on the need to consider the applicant's 'repeated and consistent statements during prosecution.'" PO Resp. Brief on Remand 2. Patent Owner alleges that we failed to account for such statements during prosecution, resulting in faulty claim constructions of certain terms. *Id*. at 3, 9–19. These terms include "executable instructions," "changing a decryption technique," "encrypted video," and "processor," where it is clear that none of the terms would be reconsidered on the basis of our reevaluation of claim terms containing "encrypt" and "decrypt." *Id*. at 9–19. For example, Patent Owner's contentions regarding "encrypted video" go to the interpretation of "video," rather than "encrypted," and Patent Owner's contentions regarding "changing a decryption technique" go to whether changing a decryption key would fall under the scope that term, rather than consideration of digital-only decryption processes, i.e., the central issues detailed in the Granting

Order. Additionally, Patent Owner bids us to "revisit [our] prior conclusions that claims 18, 20, 32, and 33 are not entitled to a 1981 priority date," although Patent Owner acknowledges that the "issue is not compelled by the Director's Order." *Id*. at 3, 20–25.

With respect to the additional claim terms that Patent Owner seeks for reconsideration, we disagree with Patent Owner's contentions that we have failed to account for crucial prosecution statements in construing other claim terms. The claim construction analysis from the prior Final Written Decisions is repeated below for claim terms previously construed, but we have considered all prior prosecution history statements in making the original determinations, and we are not compelled to make changes outside of the newly construed terms, necessitated by the Federal Circuit's decision. Similarly, such considerations would be outside of the purview of the remand instructions that we have been provided. *See* Granting Order.

We also decline Patent Owner's offer that we are "free to revisit this issue" of the proper priority date given to certain claims because the Director did not deny review on the priority-date issue, but instead said nothing about it at all. PO Resp. Brief on Remand 20. We continue to arrive at the same conclusions regarding the proper priority that claims 18, 20, 32, and 33 are entitled to, reiterated below, having considered all of the evidence put forth by the parties at trial. Such considerations would be outside of the purview of the remand instructions that we have been provided. *See* Granting Order.

ANALYSIS

A. Legal Standards

In an *inter partes* review, the petitioner has the burden of proving unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e).

That burden never shifts to the patentee. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A claim is unpatentable under 35 U.S.C. § 102 if a single prior art reference expressly or inherently describes each and every limitation set forth in the claim. *See Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1375 (Fed. Cir. 2005); *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.,* 814 F.2d 628, 631 (Fed. Cir. 1987).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are "such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective indicia of obviousness or non-obviousness (i.e., secondary considerations). *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). One seeking to establish obviousness based on more than one reference also must articulate sufficient reasoning with rational underpinnings to combine teachings. *See KSR*, 550 U.S. at 418.

B. Level of Ordinary Skill in the Art

According to Petitioner's Declarant, Mr. Wechselberger, a person of ordinary skill in the art relevant to the '635 Patent would have "bachelor's degree in electrical engineering, or equivalent experience, and two to four years of experience in the broadcast or cablecast television transmission

fields." IPR2016-00754, Ex. 1001 ¶ 81. Similarly, Patent Owner's Declarant Dr. Weaver defines a person of ordinary skill in the art relevant to the '635 Patent to have a "bachelor's degree or equivalent in digital electronics, electrical engineering, computer engineering, computer science, or a related technical degree, with 2-5 years of post-degree work experience in system engineering (or equivalent)." IPR2016-00754, Ex. 2001 ¶ 31.

Based on our review of the '635 Patent, the types of problems and solutions described in the '635 Patent and cited prior art, and the testimony of Petitioner's declarant and Patent Owner's declarant, we adopt Patent Owner's definition of a person of ordinary skill in the art at the time of the claimed invention. We are not persuaded, however, that the analysis would differ under Petitioner's proposed level of skill. We note that the applied prior art also reflects the appropriate level of skill at the time of the claimed invention. *See Okajima v. Bourdeau,* 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Interpretation

1. "encrypt"/"decrypt"

a. The Final Written Decision

All of the independent claims, specifically claims 2, 3, 13, 18, 20, 21, 32, and 33, recite the limitations directed to encryption and/or decryption. Citing passages from the '635 Patent, a related IPR decision, its Declarant, and a related District Court case, Petitioner contends that decryption and encryption are not limited to operations on digital information, but include descrambling and scrambling operations on analog information. *See* 1520-Pet. 3–4 (citing IPR2016-01520, Ex. 1001 ¶¶ 62–65; IPR2016-01520, Ex. 1003, 160:52–55; IPR2016-01520, Ex. 1011, 7–11; IPR2016-01520,

Ex. 1012, 2–5; IPR2016-01520, Ex. 1013, 25–26; IPR2016-01520, Ex. 1014, 2–4; IPR2016-01520, Ex. 1017, 29).

Patent Owner, citing the '635 Patent, which claims priority to U.S. Patent No. 4,694,490 ("'490 patent"), related patent reexaminations, a District Court case, and other evidence, contends that in line with convention, the '635 Patent makes a distinction between encryption and scrambling, with the former limited to digital data and the latter limited to analog data. *See* 1520-PO Resp. 45–47 (citing IPR2016-01520, Ex. 1003, 144:8–19; IPR2016-01520, Ex. 2003, 68–69; IPR2016-01520, Ex. 2005, 53–54; IPR2016-01520, Ex. 2009, 2; IPR2016-01520, Ex. 2012, 1330, 1362; IPR2016-01520, Ex. 2023 ¶¶ 46–54, 58–71).

In the Final Written Decisions, we examined the disclosure of the '635 Patent, the '490 patent, past statements by Patent Owner's declarant, prior proceedings, and the prosecution history of the '635 Patent, as well as the common meaning of the terms in the relevant timeframes. 754-FWD 7–18; 1520-FWD 20–27. Based on all of those factors, as well as the arguments from the parties, we construed the term "decrypt," and associated terms, with respect to the '635 Patent to include descrambling. 754-FWD 18; 1520-FWD 27. This construction was one of the issues that Patent Owner raised on its appeal to the Federal Circuit. *See* IPR2016-00754, Paper 44; IPR2016-01520, Paper 41.

b. The Federal Circuit's Decision on Appeal in a Related Case

In *Personalized Media Communications* ("*PMC*"), the Federal Circuit considered related '091 patent and specific claim terms evaluated in an *inter partes* review of that patent. *PMC*, 952 F.3d at 1337–38. The instant '635 Patent is closely related to the patent addressed in *PMC*. The analysis

of the Federal Circuit indicated that the actual claim language therein "does not preclude Patent Owner's interpretation, nor does it compel the Board's interpretation," determining upon multiple characteristics that the proposed constructions were equally plausible in view of the claim language. *PMC*, 952 F.3d at 1340–43. Considering the prosecution history of the subject patent in that case, the Federal Circuit disagreed with the Board's legal analysis and determined that prosecution history statements need not reach the level of disavowal to inform the claim construction. *Id*. at 1344–46. The Federal Circuit added that "[d]uring prosecution, the applicant repeatedly and consistently voiced its position that encryption and decryption require a digital process in the context of the [patent, and] applicant never abandoned that position." *Id*. at 1345.

In briefing from the parties, Petitioner argues that the Federal Circuit expressly did not re-construe "encrypted" and "decrypted" in *PMC*, and did not find any error in the Board's construction of those terms. Pet. Brief on Remand 1–5; Pet. Reply Brief on Remand 1–3. Petitioner asserts that the claim term construed, "an encrypted digital information transmission including encrypted information," is affected by the consistent and repeated statements made during prosecution. Pet. Brief on Remand 1–2. Petitioner also argues that the Federal Circuit affirmed the Board's decision regarding claim 26, although that claim recited "encrypted information," with the Federal Circuit holding that that "the prosecution history statements and amendments that we found decisive to the interpretation of 'encrypted digital information transmission' do not apply" to the claims including the phrase "encrypted information." *Id*. at 4 (citing *PMC*, 952 F.3d at 1346) (emphasis omitted).

Patent Owner responds that in proceedings involving the '091 patent and the instant '635 Patent, Patent Owner has made the same, consistent statements during prosecution, namely that encryption and decryption are limited to digital processes. PO Resp. Brief on Remand 3–4; PO Sur-Reply Brief on Remand 1–2. Patent Owner also argues that "the dispute focused on the word "encrypted" within the construed term. PO Resp. Brief on Remand 4 (citing *PMC*, 952 F.3d at 1339). Patent Owner also argues that the prosecution of the '635 Patent involved consistent statements that encryption and decryption require a digital signal and process. *Id*. at 6–7 (citing IPR2016-01520, Ex. 2016, 1018, 1090, 1156, 1231, 1294, 1330). Patent Owner also distinguishes the Federal Circuit's treatment of claim 26, because Patent Owner had agreed that "an information transmission including encrypted information" encompassed analog information and was not limited to digital information. *Id*. at 7–8 (citing *PMC*, 952 F.3d at 1346); PO Sur-Reply Brief on Remand 2–3.

As noted by the Federal Circuit in its decision, "[a]n applicant's repeated and consistent remarks during prosecution can define a claim term—especially where, as here, there is 'no plain or ordinary meaning to the claim term' and the specification provides no clear interpretation." *PMC*, 952 F.3d at 1345 (citing *Sunovion Pharm., Inc. v. Teva Pharm. USA, Inc.*, 731 F.3d 1271, 1276–77 (Fed. Cir 2013)).[13] As Patent Owner asserts the "'context' of the '635 patent is functionally identical to that of the '091

[13] Citing *PMC*, the court reasoned that when "the meaning of the relevant claim language is not plain," courts "look to the prosecution history to 'inform[ ] the meaning of the disputed claim phrase and address[ ] an ambiguity otherwise left unresolved.'" *See Univ. of Mass. v. L'Oreal S.A.*, 36 F.4th 1374, 1383 (Fed. Cir. 2022) (quoting *PMC*, 952 F.3d at 1345).

patent, and hence requires the same construction of encryption and decryption." PO Resp. Brief on Remand 5–6. Patent Owner goes on to recite numerous instances, in the prosecution of the '635 Patent, that it asserted that the terms "decryption" and "encryption" involve the use of digital signals, and that the terms are not broad enough to read on analog scrambling and descrambling. *Id*. at 6–7 (citing IPR2016-00754, Ex. 2016, 1018, 1090, 1156, 1231). We agree with Patent Owner that substantially similar remarks were made by Patent Owner in the prosecutions of the '091 and '635 Patents. We acknowledge Petitioner's assertions regarding the "disputed claim term," discussed at length in the *PMC* decision, not being found in the instant claims, but we are unable to ignore the overall discussion and thrust of the *PMC* decision, which clearly discusses the encryption of digital signals.

As such, we construe the claim terms "decryption," "encryption," and related terms to be applicable to digital signals, exclusive of scrambling and descrambling, unless the context of the claim makes clear that decryption and/or encryption process is performed on an analog or a mixed analog and digital signal.

2. "executable instructions"

Claim 13 of the '635 Patent recites: "said decrypted second of said plurality of signals is embedded with executable instructions." Petitioner asserts that "executable instructions" should be construed as "instructions that can be executed," and is not limited to a computer program. 1520-Pet. 15. Patent Owner responds that "executable instructions" is better construed as "instructions of a computer program that cause a computer to carry out operations on the computer according to the instructions." 1520-PO Resp. 43

(citing IPR2016-01520, Ex. 2023 ¶¶ 75–78). Patent Owner also cites to multiple citations in the '490 Patent that discuss "signals embedded in programs" and passing "operating instructions to [] equipment," as well as a dictionary definition of "execution (software)." *Id*. at 43–44 (citing IPR2016-01520, Ex. 2011, 4; IPR2016-01520, Ex. 1004, 4:5–6, 5:16–22; 9:21–23, 12:11–12, 8:56–65, 19:42–20:7) (alteration in original).

Petitioner responds that nothing in claim 13 "limits the controllable device [of claim 13] to a programmable computer that runs computer programs," and the intrinsic evidence cited by Patent Owner does not show that control signals or instruction signals need to be instructions that must be carried out by a computer. 754-Pet. Reply 8–9. Additionally, Petitioner asserts that Patent Owner's definition of "execution (software)" is "an altogether different term than that at issue." *Id*. at 9. We agree with Petitioner.

Given the language of claim 13, we are not persuaded that the claim limitation "executable instructions" must be construed as instructions of a computer program. Patent Owner's definition of "execution (software)" already supposes the presence of "software," that would have been understood as being used by a computer, whereby "executable instructions" is broader and could be performed through an analog signal, i.e., a signal level set to accomplish some operation. Additionally, the "controller" disclosed in the '490 Patent need not be a "computer," as it was understood in the relevant timeframe. *See* IPR2016-01520, Ex. 1004, 8:56–65. Similarly, the other embodiment cited in the '490 Patent discusses a receiver may be preprogrammed to respond to an instruction, which also does not require a "computer." *Id*. at 19:42–43, 19:60–65. As such, we continue to

be persuaded that "executable instructions" should be construed as "instructions that can be executed," and should not be limited to a computer program, as asserted by Patent Owner.

3. "processor"

Claim 18 recites a "processor" and claim 21 recites a "decrypting under a first processor control" and "decrypting under a second processor control." In the Institution Decision (754-DI), we preliminarily determined that "a processor means 'a device that operates on data.'" 754-DI 8–9.

Petitioner agrees with the construction. *See* 754-Pet. Reply 7. Patent Owner disputes the construction of "processor." 754-PO Resp. 22–27. According to Patent Owner, "processor" should be construed according to its plain and ordinary meaning as "a device that performs operations according to instructions." *Id*. at 22 (citing IPR2016-00754, Ex. 2019 ¶¶ 79–88) (emphasis omitted). Patent Owner contends that the specifications "consistently describe[] processors as devices that operate *pursuant to instructions*." *Id*. at 23.

Petitioner contends that the '635 Patent describes a variety of processors, including hardwired devices that process data. 754-Pet. 5 (citing IPR2016-00754, Ex. 1003, 135:10–15 (decoders 30 and 40 process information), 75:49–55 (buffer/comparator 8 processes data)). The '490 patent describes "pass[ing] a signal word to signal processor, 200, which, in a predetermined fashion, signal processor, 200, decrypts and transfers to decrypt[o]r, 224, to serve as the code upon which decrypt[o]r, 224, will decrypt the incoming encrypted recipe." IPR2016-00754, Ex. 1004, 20:39–43. With respect to processor instructions, Petitioner also notes "the specification discloses that an 'interrupt signal' informs a control processor

and causes the control processor to act in a 'predetermined fashion.'" 754-Pet. Reply 14 (citing Ex. 1003, 110:44–54).

Moreover, the '635 Patent states "[t]he processors and buffers can have inputs from each of the receiver/detector lines and evaluate information continuously. From the processors and buffers, the signals may be transferred . . . ." IPR2016-00754, Ex. 1003, 8:54–58. This passage shows that processors often merely "evaluate information" and/or "transfer[]" signals, tracking our preliminary claim construction. In contrast to the descriptions of various processors, the '635 Patent describes "[i]n the present invention, particular signal processing apparatus (hereinafter called the '*signal processor*') detect signals, and, in accordance with instructions in the signals and pre-programming in the signal processor, decrypt and/or record and/or control station apparatus." *Id*. at 8:34–38 (emphasis added). None of the challenged claims recite a "signal processor" that the '635 Patent appears to define in more narrow terms relative to a more general processor.

Petitioner points out that in related District Court litigation, Patent Owner previously proposed construing the term "processor" as "any device capable of performing operations on data." 754-Pet. 5 (citing Ex. 1016, 12; Ex. 1018, 7–8); 754-Pet. Reply 6 (citing same). Patent Owner responds it "did not propose a more precise construction [in prior litigation] merely because the opposing parties did not attempt to overstretch 'processor' beyond its common-sense meaning." 754-PO Resp. 27. Patent Owner's response implies its prior proposed District Court construction of "any device capable of performing operations on data" constitutes a "common-sense meaning," tracking the plain meaning Petitioner proposes. *See* IPR2016-00754, Ex. 1016, 12; IPR2016-00754, Ex. 1018, 7–8. As

Petitioner notes, Patent Owner does not address, let alone dispute, our preliminary claim construction that relies upon the preliminary record to show processor instructions include control or informational signals. *See* 754-Pet. Reply 6–7; 754-PO Resp. 22–27.

The disclosures and extrinsic evidence of record of the '635 Patent and the '490 patent, including Patent Owner's proposed District Court construction, support our preliminary construction. We also incorporate by reference a Board panel's analysis of the construction of processor in related IPR2014-01532, which relies on the same 1987 specification in a related patent. *See* IPR2016-00754, Ex. 1013, 6–8.

Accordingly, we determine that "processor" means "'a device that operates on data," in the context of the '635 Patent.

4. "at least one encrypted digital information transmission is unaccompanied by any non-digital information transmission"

The claim limitation "at least one encrypted digital information transmission is unaccompanied by any non-digital information transmission" is recited in claim 18, and similarly in claims 20, 32, and 33. In the Institution Decision (1520-DI), we determined, in view of the plain language of the claim limitation, that the "at least one encrypted digital information transmission" must not include any non-digital information in at least one transmission. 1520-DI 22. We also determined that the proper construction of the limitation "at least one encrypted digital information transmission is unaccompanied by any non-digital information transmission" recited in claim 18, and similarly in claims 20, 32, and 33, means "the at least one encrypted digital information transmission does not include non-digital information such as analog information." *Id.*

Patent Owner requests that we maintain that construction, and Petitioner argues that because Patent Owner "does not raise any argument on that issue," it agrees to the construction for purposes of resolving the disputes in the instant proceeding. 1520-PO Resp. 48; 1520-Pet. Reply 20. As such, we maintain our construction for the instant decision.

D. Priority Date for the Challenged Claims of the '635 Patent

Patent Owner argues that all of the prior art references cited by the Petitioner in IPR2016-01520 were filed or published after November 3, 1981, the priority date which Patent Owner argues is applicable to claims of the '635 Patent; thus, Patent Owner argues that the references do not constitute prior art and cannot render each of the challenged claims unpatentable. 1520-PO Resp. 4–42. Petitioner responds that the challenged claims are not entitled to the earlier priority date. 1520-Pet. Reply 1–17. We address the parties' contentions below.

The prior art status of the asserted prior art in IPR2016-01520 hinges on the effective priority date for the '635 Patent with respect to support for the challenged claims. Petitioner contends that the earliest effective priority date for the challenged claims of the '635 Patent (through a series of continuation patents) is the filing date of U.S. Patent No. 4,965,825 ("'825 patent") on September 11, 1987. *See* 1520-Pet. 5. The '635 Patent claims Continuation-in-Part ("CIP") status from September 11, 1987 to a chain of continuing applications purportedly having a priority date of November 3, 1981—the filing date of the earliest-filed ancestor patent in the chain, i.e., the '490 patent. *See* IPR2016-01520, Ex. 1003, [63]. Patent Owner contends that the effective priority date of the challenged claims of the '635

Patent is the filing date of the '490 patent on November 3, 1981. 1520-PO Resp. 1, 4–5.

Patent Owner contends "[t]he sufficiency of the written-description requirement for priority must be judged as of the filing date of the earlier application based on what the language of the specification would have meant to one of ordinary skill in the art as of the filing date of the earlier application." 1520-PO Resp. 5 (citing *Ariad Pharmaceuticals, Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1355–57 (Fed. Cir. 2010); *PowerOasis, Inc. v. T–Mobile USA, Inc.*, 522 F.3d 1299, 1306 (Fed. Cir. 2008); *Vas–Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64, 66 (Fed. Cir. 1991)) (emphasis omitted). As a preliminary matter, Patent Owner disputes the propriety of the analysis of Mr. Wechselberger, Petitioner's declarant. *Id.* at 6–9. Even accepting, arguendo, that Mr. Wechselberger's analysis was conducted from the wrong viewpoint, i.e., from the perspective of one of ordinary skill in the art in 1987, instead of 1981, we are not convinced that Petitioner's case against the earlier priority date rests solely on their declarant's testimony. We disagree that the testimony should be "given no weight" (*id.* at 9), and we review the testimony, along with other arguments presented by Petitioner, as well as the testimony and arguments of Patent Owner, in determining the proper priority for the claims.

1. "programming"

Claim 3 of the '635 Patent recites the term "programming." The '490 patent discloses "provid[ing] techniques whereby, automatically, single channel, *single medium transmissions, presentations, be they radio, or other electronic transmissions*, [which] may be recorded, [and] co-ordinated in time with other programing previously transmitted and recorded." IPR2016-

01520, Ex. 1004, 3:51–56 (emphasis added). On the other hand, the later-filed '635 Patent states that "[t]he term 'programming' refers to *everything* that is transmitted electronically to entertain, instruct or inform, including television, radio, broadcast print, and computer programming as well as combined medium programming." IPR2016-01520, Ex. 1003, 6:31–34 (emphasis added).

Therefore, the broad disclosure in the '635 Patent potentially includes not only "combined medium programming" and "computer programming," it also includes "*everything* . . . transmitted electronically" (subject to the quoted qualifiers) at the time of filing of the '635 Patent (i.e., assuming for the sake of argument written description exists for "everything" so transmitted). The earlier disclosure, however, in context, only includes "other electronic transmissions"—i.e., in context, those "other" transmissions that were similar to conventional "single channel, single medium," "television" or "radio" transmissions at the time of filing of the '490 patent. *Compare* IPR2016-01520, Ex. 1003, 6:31–34, *with* IPR2016-01520, Ex. 1004, 3:51–56, 10:48–49.

Petitioner argues that the broader 1987 definition of "programming" in the '635 Patent expands the scope of the subject matter; thus, claim 3 is not entitled to the 1981 priority date. 1520-Pet. 12. More particularly, Petitioner argues the Federal Circuit instructed in *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299 (Fed. Cir. 2008) that "where a claim term would receive a broader or more inclusive claim construction in view of the later specification, the claim is not entitled to the benefit of the earlier filing date." 1520-Pet. 12 (citing *PowerOasis*, 522 F.3d at 1310–11).

We acknowledge that Patent Owner and its declarant, Dr. Alfred Weaver, point out where claim 3 finds support in the '490 patent. 1520-PO Resp. 10–13 (citing IPR2016-01520, Ex. 2023 ¶¶ 105–136; Ex. 1004). As discussed above, the change in the meaning of "programming," in the contexts of the different specifications, constitutes a change sufficient such that the 1981 Specification of the '490 patent does not provide proper written description support, as we determined in the Institution Decision. *See* 1520-DI 10. We continue to determine that whatever the term "programming" meant in 1987, it meant something different in 1987 than it did in 1981, because it grew to encompass many different types of known analog and digital programming not contemplated in 1981 according to the '490 patent. As noted, the 1987 '635 Patent Specification broadened the meaning of programming to encompass "*everything* that is transmitted electronically to entertain, instruct or inform, including television, radio, broadcast print, and computer programming as well as combined medium programming." IPR2016-01520, Ex. 1003, 6:31–34 (emphasis added). Even considering Patent Owner's arguments, discussed below, we continue to determine that claim 3 cannot correctly claim priority to the 1981 priority date.

Patent Owner argues that *PowerOasis* is inapplicable because the proper inquiry in determining priority is whether the earlier filed application alone provides written description support for the claim in question and that it is legally improper to compare two specifications. 1520-PO Resp. 14–15 (citing *Technology Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1333–34 (Fed. Cir. 2008)). Patent Owner's argument contradicts the holding of *Power Oasis*, as the Federal Circuit considered both the original application

and a continuation-in-part application in that case, and ultimately determined that support did not exist in the original application for a variation of the customer interface later introduced in the continuation-in-part application. *PowerOasis*, 522 F.3d at 1310 ("Because none of this support was present in the Original Application and because the Original Application did not disclose a customer interface apart from the vending machine, the asserted claims are only entitled to the 2000 CIP Application filing date of June 15, 2000."). Accordingly, notwithstanding Patent Owner's characterization of the holding of *PowerOasis,* 522 F.3d at 1306, we determine that Patent Owner impermissibly broadened the scope of the claim term "programming" in the '635 Patent, relative to the disclosure of the term in the ancestor 1981 '490 patent.

Patent Owner also argues that "the '490 Patent discloses the same type of 'programming' as described in the 1987 Specification." 1520-PO Resp. 15. Patent Owner argues that the meaning of "programming," in the '490 patent is not limited to a single channel or medium and can include everything that is transmitted electronically. *Id*. at 15–16 (citing IPR2016-01520, Ex. 2023 ¶¶ 112–131). It is telling, however, that the citations to the '490 Patent (Ex. IPR2016-01520, Ex. 1004, 3:3–41, 48–60, 10:15–39) do not recite "everything that is transmitted electronically," but rather disclose coordination, delivery, channels, and media of transmission, while still detailing programming to be used with a single channel and a single medium. The 1987 Specification clearly contemplates known analog and digital programming, whereas the 1981 Specification does not. *Compare* IPR2016-01520, Ex. 1003, 235:33–38, *with* IPR2016-01520, Ex. 1004 (with the former disclosing "digital television transmissions," and no equivalent in

the latter). This example is further buttressed by Petitioner, pointing out that Patent Owner's declarant acknowledges that the transmission of digital television signals were "experimental" in 1981. 1520-Pet. Reply 5 (citing Ex. 1049, 42:18–43:11, 77:21–79:5, 88:11–15). Although the term "programming" is used in both specifications, the meaning of that term changed over the course of time.

Patent Owner also argues that "[w]hether additional examples of 'programming' were known or developed after November 3, 1981 is not relevant to the priority analysis under Section 120." 1520-PO Resp. 19. We do not agree. Under *PowerOasis*, we are charged with determining if claim terms have different meanings based on different specifications, and determining whether support exists in the earliest, original application for a variation on that claim term. It is not the case that the instant claims utilize "programming" as it would have been understood in the context of ordinarily skilled artisans in 1981.

Although Petitioner raised additional support issues of claim 3 (*see* 1520-Pet. 13), we need not reach those arguments based on the conclusions made herein. Therefore, we determine that Patent Owner has failed to sufficiently "come forward with evidence" or argument that contradicts Petitioner's showing that the '490 patent does not support at least claim 3 of the'635 Patent and that the earliest effective priority date for this claim is no earlier than that of the '825 patent on September 11, 1987. *See PowerOasis*, 522 F.3d at 1305 (noting the party asserting invalidity retains the overall burden); *Dynamic Drinkware*, 800 F.3d at 1378 (same).

2. "unaccompanied by any non-digital information transmission"

Claim 18 of the '635 Patent recites "receiving at least one encrypted digital information transmission, wherein the at least one encrypted digital information transmission is *unaccompanied by any non-digital information transmission*" (claims 20, 32, and 33 provide similar recitations) (emphasis added). We have previously determined with respect to the '635 Patent that the construction of the limitation "at least one encrypted digital information transmission is unaccompanied by any non-digital information transmission" means "the at least one encrypted digital information transmission does not include non-digital information such as analog information." 754-DI 10. We do not deviate from the construction with respect to this analysis. Petitioner argues that the negative limitation that transmissions are "unaccompanied by any non-digital information transmission" is never described in the 1981 '490 patent. 1520-Pet. 6 (citing Ex. 1001 ¶¶ 83–87).

Petitioner's declarant, Mr. Wechselberger, states that the 1981 '490 patent describes receiving a "recipe in encoded digital form," but this recipe is received via a cable television channel. IPR2016-01520, Ex. 1001 ¶ 84 (citing IPR2016-01520, Ex. 1004, 20:28–37). Mr. Wechselberger states that the 1981 '490 patent explains that these signals are embedded into programs and "lie outside the range of the television picture displayed on a normally tuned television set." *Id*. (citing IPR2016-01520, Ex. 1004, 4:5–6, 4:18–22). Mr. Wechselberger testifies that person of ordinary skill in the art would have understood, in view of this disclosure, that the transmission of the recipe is accompanied by conventional analog programming. *Id*. Accordingly, Petitioner argues that the 1981 '490 patent fails to support the

claim recitation that the transmissions are "unaccompanied by any non-digital information transmission." 1520-Pet. 7.

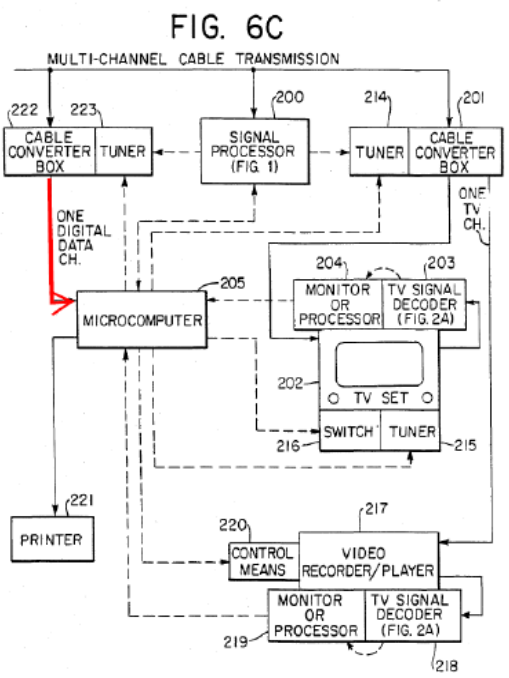
As we determined in the Institution Decision, we continue to determine that the 1981 '490 patent fails to describe or indicate, expressly or inherently, support for the limitation of "at least one encrypted digital information transmission," where any non-digital information is prohibited from that transmission. *See* 1520-DI 15.

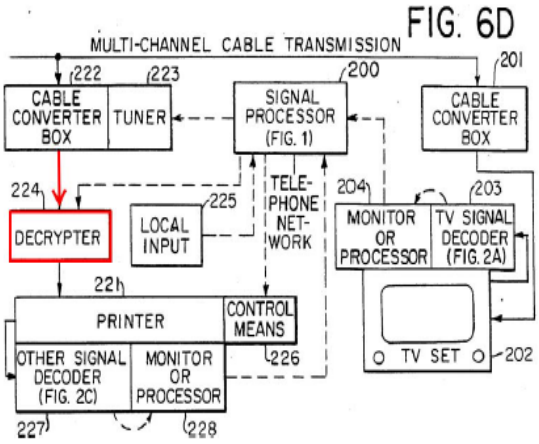
In response, Patent Owner argues that certain embodiments in the 1981 '490 patent support the negative limitation. 1520-PO Resp. 29–42. For example, Patent Owner points to information transmitted via a telephone link, citing the statement that a signal processor may "telephone a remote site to get an additional signal or signals necessary for the proper decryption and/or transfer of incoming programing transmissions." *Id*. at 29–31 (citing IPR2016-01520, Ex. 1004, 15:20–25). Patent Owner continues that those signals are made of "signal words," described as being all-digital, and that "a receiver station could make a connection via the telephone line to receive an all-digital information transmission made up of digital signal words used for proper decryption of an incoming programming transmission." *Id*. at 29–30 (citing IPR2016-01520, Ex. 1004, 3:6–7, 20:38–43, 8:39–40; IPR2016-01520, Ex. 2023 ¶¶ 172–77). We do not agree.

As Petitioner counters, the limitation in question is of "at least one *encrypted* digital information transmission," and Patent Owner's discussion of encryption refers to encryption of cable television transmissions, and not telephone transmissions. 1520-Pet. Reply 9 (citing 1520-PO Resp. 30–31) (emphasis added). Even if the "signal words" are used for encryption or decryption, it does not necessarily follow that those "signal words"

themselves would be encrypted, in order to support the claim limitations. Further, Patent Owner's assertion that "a receiver station *could* make a connection" speaks to probabilities and possibilities without relevant context, rather than demonstrating proper written description support. Patent Owner also argues that Petitioner's position is undercut by its citation to Chandra, in the unpatentability ground, which is said to disclose receiving a transmission via a telephone line. 1520-PO Resp. 30 (citing 1520-Pet. 30). We are convinced, however, per the discussion in later sections, that Chandra describes transmitting encrypted data over a telephone line, in distinction with the 1981 '490 patent that does not specify that data transmitted over the telephone line are encrypted. As such, we are convinced that the explicit disclosure in Chandra informs one of transmitting encrypted data over a telephone line, but the 1981 '490 patent does not.

Patent Owner also argues that Figures 6C and 6D of the '490 patent (IPR2016-01520, Ex. 1004) provide examples of the claimed limitation. 1520-PO Resp. 31–37. Those figures, annotated by Patent Owner, are reproduced below:





Patent Owner asserts that the Wall Street Week example (Fig. 6C) and the Julia Child example (Fig. 6D) illustrate support for "receiving at least one encrypted digital information transmission, wherein the at least one encrypted digital information transmission is unaccompanied by any non-digital information transmission." 1520-PO Resp. 31–37. Patent Owner argues that news services "transmit news on different channels carried on the multi-channel cable transmission to converter boxes, 222 and 201, and to signal processor, 200," and that the receiver station receives multiple channels of data, at least one of which is a digital data channel with stock information. *Id.* at 31–32 (citing IPR2016-01520, Ex. 1004, 18:43–68, Fig. 6C; IPR2016-01520, Ex. 2023 ¶¶ 178–187). With respect to the other example, Patent Owner argues that the cable converter box 222 tunes to one channel of several available channels to receive a transmission that only contains an encrypted "recipe in encoded digital form," which is separate from any cable television transmission. *Id.* at 35–36 (citing IPR2016-01520,

Ex. 1004, 20:35–37, Fig. 6D; IPR2016-01520, Ex. 2023 ¶¶ 184–185). We do not agree with Patent Owner's assessment.

As Petitioner counters, the multi-channel cable transmission, in Figure 6C, is made up of multiple channels, and Patent Owner acknowledges that "one digital data channel" in Figure 6C is "one channel of several available channels" received by the receiver station together. 1520-Pet. Reply 10–11 (quoting 1520-PO Resp. 35; citing IPR2016-01520, Ex. 1049, 48:19–49:8). Petitioner points out that conventional analog television programming and signals are included in the received channels, and thus the digital data channel with stock information will be accompanied by non-digital information. *Id*. at 11–12. Petitioner also points out that nothing in the 1981 '490 patent details that the stock information is encrypted, such that the digital data channel cannot provide support for the subject limitation of claims 18, 20, 32, and 33. Moreover, although Figure 6C refers to "ONE DIGITAL DATA CH.," this is an *output* of "CABLE CONVERTER BOX 222" at the television receiver side after it processes an input signal that is not necessarily a transmission of an all-digital signal. *See* Ex. 1004, Fig. 6, 6:1–4 ("FIG. 6C is a block diagram of signal processor apparatus and methods used *to organize the reception of selected information and programing and to co-ordinate multi-media, multi-channel presentations in time*." (emphasis added).

With respect to the Figure 6D example, we also agree with Petitioner that nothing in the 1981 '490 patent specifies that an appropriate channel to receive the encrypted recipe must be a separate, all-digital data channel. *Id*. at 13 (citing IPR2016-01520, Ex. 1004, 20:11–68). The "alternative method" describes receiving the recipe utilizing the same channel that the

French Chef is broadcast, such that the "primary embodiment" would utilize a separate channel, but there is no suggestion in the 1981 '490 patent that this should be an all-digital data channel. More likely, as Petitioner suggests (*id.*), the recipe would be received on a conventional cable television channel, albeit different from the one on which the television program is received. As such, we determine that the encrypted recipe in encoded digital form cannot provide support for the subject limitation of claims 18, 20, 32, and 33.

Patent Owner also argues that Figure 6E, directed to the "How to Grow Grass" example in the 1981 '490 patent, illustrates support for the subject negative limitation. 1520-PO Resp. 37–42. Patent Owner argues that the receiver station in the 1981 '490 patent can receive all-digital information from laser videodisc system 232, in order to print out the contents of a digital book. *Id.* at 37 (citing IPR2016-01520, Ex. 1004, 21:1–22:4; IPR2016-01520, Ex. 2023 ¶¶ 188–198). Patent Owner continues that signal words are received from the videodisc player, and are used to decode the book information, and that the specification does not disclose the existence of any analog information in the videodisc player's signal. *Id.* at 38 (citing IPR2016-01520, Ex. 1004, 21:20–51; IPR2016-01520, Ex. 2023 ¶ 191). We do not agree with Patent Owner's interpretation.

The specific embodiment uses "conventional laser videodisc equipment and techniques, well known in the art." IPR2016-01520, Ex. 1004, 21:10–12. The 1981 '490 patent does not specify that the output of the videodisc player only contains digital information. Patent Owner argues that videodisc systems could store "all-digital information" in "bit-oriented optical digital disc" by "us[ing] one recorded pit for each bit of

information." 1520-PO Resp. 39 (citing IPR2016-01520, Ex. 1047, 13–14; Ex. 2023 ¶¶ 192–195) (alteration in original, emphasis omitted). We agree with Petitioner, however, that the cited section in Exhibit 1047 refers to "optical digital disc technology," which is not necessarily the same as conventional videodisc systems, especially in the context of 1981. 1520-Pet. Reply 16 (citing Ex. 1051, 77:8–12, 80:25–81:4; Ex. 1047, 7–14; Ex. 1053 ¶ 9). We are persuaded that conventional, consumer videodisc systems, in 1981, need not output digital-only information. *See id.* As such, we determine that the output of the laser videodisc system in the 1981 '490 patent cannot provide support for the subject limitation of claims 18, 20, 32, and 33.

In addition, even if the relied-upon prior art system at Figure 6E pertains to locally stored digital information, such a prior art system simply transmits information from one local piece of equipment to another in an entirely local transmission within the same receiver station. This does not provide support for the full range of the challenged claims, which read on receiving transmissions from larger distances and include all manner of digital modulation types not contemplated by the 1981 '490 patent.

Accordingly, we determine Patent Owner fails to describe sufficiently how the embodiments in the 1981 '490 patent provide support for the limitations in claim 18, and similar recited limitations in claims 20, 32, and 33. Therefore, we determine that Patent Owner fails to rebut sufficiently Petitioner's contention that the 1981 '490 patent does not support at least claims 18, 20, 32, and 33 of the'635 Patent, and that the earliest effective priority date for these claims is no earlier than that of the '825 patent on September 11, 1987.

3. Conclusions Regarding Priority Date of Challenged Claims

In view of the above, we determine Petitioner shows by a preponderance of evidence that Chandra, Nachbar, and Campbell qualify as prior art against challenged claims 3, 18, 20, 32 and 33 of the '635 Patent.

E. Asserted Anticipation and Obviousness Based on Guillou – Claims 4, 7, 13, 21, and 28–30

1. Overview of Guillou

Guillou is titled "Text Video-Transmission System Provided With Means For Controlling Access To The Information" and describes a system having an information emitting center, including an encryption means using an operating key, and receiving stations, which provide a decryption means using the operating key. IPR2016-00754, Ex. 1006, Abs. Figure 7 of Guillou illustrates one embodiment of system, and is reproduced below:

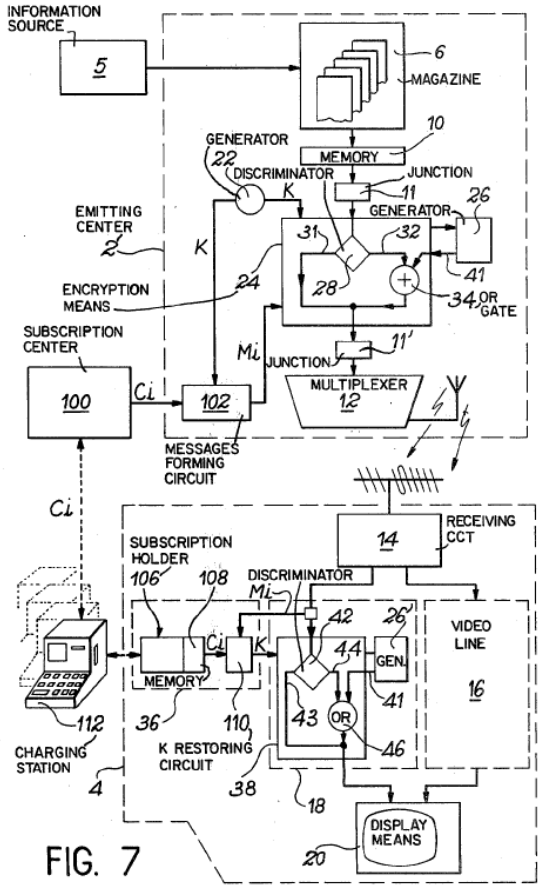


FIG. 7

As shown above in Figure 7, Guillou discloses emitting center 2, including automatic encryption means 24, and receiving station 4, including automatic decryption means 38. *Id.* at 10:3–42. Guillou discloses that automatic decryption means 38 includes discriminator 42, adapted to distinguish among coded octets, and logic circuit 46 to output the decoded octets d_j to display means 20. *Id.* at 10:41–56. Additionally, Guillou discloses restoring circuit 110 for restoring the operating key K from message M_i. *Id.* at 16:1–7. Message forming circuit 102 forms messages M_i using the subscriber's keys C_i and the operating key K according to an algorithm, $M_i = F_{Ci}(K)$. *Id.* at 15:51–57. Additionally, restoring circuit 110 in receiving station 4 receives the messages M_i and relies upon an algorithm, $K = G_{Ci}(M_i)$, to restore the signal corresponding to the operating key K used

in the emitting station. *Id*. at 16:1–10. Guillou also discloses that "[a]s soon as a distribution centre generates a new operating key K, it calculates, for each current subscribers' key in use C_i for this service, a message M_i by means of an algorithm $M_i = F_{Ci}(K)$, with the keys C_i acting as parameters." *Id*. at 8:44–48.

2. Analysis of Asserted Anticipation by Guillou and Obviousness In View of Guillou

In the Institution Decision, we instituted review based on Petitioner's contentions that claims 1, 2, 7, 21, and 29 are anticipated by Guillou and that claims 4, 13, 28, and 30 would have been obvious in view of Guillou. 754-DI 42. After the filing of the Petition in this matter, Patent Owner disclaimed claims 1 and 2 of the '635 Patent (*see* IPR2016-00754, Ex. 3001, Jun 24, 2016 Disclaimer in Patent Under 37 C.F.R. § 1.321(a)); therefore, we do not provide an analysis of the patentability of claims 1 or 2, except as necessary to render a decision with respect to claims 4 and 7 that depend from claim 2.

Patent Owner disputes Petitioner's contentions with respect to claims 7, 21, and 29, arguing that the cited reference fails to disclose all the elements required by the claims and disputes Petitioner's contentions with respect to claims 4, 13, 28 and 30, arguing that the cited reference fails to teach or suggest all the elements required by the claims. 754-PO Resp. 49–63. We have reviewed the Petition, the Patent Owner's Response, and Petitioner's Reply, as well as the relevant evidence discussed in those papers and other record papers. We determine the record supports Petitioner's contentions and adopt Petitioner's contentions discussed below as our own. For reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 7, 21, and 29 are anticipated by

Guillou and that claims 4, 13, 28, and 30 would have been obvious in view of Guillou.

Claims 4 and 7 are dependent from claim 2. Therefore, although Patent Owner has disclaimed claim 2, we must analyze independent claim 2 in analyzing the challenge of obviousness in view of Guillou of dependent claim 4 and anticipation by Guillou of dependent claim 7. Generally, Petitioner argues that claim 2 of the '635 Patent is virtually identical to claim 1 of the '304 patent previously at issue in the *Amazon.com, Inc. v. Personalized Media Communication, LLC*, Case No. IPR2014-01532 ("the '1532 IPR"). 754-Pet., 11. In the '1532 IPR, we determined Petitioner had shown claim 1 of the '304 patent to be unpatentable as obvious in view of Guillou. *See Amazon.com, Inc. v. Personalized Media Communication, LLC*, Case No. IPR2014-01532, Paper 57, at 64 (PTAB March 29, 2016) (Paper 57) ("'1532 Final Decision"). Petitioner argues that the only element of claim 1 of the '304 patent that Patent Owner previously disputed was whether Guillou disclosed two decryptors instead of the claimed single decryptor, and Petitioner argues that claim 2 in the '635 Patent here recites the use of a first and second decryptor. 754-Pet. 11 (citing IPR2016-00754, Ex. 1010, 52; Ex. 1001 ¶ 114).

Petitioner argues that Guillou discloses the method recited in claim 2 by disclosing a method for controlling the decryption of programming (i.e., teletext programming) at a subscriber station (i.e., receiving station 4), including a video transmission system that uses a "double-key" encryption scheme to control access to teletext programming at a receiver. 754-Pet. 11 (citing IPR2016-00754, Ex. 1001 ¶¶ 115, 100–102; IPR2016-00754, Ex. 1006, Abs., 1:7–12, 8:15–9:12, 9:48–10:66, 15:42–16:17). Petitioner argues

that the claimed "receiving programming, said programming having a first encrypted digital control signal portion and an encrypted digital information portion" is met by the disclosure of Guillou's message M_i and encrypted teletext data D_j. *Id*. at 12 (citing IPR2016-00754, Ex. 1001 ¶¶ 116, 103–106). Specifically, Petitioner argues that Guillou discloses that teletext data d_j is encrypted using operating key K at emitting center 2 to form encrypted teletext data D_j and operating key K is encrypted using each subscriber key Ci to form a set of encrypted messages M_i. *Id*. (citing IPR2016-00754, Ex. 1006, 5:30–57, 8:39–48, 14:20–31, 15:42–64, Fig. 7; IPR2016-00754, Ex. 1001 ¶¶ 104, 106).

Furthermore, Petitioner argues that the claimed "detecting said first encrypted digital control signal portion of said programming" is met by the disclosure of Guillou's video-data separator 142, selection circuit 143, and decoding circuit 145 detecting and extracting encrypted message M_i and encrypted teletext data D_j. 754-Pet. 12–13 (citing IPR2016-00754, Ex. 1006, 15:64–16:10, 19:4–15, 19:55–20:17, 20:42–52, Fig. 9; IPR2016-00754, Ex. 1001 ¶¶ 107–108). Petitioner argues that the claimed "passing said first encrypted digital control signal portion of said programming to a first decryptor at said subscriber station" is met by Guillou's disclosure of passing encrypted message M_i to a first decryptor, K restoring circuit 110 at the subscriber station. *Id*. at 13 (citing IPR2016-00754, Ex. 1006, 15:64–16:10, 19:55–20:17, 20:40–52, Fig. 10; IPR2016-00754, Ex. 1001 ¶ 109). Petitioner also argues that the claimed "decrypting said first encrypted digital control signal portion of said programming using said first decryptor at said subscriber station," is met by Guillou's disclosure that K restoring circuit 110 decrypts the appropriate message M_i using the subscriber's key

Ci to restore operating key K. *Id*. at 13–14 (citing IPR2016-00754, Ex. 1006, 15:64–16:10, 20:53–21:14, Fig. 10; IPR2016-00754, Ex. 1001 ¶ 110).

Petitioner relies upon Guillou's disclosure of passing the encrypted teletext data D_j and the operating key K to the second decryptor, including decoding octet generator 26', discriminator 42, and XOR gate 46 for the limitation of "passing said encrypted digital information portion of said programming and the decrypted control signal portion to a second decryptor at said subscriber station" recited in claim 2. 754-Pet. 14 (citing IPR2016-00754, Ex. 1006 10:41–56, 20:29–39, Fig. 10; IPR2016-00754, Ex. 1001 ¶¶ 120–121). Petitioner argues that the second decryptor in Guillou, including decoding octet generator 26', discriminator 42, and XOR gate 46, performs the claimed step of "decrypting said encrypted digital information portion of said programming using said second decryptor." *Id*. at 15 (citing IPR2016-00754, Ex. 1006, 10:41–56, 20:29–39, Fig. 10; IPR2016-00754, Ex. 1001 ¶¶ 122, 111–112). Finally, Petitioner argues that Guillou's disclosure regarding presenting the teletext to the subscriber via display means 20 meets the claimed limitation of "presenting said programming." *Id*. at 16 (citing IPR2016-00754, Ex. 1006, 1:7–12, 18:61–19:3, Fig. 7; IPR2016-00754, Ex. 1001 ¶¶ 123, 113).

a. Alleged Obviousness of Claim 4

Claim 4 depends from claim 2 and further requires "said programming further includes encrypted video," which Petitioner argues is taught by the disclosure in Guillou of a "video-transmission" system with encrypted teletext programming that includes text and simple graphics that may be non-static. 754-Pet. 16 (citing IPR2016-00754, Ex. 1006, 1:7–62; IPR2016-00754, Ex. 1001 ¶ 141). Patent Owner argues that a person of ordinary skill

in the art would have understood "encrypted video" recited in claim 4 to exclude teletext and would recognize "video" to be distinct from static text and images. 754-PO Resp. 19. Petitioner counters that "video" is any information that is visually perceivable including the display of static pictures. 754-Pet. Reply 5 (citing IPR2016-00754, Ex. 2028, 10–12; IPR2016-00754, Ex. 1003, 278:21–24, 258:16–19, 13:38–52, 188:17–18, 249:53–56). During oral argument, Petitioner argued that a single image can qualify as video. IPR2016-00754, Paper 40, 14:24–25 ("JUDGE WARD: So one image qualifies as video. MR. SERNEL: I think arguably it would."). We do not agree with Petitioner's position that the display of a static image constitutes "video"; otherwise, there would be no difference in an image and video. We determine that video requires moving visuals. In its Preliminary Response, Patent Owner stated that video shows movement and changes within an image. IPR2016-00754, Paper 7, 60 (citing IPR2016-00754, Ex. 2001 ¶ 122). Petitioner's Declarant Mr. Wechselberger seems to agree as he describes that "[s]uccessive frames of text and/or graphics presented on the display means 20 constitutes video." IPR2016-00754, Ex. 1001 ¶ 141. We determine that the construction of the term "video" recited in claim 4 of the '635 Patent means "visually perceivable non-static imagery."

Patent Owner argues that Guillou does not render claim 4 obvious because Guillou's disclosure of teletext is not video but textual data. 754-PO Resp. 56. Petitioner counters that "encrypted video" does not exclude teletext because even Guillou itself refers to the teletext system as a "video-transmission system." 754-Pet. Reply 9 (citing IPR2016-00754, Ex. 1006, codes (54), (57), 1:7–12) (internal quotations omitted). Specifically, Guillou

discloses a "Text Video-Transmission System Provided with Means for Controlling Access to the Information." IPR2016-00754, Ex. 1006, code (54). Furthermore, Petitioner relies upon Mr. Wechselberger's testimony that it "well known that teletext programming included text and/or graphics used to generate visuals, *which may be non-static*, for a variety of programming, including news programs, weather services, educational programs." IPR2016-00754, Ex. 1001 ¶¶ 43, 141 (emphasis added) (citing (IPR2016-00754, Ex. 1021, 17–18 (discussing the PRESTEL teletext system); IPR2016-00754, Ex. 1022, 3 (discussing the ANTIOPE teletext system); IPR2016-00754, Ex. 1026, 3). Accordingly, we determine that Guillou's disclosure of encrypted teletext programming teaches or suggests that the programming may include non-static imagery.

Patent Owner argues that claim 2 requires "receiving programming" and claim 4 requires that what is received in the programming is video, "not simply any data that when displayed, depicts movement." 754-PO Resp. 56. Patent Owner further argues that the alleged programming received at Guillou's receiver station is static, teletext data, not video data because a person of ordinary skill in the art "would recognize that teletext, as the name implies, is textual data, not a video." *Id*. As stated above, the record does not support Patent Owner arguments that non-static visuals generated with teletext do not constitute video as recited in claim 4. Furthermore, receiving encrypted programming including the teletext data is programming including encrypted video. Accordingly, the record does not support Patent Owner's argument that Guillou's receiver station does not receive video.

As discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's

contention that Guillou teaches or suggests each limitation of claim 4. Accordingly, in light of the foregoing and our analysis of secondary considerations discussed below, we determine Petitioner has shown by a preponderance of evidence that claim 4 would have been obvious in view of Guillou.

b. Alleged Anticipation of Claim 7

Claim 7 depends from claim 2 and further requires "said subscriber station detects, in a transmission channel including said programming, a second control signal portion used to decrypt the first control signal portion." For this claim, Petitioner relies upon the disclosure in Guillou that the access control page line number or subscription index is used to decrypt the first control signal portion (encrypted messages M_i). 754-Pet 16–17 (IPR2016-00754, Ex. 1001 ¶¶ 144–146). Specifically, Petitioner argues that within Guillou's access control page, that groups messages M_i, each access block is preceded by a line or number or subscription index, which is detected in the transmission channel with the programming. *Id*. at 17 (IPR2016-00754, Ex. 1006, 8:55–65, 17:48–68, 20:40–52; IPR2016-00754, Ex. 1001 ¶ 146).

In the Institution Decision, we noted Mr. Wechselberger's testimony that, in the access control page, each access block is preceded with a line number and the line number is used to extract the appropriate message M_i for a particular subscriber station. 754-DI 21 (citing IPR2016-00754, Ex. 1001 ¶ 146; IPR2016-00754, Ex. 1006, 17:48–68, 20:40–52). Patent Owner argues that claim 7 requires that the second control portion is "used to decrypt" not used to extract; thus, even if Guillou's receiver station uses the line number to retrieve a message M_i from the access control page,

Petitioner has failed to demonstrate that the line number is used to decrypt the first control signal portion [the message M_i]. Patent Owner further argues that the line number/subscription index is not an input to K-restoring circuit 110 but instead circuit 110 decrypts M_i using a subscriber key C_i. 754-PO Resp. 50–51.

Petitioner counters by noting that Patent Owner's argument suggests the line number/subscription index must be a *direct* input to K restoring circuit 110, while claim 7 merely requires that the second control portion be "*used to* decrypt the first control signal portion." 754-Pet. Reply 10 (emphasis added). Petitioner argues that the line number/subscription index is used to identify and extract message M_i for decryption by K-restoring circuit 110 and, thus, it is "*used to"* decrypt encrypted message M_i. *Id*. We are persuaded by Petitioner's contentions and determine that Patent Owner's arguments are not commensurate with the scope of claim 7, which recites "a second control signal portion *used to* decrypt the first control signal portion." Patent Owner's expert, Dr. Weaver, agreed during his deposition that the line number/subscription index was necessary for the decryption of message. IPR2016-00754, Ex. 1054, 134:6–12 ("Q[:] Without knowing the subscription index, the system doesn't know which M sub I to use in the subsequent operations; correct? A[:] It does have to know the subscription index for this to operate correctly.").

As discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contention that Guillou discloses each limitation of claim 7. Accordingly, in light of the foregoing, we determine Petitioner has shown by a preponderance of evidence that claim 7 in anticipated by Guillou.

c. Alleged Obviousness of Claim 13

Independent claim 13 is similar to claim 2 and Petitioner relies upon many of the same teachings from Guillou relied upon with respect to claim 2 as teaching the limitations of claim 13. 754-Pet. 22–26. Claim 13 recites "decrypting a second of said plurality of signals on the basis of said changed decryption technique, wherein said decrypted second of said plurality of signals is embedded with *executable instructions*" (emphasis added). For this claim limitation, Petitioner argues that "[e]ach individual data octet d_j (byte) of the decrypted teletext data is an instruction that is executed by character generator 148 to present the decrypted data on display means 20." *Id*. at 24–25 (citing IPR2016-00754, Ex. 1006, 10:51–56, 19:17–21, Fig. 9; IPR2016-00754, Ex. 1001 ¶ 157). Claim 13 further recites "controlling said controllable device on the basis of said embedded executable instructions." Petitioner argues that this limitation is taught or suggested by Guillou's disclosure of character generator 148 that is controlled by individual data octets of the decrypted teletext data because individual data octets d_j instructs character generator 148 to stimulate inputs R_2, V_2, and V_2 to display means 20 to present the decrypted data. *Id*. at 26 (IPR2016-00754, Ex. 1006, 10:51-56, 19:17–21, Fig. 9; IPR2016-00754, Ex. 1001 ¶ 165).

In asserting that Guillou does not teach or suggest "executable instructions," Patent Owner argues that the individual data octets d_j disclosed in Guillou are not executable instructions because they do not cause the character generator to carry out operations on a computer according to instructions. 754-PO Resp. 57 (citing Ex. 2001 ¶ 138). More particularly, Patent Owner argues that Guillou discloses that the data octets represent information constituting the service being broadcast and the

information element in the system of this kind is the displayable line. *Id.* at 57–58 (citing IPR2016-00754, Ex. 1006, 3:58–61). Thus, Patent Owner argues that Guillou's character generator converts the data, but the octets do not control the character generator to carry out operations according to the data octets. *Id.* at 58 (citing IPR2016-00754, Ex. 2019 ¶ 209).

We disagree with Patent Owner's argument. As Mr. Wechselberger testifies, "Guillou explains that the octets d_j are instructions to the character generator." IPR2016-00754, Ex. 1055 ¶ 3 (citing IPR2016-00754, Ex. 1006, 19:18–21). Guillou discloses the character generator converts the data octets into color inputs and the "signal outputs of the generator 148 are connected to the colour inputs R_2, V_2, and B_2 of the video switch 141 and to a luminance input L_2." IPR2016-00754, Ex. 1006, 19:18–21. Figure 9 of Guillou is reproduced below.

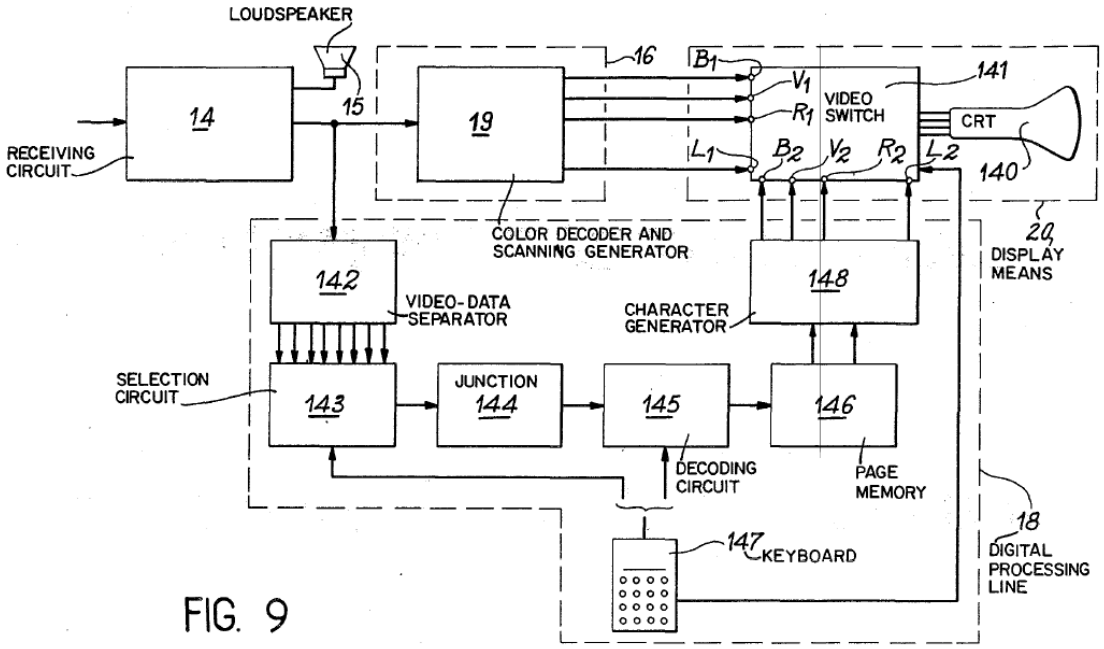


FIG. 9

IPR2016-00754, Ex. 1009, Fig. 9. As shown above in Figure 9, the character generator 148 is connected to the video switch 141 to provide

color inputs R_2, V_2, and B_2 of the video switch 141 and to luminance input L_2 to create the display provided on CRT 140. *Id*. at 19:18–21. Patent Owner's Declarant Mr. Weaver states that this disclosure in Guillou merely describes how the character generator "*converts* the 0s and 1s stored in the page memory and *converts* the data into colour inputs." IPR2016-00754, Ex. 2019 ¶ 209. Neither Mr. Weaver nor Patent Owner explain sufficiently, however, how such operations by the character generator do not constitute "controlling said controllable device on the basis of said embedded executable instructions," as recited in claim 13. As Mr. Wechselberger explains, "the character generator stimulates the inputs R_2, V_2, and B_2 of the display means according to each individual octed d_j." IPR2016-00754, Ex. 1055 ¶ 3 (citing Ex. 1006, 19:18–21).

As discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contentions that Guillou would have rendered claim 13 obvious. Accordingly, in light of the foregoing and our analysis of secondary considerations discussed below, and we determine Petitioner has shown by a preponderance of evidence that claim 13 would have been obvious in view of Guillou.

d. Alleged Anticipation of Claim 21

Claim 21 is similar to claim 2 and Petitioner's challenge of anticipation of claim 21 based on Guillou primarily relies upon the same disclosures cited with respect to claim 2. 754-Pet. 18–20. Specifically, Petitioner alleges the claim limitation of "decrypting under first processor control a first portion of said encrypted materials in said transmission," is met by Guillou's disclosure of a microprocessor controlling K-restoring

circuit 110. *Id.* at 19 (citing IPR2016-00754, Ex. 1001 ¶¶ 193–195). Petitioner relies upon Guillou's decoding circuit 145 for the claimed "decrypting under second processor control a second portion of said encrypted materials." *Id.* at 20 (citing IPR2016-00754, Ex. 1001 ¶¶ 197–198, 111–112). Patent Owner argues that Guillou fails to anticipate claim 21 for multiple reasons. 754-PO Resp. 51–55.

First, Patent Owner argues that Petitioner's proposed claim mapping is incorrect because it improperly relies upon two different and distinct embodiments in Guillou. 754-PO Resp. 51. Specifically, Patent Owner argues that with respect to the "second processor control," Petitioner relies upon "decoder 145" found in Guillou's subscriber station embodiment of Figure 9 and for the "first processor control," Petitioner relies upon K-restoring circuit 110 found in Guillou's subscriber station embodiment of Figure 10. *Id*. at 51–52 (citing IPR2016-00754, Ex. 1001 ¶¶ 194–195, 198). Moreover, Patent Owner argues that "[u]nlike Figure 10, there is no K-restoring circuit [110] (the alleged "first processor") in the station in Figure 9." *Id*. at 52–53.

Petitioner rebuts this argument by noting the express disclosure in Guillou that identifies that Figure 10 is intended to be inserted into the prior art shown in Figure 9. 754-Pet. Reply 13 (citing IPR2016-00754, Ex. 1006, 9:40–41) ("Fig. 9 shows a synoptic plan of a receiver according to the prior art, Fig. 10 shows a synoptic plan of the means to be inserted in the receiver of the type shown in the previous figure [Fig. 9], in order to decrypt the information."). Thus, Guillou discloses that the decryption components in Figure 10 are to be added to the receiver system of Figure 9. *See* IPR2016-00754, Ex. 1006, 18:56–21:14. In view of these disclosures, we disagree

with Patent Owner's arguments that Petitioner has improperly combined Guillou's Figures 9 and 10.

Second, Patent Owner argues that Guillou's decoder 145 does not disclose the "second processor control" because decoder 145 does not control decryption but only extracts selected teletext pages from the transmission and input the extracted pages for further processing by the other components of the system. 754-PO Resp. 53 (citing IPR2016-00754, Ex. 1006, 19:35–38, 10:42–43, 10:57–60; IPR2016-00754, Ex. 2019 ¶ 181).

Petitioner rebuts by contending that Patent Owner's argument dismisses the express disclosure in Guillou "that decoding circuit 145 also *initializes* octet generator 26', *causes* the generation of decoding octets C_j, and *combines* decoding octets with encrypted octets D_j to generate decoded octets d_j." 754-Pet. Reply 13–14 (citing IPR2016-00754, Ex. 1006, 20:29–39; IPR2016-00754, Ex. 1055 ¶¶ 7–8). Specifically, Guillou discloses that the "decoder 145 causes the generation of a decoding octet C_j (C_6=C_7=C_3=0), and if the octet D_j received is not a control code (columns 0 and l), which is verified by the comparator 42, the decoder combines it, by 'OR-exclusive,' with the decoding octet in the gate 46." IPR2016-00754, Ex. 1006, 20:34–39. Mr. Wechselberger testifies that by initializing the octet generator 26', causing the generation of decoding octets C_j, and combining decoding octets with encrypted octets D_j to generate decoded octets d_j, decoding circuit 145 controls the decryption of encrypted octets D_j as required by claim 21. IPR2016-00754, Ex. 1055 ¶ 8. In view of the foregoing, we determine the record supports Petitioner's contention that Guillou's decoding circuit 145 corresponds to the claimed "decrypting under second processor control a second portion of said encrypted materials."

Third, Patent Owner argues that if the decoding circuit 145 is the claimed "second processor control," then it is also the claimed "first processor control" because it allegedly controls the decryption of message M_i at K-restoring circuit 110. 754-PO Resp. 53–54 (citing IPR2016-00754, Ex. 1006, 20:40–52; IPR2016-00754, Ex. 2019 ¶ 185). More particularly, Dr. Weaver states that under Mr. Wechselberger's interpretation, decoding circuit 145 controls the decryption of key K by using the access control page to restore operation key K. IPR2016-00754, Ex. 2019 ¶ 185. Petitioner counters by arguing that the mere fact that decoding circuit 145 provides message M_i as an input value to K-restoring circuit 110 does not mean it "controls" the K-restoring circuit. 754-Pet. Reply 14 (citing IPR2016-00754, Ex. 1055 ¶¶ 9–10). Mr. Wechselberger states that decoding circuit 145 does not control K-restoring circuit 110 to decrypt M_i but merely passes M_i to K-restoring circuit 110, which is programmed to decrypt messages M_i. IPR2016-00754, Ex. 1055 ¶ 9 (citing IPR2016-00754, Ex. 1006, 20:40–21:14). Guillou discloses that once the decoding circuit 145 has extracted the message M_i from the access block, the message is transmitted to K-restoring circuit 110 and "[t]o restore this K from M_i and C_i, the circuit 110 . . . is programmed to develop an algorithm $K=G_{Ci}(M_i)$." IPR2016-00754, Ex. 1006, 20:53–56. Therefore, contrary to Patent Owner's argument, we determine the record supports Petitioner's contention that K-restoring circuit 110 corresponds to the claimed "decrypting under first processor control a first portion of said encrypted materials in said transmission" by disclosing a process and algorithm by which K-restoring circuit 110 decrypts K from M_i and C_i.

Fourth, Patent Owner argues that decoding circuit 145 is not a processor because it is not a "digital electronic device that processes information by operating on data according to instructions." 754-PO Resp. 54. Patent Owner's argument relies upon its proposed construction of "processor," a construction that we do not adopt, as discussed above. Accordingly, we disagree with Patent Owner's argument.

As discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contention that Guillou discloses each limitation of claim 21. Accordingly, in light of the foregoing, we determine Petitioner has shown by a preponderance of evidence that claim 21 in anticipated by Guillou.

e. Alleged Anticipation of Claims 29

Claim 29 depends from claim 21 and further recites "said transmission in said step of receiving a transmission and a signal necessary for decryption are received from different sources." With respect to claim 29, Petitioner argues that Guillou discloses receiving a transmission (encrypted message M_i and encrypted teletext data D_j) and signal necessary for decryption (subscriber key C_i) from different sources. 754-Pet. 21 (citing IPR2016-00754, Ex. 1001 ¶¶ 203–205). Guillou discloses that encrypted messages M_i and encrypted teletext data D_j are transmitted from emitting center 2 to the receiver station 4 and the subscriber key C_i is generated by subscription center 100 and distributed to the subscriber via charging station 112. *Id.* (citing IPR2016-00754, Ex. 1006, 8:15–9:12, 15:42–16:17, 16:26–29, Fig. 7; IPR2016-00754, Ex. 1001 ¶ 205). Patent Owner does not present separate arguments against claim 29. 754-PO Resp. 9–17. The burden, however, remains on Petitioner to demonstrate unpatentability. *See Dynamic*

Drinkware, 800 F.3d at 1378. As discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contention that Guillou discloses each limitation of claim 29. Accordingly, in light of the foregoing, we determine Petitioner has shown by a preponderance of evidence that claim 29 in anticipated by Guillou.

f. Alleged Obviousness of Claims 28 and 30

Claim 28 depends from claim 21 and further adds that "said encrypted materials comprise a portion of a television program." Petitioner argues that Guillou suggests the encrypted materials comprise a portion of a television program by disclosing that the received teletext programming, "displayed on 'television receivers for purposes of entertainment, information or education,' may be news programming, weather programming, [and] educational programming." 754-Pet. 20–21 (citing IPR2016-00754, Ex. 1006, 1:11–13, 2:23–25; IPR2016-00754, Ex. 1001 ¶¶ 200–201). Petitioner adds that it would have been obvious to a person of ordinary skill in the art to use teletext in accordance with its well-known capabilities as part of a television program, as an early application of teletext was closed captioning for television programs. *Id*. at 21 (citing IPR2016-00754, Ex. 1001 ¶¶ 41–43, 201). Mr. Wechselberger states that it was well known that teletext programming included text and/or graphics to generate non-static visuals for a variety of programming and, thus, it would have been obvious for a person of ordinary skill in the art to apply Guillou to a variety of applications where teletext comprises a portion of a television program. IPR2016-00754, Ex. 1001 ¶ 201. As examples of such systems, Mr. Wechselberger cites to the videotext system of PRESTEL and the teletext system of ANTIOPE,

which is expressly mentioned in Guillou. *Id*. ¶¶41–43 (citing IPR2016-00754, Ex. 1021, 10; IPR2016-00754, Ex. 1022, 3; IPR2016-00754, Ex. 1026, 3; IPR2016-00754, Ex. 1006, 1:11–13).

Patent Owner argues that there is nothing in Guillou to suggest to a person of ordinary skill in the art to modify Guillou to transmit encrypted content that is part of a "'television program,' as required by claim 28," because Guillou only describes transmitting weather and stock market teletext information, *which is completely unrelated to any television program*." *See* 754-PO Resp. 60 (emphasis added). We do not agree that Petitioner fails to provide any basis to modify Guillou, and we do not agree that weather and stock market information would be completely unrelated to any television program. Petitioner notes that the ANTIOPE system disclosed in Guillou could not only provide subtitles for television programs, it could "broadcast special pages to *display news flashes superimposed on the television program.*" 754-Pet. Reply 15 (citing IPR2016-00754, Ex. 1022, 3–4; IPR2016-00754, Ex. 1006, 1:11–13, 2:23–25). Furthermore, Guillou discloses that its text video-transmission system "can be used in the transmission and display of information on television receivers for purposes of entertainment, information or education." IPR2016-00754, Ex. 1006, 1:11–13. Guillou also discloses that this programming can be programming regarding "a meteorological service, the Stock Exchange, an information agency, etc." *Id*. at 2:23–25. Mr. Wechselberger also testifies that it was well known that the teletext system described by Guillou was used with television programming. IPR2016-00754, Ex. 1055 ¶ 12 (citing IPR2016-00754, Ex. 1022, 3–4). Mr. Wechselberger further testifies that to the extent it is not expressly disclosed in Guillou, it would have been obvious to use

teletext in accordance with its well-known capabilities as part of a television program. IPR2016-00754, Ex. 1001 ¶ 201. As the Supreme Court instructed in *KSR*, it is proper to "consider the inferences and creative steps a person of ordinary skill in the art would employ." 550 U.S. at 401. Based on the foregoing, we determine Petitioner has provided a sufficient rationale for the modification of Guillou. *Id*. at 418. Accordingly, we determine the record supports Petitioner's proposed modification of Guillou such that the encrypted materials comprise a portion of a television program, and we adopt Petitioner's contentions as our own.

As discussed above, we have reviewed the Petition and the supporting evidence and briefs, we determine the record supports Petitioner's contentions that Guillou would have rendered claim 28 obvious. Accordingly, in light of the foregoing and our analysis of secondary considerations discussed below, we determine Petitioner has shown by a preponderance of evidence that claim 28 would have been obvious in view of Guillou.

Claim 30 depends from claim 29 and further requires "the step of contacting a remote transmitter station to receive one of said transmission and said signal necessary for decryption." Petitioner contends that Guillou suggests contacting a remote transmitter station (i.e., emitting center 2) to receive one of the transmission and signal necessary for decryption. 754-Pet. 22 (citing IPR2016-00754, Ex. 1001 ¶¶ 207–211). Furthermore, Petitioner argues that it would have been obvious to one of ordinary skill in the art for Guillou's system to contact emitting center 2 using a telephone line to request transmission of programming in order to allow a subscriber to request specific information from a database, such as stock quotes, weather

information, or educational programming. *Id*. (citing IPR2016-00754, Ex. 1001 ¶¶ 42, 207–208).

Patent Owner argues that Petitioner's proposed modification of Guillou fails because the Viewdata and Prestel systems communicate with a single source, the Viewdata or Prestel central server, to retrieve content. 754-PO Resp. 61–62 (citing IPR2016-00754, Ex. 2019 ¶ 225; IPR2016-00754, Ex. 1021, 15). Petitioner notes that Patent Owner does not dispute that Guillou discloses that the transmission in the step of receiving a transmission (i.e., encrypted message M_i and encrypted teletext data D_j) and a signal necessary for decryption (i.e., subscriber key C_i) are received from different sources (emitting center 2 and subscription center 100/charging station 112). 754-Pet. Reply 16. Furthermore, Petitioner argues that Guillou expressly discloses its access control scheme is applicable to two-way interactive systems such as Viewdata. *Id*. (citing IPR2016-00754, Ex. 1006, 1:10–20, 21:23–28). Guillou discloses that its broadcasting system "can be put into television lines and to [an] interactive system (i.e. two-directional)" and that the system "could be applied to other systems without any difficulty for the man skilled in the art, and notably to the . . . VIEWDATA or PRESTEL systems." IPR2016-00754, Ex. 1006, 1:16–17, 21:23–28.

Petitioner contends that Patent Owner's argument improperly assumes a phone-only viewdata system as a starting point and adds Guillou's encryption scheme to such a system. 754-Pet. Reply 17. Petitioner argues that including two-way, interactive functionality into Guillou's system does not alter the basic architecture of Guillou's encrypting scheme. *Id*. (citing IPR2016-00754, Ex. 1001 ¶¶ 207–211). Mr. Wechselberger testifies that depending on the implementation, Viewdata systems returned information

"to the subscriber through either the telephone line or a TV channel carrying the information as embedded digital data." IPR2016-00754, Ex. 1001 ¶ 42 (citing IPR2016-00754, Ex. 1021, 32–33; IPR2016-00754, Ex. 1026, 3).

Accordingly, Petitioner argues that modifying Guillou to contact emitting center 2 using a telephone line to request transmission of programming would not alter the basic architecture of Guillou's encryption scheme. 754-Pet. Reply 17 (citing IPR2016-00754, Ex. 1001 ¶¶ 207–211). Accordingly, Mr. Wechselberger testifies that one of ordinary skill in the art would have understood how to implement Guillou's "double key" access scheme in both a teletext system (as disclosed by Guillou) and a two-way system such as viewdata. IPR2016-00754, Ex. 1001 ¶ 210. Additionally, the preservation of the basic architecture of Guillou's encryption scheme would not result in a compromise in security due to dialing a request over the telephone line, as suggested by Patent Owner. 754-PO Resp. 62. Based on the foregoing, we determine Petitioner has provided a sufficient rationale for the modification of Guillou to contact a remote station to receive one of said transmission and said signal necessary for decryption. *See KSR*, 550 U.S. at 418. Accordingly, we determine the record supports Petitioner's proposed modification of Guillou and we adopt Petitioner's contentions as our own.

As discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contentions that the Guillou would have rendered claim 30 obvious. Accordingly, in light of the foregoing and our analysis of secondary considerations discussed below, we determine Petitioner has shown by a

preponderance of evidence that claim 30 would have been obvious in view of Guillou.

F. Asserted Obviousness Based on Aminetzah and Obviousness in View of Aminetzah and Bitzer – Claims 4, 21, and 28–30

1. Overview of Aminetzah

Aminetzah is titled "Method of Controlling Scrambling and Unscrambling in a Pay TV System" and discloses a system in which the scrambling of a video signal in a pay TV system is effected in dependence upon a first variable, which is changed recurrently. IPR2016-00754, Ex. 1008, Abstract. Figure 1 of Aminetzah, illustrating the pay TV system, is reproduced below:

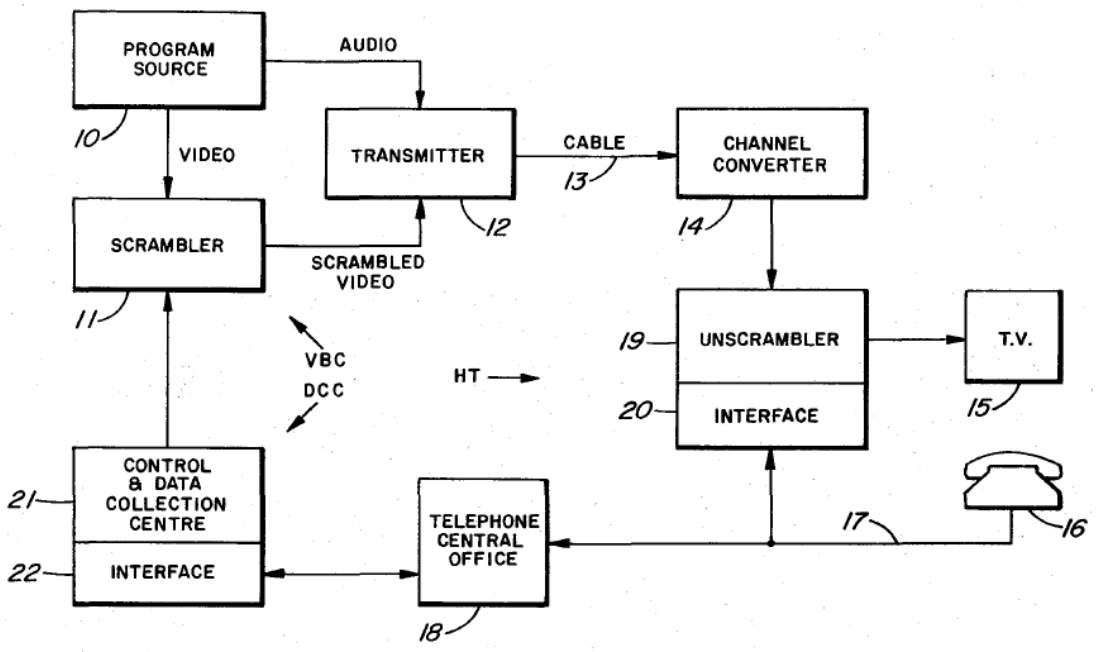


FIG. 1

IPR2016-00754, Ex. 1008, Fig. 1. As shown above in Figure 1, the pay TV system in Aminetzah provides video signals from a program source 10, which are scrambled in a scrambler 11, and the resultant video signals and

audio signals from the program source are supplied to transmitter 12 for broadcasting to the subscribers of the pay TV system. *Id*. at 3:56–62. Aminetzah discloses that program source 10, scrambler 11, and transmitter 12 constitute a Video Broadcast Centre ("VBC"). *Id*. at 3:67–68. The subscriber's home includes a conventional channel converter 14, television receiver 15, and an unscrambler 19. *Id*. at 4:1–6. The pay TV system also includes a control and Data Collection Centre ("DDC") which can be coupled via interface 22 to telephone central office 18 for communicating recurrently with each unscrambler 19. *Id*. at 4:16–23.

Aminetzah discloses that scrambling and unscrambling are effected under the control of a first variable DK, a second variable PD, and a third variable ICK. *Id*. at 4:48–50. The first variable DK and the third variable ICK are produced using a random number generator and transmitted recurrently (e.g., monthly) to a subscriber station, so that only the intended subscriber station can decode these variables. *Id*. at 2:59–65. The first variable DK is used together with a second variable, PD, which is transmitted simultaneously with the video signal and which can change from field to field, to scramble the video signal prior to transmission and, in the subscriber station, to unscramble the video signal for viewing. *Id*. at 2:65–3:3.

2. Overview of Bitzer

Bitzer is titled "Transmitter and Receiver for the Transmission of Digital Data Over Standard Television Channels" and describes an apparatus for the distribution of digital data to a number of data terminals using standard commercial television channels. IPR2016-00754, Ex. 1009, Abstract. Bitzer's system includes a digital transmitter for transmitting

digital data over a video cable and a receiver for receiving the transmitted digital data and selectively distributing the recovered data to the desired data terminals. *Id.* Figure 3 of Bitzer is reproduced below.

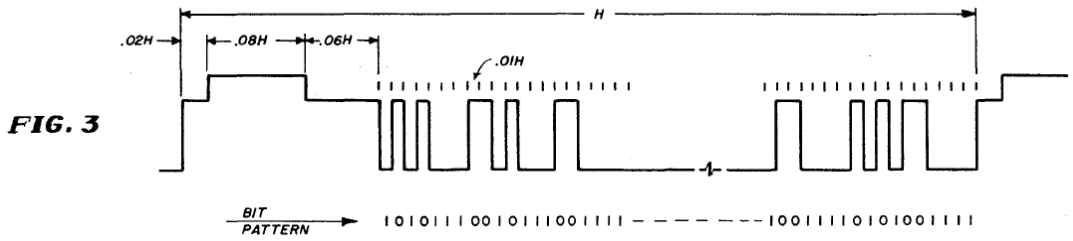


FIG. 3

IPR2016-00754, Ex. 1009, Fig. 3. As shown above in Figure 3, Bitzer discloses modifying the FCC standard synchronization signal such that the "first l6 bins of each line (0.02H + 0.08H + 0.06H) are used for horizontal synchronization and blanking purposes while each of the remaining 84 bins contains a bit of digital information." *Id.* at 3:67–4:4. Bitzer discloses that the digital transmitter 12 generates the standard television synchronization and blanking signals of Fig. 2 and combines these signals with the digital data into a composite signal compatible with FCC standards, one such line signal being shown in Fig. 3. *Id.* at 4:7–11. The composite signal then is delivered to the common carrier supplying the television channel for RF modulation and transmission over the standard cable television ("CATV") equipment. *Id.* at 4:11–15.

3. Analysis of Alleged Obviousness In View of Aminetzah Alone and Obviousness in View of Aminetzah and Bitzer

In the Institution Decision, we instituted review based on Petitioner's contentions that claims 21 and 28–30 would have been obvious in view of Aminetzah alone and that claims 1, 2, and 4 would have been obvious in view of Aminetzah and Bitzer. 754-DI 42. Patent Owner disclaimed claims 1 and 2 of the '635 Patent (*see* Ex. 3001, Jun 24, 2016 Disclaimer in Patent

Under 37 C.F.R. § 1.321(a)); therefore, we do not provide an analysis of the patentability of claims 1 or 2 except as necessary to render a decision with respect to claim 4 that depends from claim 2. Patent Owner disputes Petitioner's position with respect to claims 4, 21, and 28–30, arguing that the cited reference and/or references fail to teach or suggest all the elements required by the claims. 754-PO Resp. 29–49. We have reviewed the Petition, the Patent Owner's Response, and Petitioner's Reply, as well as the relevant evidence discussed in those papers and other record papers. We determine the record supports some of Petitioner's contentions and does not support the rest of Petitioner's contentions, as discussed below. For reasons that follow, we determine that Petitioner has not shown by a preponderance of the evidence that claims 21 and 28–30 would have been obvious in view of Aminetzah alone, but has shown by a preponderance of evidence that claim 4 would have been obvious in view of Aminetzah and Bitzer.

a. Alleged Obviousness of Claims 4

Claim 4 is dependent from claim 2. Therefore, although Patent Owner has disclaimed claim 2, we must analyze independent claim 2 in analyzing the challenge of obviousness of dependent claim 4 in view of Aminetzah and Bitzer. Claim 2 recites "receiving programming, said programming having a first encrypted digital control signal portion and an encrypted digital information portion." Petitioner argues that "Aminetzah in combination with Bitzer teaches receiving programming, the programming having a first encrypted digital control signal portion (i.e., encrypted variable DK of Aminetzah) and an encrypted digital information portion (i.e., digital data of Bitzer, encrypted by Aminetzah)." 754-Pet. 41 (citing IPR2016-00754, Ex. 1001 ¶¶ 255, 231–242). Particularly, Aminetzah discloses

transmitting scrambled video signals and encrypted variable DK, used to decrypt programming, to a subscriber station. *Id.* (citing IPR2016-00754, Ex. 1008, 2:15–33, 2:58–3:3). Petitioner adds that "[w]hile Aminetzah does not expressly disclose that its video programming includes 'digital' information, Bitzer describes transmitting digital data over standard television channels." *Id.* (citing IPR2016-00754, Ex. 1009, Abs., 1:47–52, 3:49–4:15, 5:13–45). Petitioner argues that a person of ordinary skill in the art would have understood that Aminetzah's pay TV system would have been operable with the digital data transmission disclosed by Bitzer to provide content protection for digital programming channels. *Id.* (citing IPR2016-00754, Ex. 1001 ¶ 235).

Petitioner also argues that although Aminetzah does not expressly disclose sending encrypted DK with the programming, it would have been obvious to a person of ordinary skill the art to transmit DK more frequently and in-band with the programming to increase system security. *Id.* at 42. (citing IPR2016-00754, Ex. 1001 ¶¶ 239–242). Mr. Wechselberger states that a person of ordinary skill in the art would have known the encrypted variable DK could be transmitted with encrypted digital programming using the "in-band" channel because Aminetzah discloses this type of in-band transmission for variable PD. IPR2016-00754, Ex. 1001 ¶ 239.

Petitioner argues the claimed step of "decrypting said first encrypted digital control signal portion of said programming using said first decryptor at said subscriber station" is taught by Aminetzah's disclosure of decrypting encrypted DK using decoder 403 at the subscriber station using the subscriber station's Subscriber Number ("SN"). 754-Pet. 43 (citing IPR2016-00754, Ex. 1008, 5:57–6:6; IPR2016-00754, Ex. 1001 ¶¶ 258,

244). As to the claimed step of "decrypting said encrypted digital information portion of said programming using said second decryptor at said subscriber station based on the decrypted control signal portion," Petitioner alleges it is taught by Aminetzah's disclosure of a second decryptor, control logic 409. 754-Pet. 44 (citing IPR2016-00754, Ex. 1001 ¶¶ 259–262). Figure 4 of Aminetzah is reproduced below.

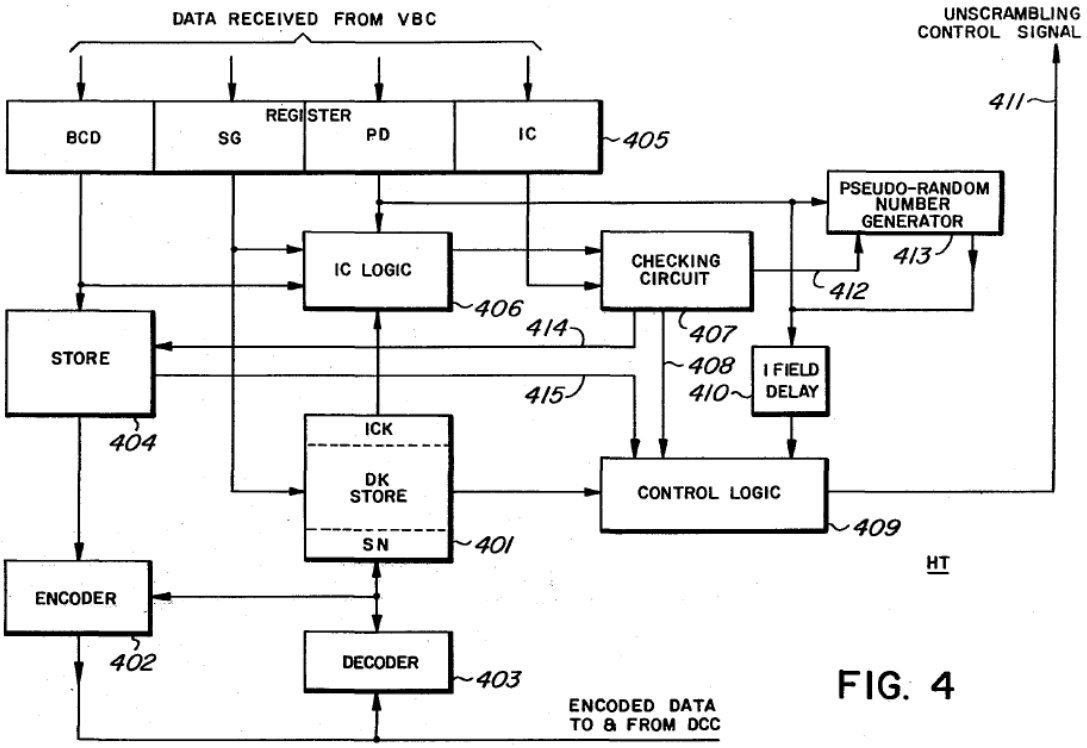


FIG. 4

IPR2016-00754, Ex. 1008, Fig. 4. Mr. Wechselberger states that Aminetzah discloses that control logic 409, shown above in Figure 4, is provided with decryption variables PD and DK to decrypt received video programming. IPR2016-00754, Ex. 1001 ¶ 260 (citing IPR2016-00754, Ex. 1008, 6:32–41). Finally, Petitioner argues that the claimed "presenting said programming" is taught by Aminetzah's disclosure of programming displayed on television receiver 15 and Bitzer's disclosure of presenting digital data received on a terminal display. 754-Pet. 44 (citing IPR2016-

00754, Ex. 1008, 4:1–4, Fig. 1; IPR2016-00754, Ex. 1009, 1:10–14, 2:52–56, 5:61–6:2).

Petitioner argues that a person of skill in the art would have been motivated to combine the teachings of Aminetzah and Bitzer to expand the programming options available in Aminetzah's pay TV system to include educational programming described by Bitzer or other digital programming services such as teletext. 754-Pet. 42 (citing IPR2016-00754, Ex. 1001 ¶¶ 234–236).

Claim 4 depends from claim 2 and further requires "said programming further includes encrypted video," which Petitioner argues would have been obvious in view of Aminetzah and Bitzer because it was well known that digital data transmitted via television channels (such as teletext) used a combination of text and simple graphics to create moving visuals for a variety of programming. 754-Pet. 45 (citing IPR2016-00754, Ex. 1001 ¶¶ 281–282). Patent Owner argues that Petitioner's proposed combination fails for four reasons. 754-PO Resp. 44–49.

First, Patent Owner argues that Petitioner fails to explain sufficiently how a person of ordinary skill in the art would have found it obvious to modify Aminetzah's system to support decryption of an all-digital in-band teletext transmission. 754-PO Resp. 44. Patent Owner also argues that Petitioner's proposal would "require a complete overhaul of Aminetzah's system by requiring the removal of a vast majority of the components of its VBC, DCC, and HTs." *Id*. (citing IPR2016-00754, Ex. 2019 ¶¶ 140–141, 148). Petitioner responds that substituting Bitzer's digital content for the analog programming in Aminetzah would not require an "overhaul" of Aminetzah's system. 754-Pet. Reply 24 (citing IPR2016-00754, Ex. 1055

¶ 21). Mr. Wechselberger testifies that transmitting digital content using standard television signals (e.g., teletext and videotext services) was well known at the time of the invention of the '635 Patent. IPR2016-00754, Ex. 1055 ¶ 21 (citing IPR2016-00754, Ex. 1001 ¶¶ 39–47). Additionally, Mr. Wechselberger testifies that Aminetzah discloses transmitting digital data using standard TV signals and receiving digital data in the TV signal; thus, applying Bitzer's technique to add digital content into the standard TV signals transmitted by Aminetzah would have been well within the ability of a person of ordinary skill in the art. *Id.* ¶ 22. For example, Mr. Wechselberger cites the transmission of teletext digital programming information in ANTIOPE teletext systems and videotext systems. IPR2016-00754, Ex. 1001 ¶ 41 (citing IPR2016-00754, Ex. 1021, 16; IPR2016-00754, Ex. 1022, 3; Ex. 1026, 3). Mr. Wechselberger testifies that a person of ordinary skill in the art could have applied Aminetzah's encryption scheme to encrypt Bitzer's digital programming just as Aminetzah discloses for standard television programming video signals. *Id.* ¶ 235. We are persuaded that the record supports Petitioner's contentions with respect to the incorporation of Bitzer's digital programming into Aminetzah's encryption scheme.

Second, Patent Owner argues that there is no motivation to combine because the resulting system would be inoperable. 754-PO Resp. 46. Specifically, Patent Owner argues that Petitioner's modification would require that the Video Broadcast Center ("VBC") transmit millions of unique, encrypted DKs in-band. *Id.* Petitioner counters that Patent Owner's argument presumes Bitzer's system would be wholly incorporated into that of Aminetzah, which is contrary to Petitioner's proposed combination. 754-

Pet. Reply 24–25. Petitioner proposes "to transmit DK more frequently and in-band with the programming to increase system security." 754-Pet. 42 (citing IPR2016-00754, Ex. 1001 ¶¶ 239–242). Aminetzah's discloses that system security can be increased by changing the encryption variables (such as DK) more frequently. IPR2016-00754, Ex. 1008 7:4–12 ("The security of the system may, however, be further enhanced by . . . changing the variables DK and ICK more frequently."). Mr. Wechselberger testifies that a person of ordinary skill in the art would have understood that more frequently transmitting encrypted variable DK using an out-of-band channel would not be optimal due to tying up the subscriber's phone line and that it would more efficient to transmit the encrypted variable in-band along with the encrypted digital programming. IPR2016-00754, Ex. 1001 ¶ 241.

Mr. Wechselberger testifies that the use of in-band command and control signals, to control access to programming in systems such as the one disclosed by Aminetzah, was well known to the person of ordinary skill in the art at the time of the alleged invention, and that Aminetzah actually discloses transmitting digital data, such as billing and control data, along with the encrypted video signal. IPR2016-00754, Ex. 1001 ¶ 239 (citing Ex. 1008, 5:18–29). In fact, Aminetzah discloses that the second variable PD, data BCD and SG, and variable ICK are stored in register 303 and "data stored in the register 303 is transmitted each field of the video signal to each home terminal." IPR2016-00754, Ex. 1008, 5:18–29. Patent Owner concedes that Aminetzah's "VBC inserts variables BCD, SG, PD, and IC into the vertical blanking interval of each video field and transmits the scrambled television signal to the plurality of HTs." 754-PO Resp. 31–32. As the Supreme Court instructed in *KSR*, it is proper to "consider the

inferences and creative steps a person of ordinary skill in the art would employ." 550 U.S. at 401. Additionally, as Mr. Wechselberger states, a person of ordinary skill in the art would have understood that the subscriber's encrypted DK would be transmitted embedded in the TV signal with addressing data so that each subscriber terminal could correctly identify its own encrypted DK. IPR2016-00754, Ex. 1055 ¶ 19 (citing Ex. 1001 ¶¶ 54–61). Based on the foregoing, we determine Petitioner has provided a sufficient "reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418.

Third, Patent Owner argues that Petitioner's alleged modifications to Aminetzah would substantially change the operating principal of Aminetzah because the resulting system would not be able to provide unscrambling or support analog television programming. 754-PO Resp. 47. Petitioner rebuts that Patent Owner's argument incorrectly assumes that Aminetzah can only transmit digital programming or analog programming. 754-Pet. Reply 25. Petitioner argues that Bitzer's teachings could be incorporated into Aminetzah's system to provide digital services as part of analog television programming or it could be limited to specific digital programming channels. *Id*. (citing IPR2016-00754, Ex. 1055 ¶ 22). Mr. Wechselberger testifies that a person of ordinary skill in the art would have been familiar with systems that included channels with all analog content (e.g., standard TV), all digital content (e.g., full-field teletext), and channels that carried both analog and digital content (e.g., standard TV augmented with digital services such as subtitles/teletext). IPR2016-00754, Ex. 1055 ¶ 22 (citing IPR2016-00754, Ex. 1001 ¶¶ 39–46). Accordingly, we disagree with Patent

Owner's argument that that Petitioner's alleged modifications to Aminetzah would substantially change the operating principal of Aminetzah.

Fourth, Patent Owner argues that claim 4 requires that the "received programming" include "encrypted video," and a person of ordinary skill in the art would understand "encrypted video" to exclude teletext. 754-PO Resp. 48. As discussed above regarding the challenge to claim 4 as anticipated by Guillou, the proper interpretation of "encrypted video" in claim 4 does not exclude teletext, provided the encrypted video includes moving visuals.

As discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contentions that the combination of Aminetzah and Bitzer would have rendered claim 4 obvious. Accordingly, in light of the foregoing and our analysis of secondary considerations discussed below, we determine Petitioner has shown by a preponderance of evidence that claim 4 would have been obvious in view Aminetzah and Bitzer.

b. Alleged Obviousness of Claims 21 and 28–30

Claim 21 is similar to claim 2 and Petitioner challenge of obviousness based on Aminetzah alone primarily relies upon the same disclosures cited with respect to claim 2. 754-Pet. 47–49. For example, with respect to the claimed step of "receiving a transmission comprising encrypted materials," Petitioner argues that although Aminetzah does not expressly disclose sending encrypted DK with the scrambled video, it would have been obvious to a person of ordinary skill in the art to include encrypted DK along with the scrambled video. *Id*. at 47 (citing IPR2016-00754, Ex. 1001 ¶¶ 304–

305). PO Argues that Aminetzah does not render claim 21 obvious for multiple reasons.

Patent Owner's primary argument against the challenge to claim 21 is that the challenge should be rejected "[b]ecause Aminetzah's system only performs descrambling, rather than decryption." 754-PO Resp. 33–34. In response, Petitioner argues that this argument is based on Patent Owner's "improperly narrow construction of 'decrypting' as applying only to digital data," and that "Aminetzah describes descrambling analog television signals." 754-Pet. Reply 18. We agree with Patent Owner.

Given our construction of "decrypt" and related terms, Aminetzah alone is unable to meet such a limitation because it is only directed to scrambling and descrambling of signals. Petitioner has not provided any argument that it would have been obvious to substitute decryption for descrambling in Aminetzah in the ground of unpatentability directed to claim 21. As such, the Petition has failed to establish, by a preponderance of the evidence, that claim 21 is obvious over Aminetzah.

Claims 28–30 all depend directly or indirectly on independent claim 21. Thus, the Petition's failure to establish obviousness of claim 21 also demonstrates a failure to establish the obviousness of claims 28–30 by a preponderance of the evidence,

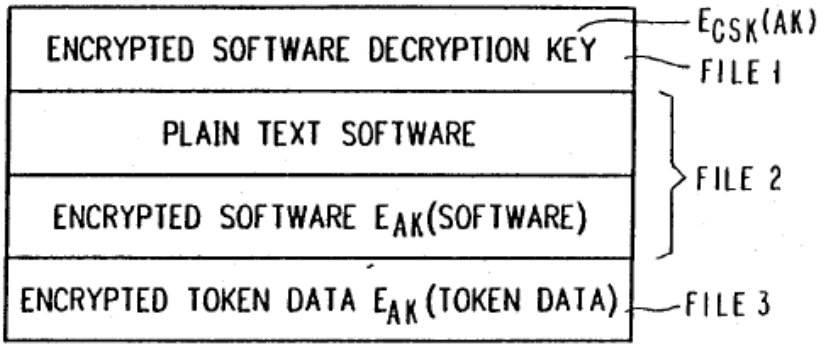
As discussed above, we have reviewed the Petition and the supporting evidence and briefs; we determine the record does not support Petitioner's contentions that Aminetzah alone would have rendered claims 21 and 28–30 obvious. Accordingly, we determine Petitioner has not shown by a preponderance of evidence that claims 21 and 28–30 would have been obvious in view of Aminetzah.

G. Asserted Anticipation Based on Chandra – Claims 13, 18, 20, and 32

1. Overview of Chandra

Chandra is titled "Software Protection System Using a Single-Key Cryptosystem, a Hardware-Based Authorization System and a Secure Coprocessor" and describes a software protection system in which the software is partitioned into an encrypted portion and an optional, unencrypted, plain text portion. IPR2016-01520, Ex. 1041 [54], Abs. The software is distributed with an encrypted software decryption key. *Id.* at Abs. A coprocessor decrypts the software decryption key so it can thereafter decrypt the protected software, for execution of the software. *Id.* A software set may be provided to the coprocessor via a communication link, such as a telephone line or CATV. *Id.* at 8:14–22. Fig. 3 of Chandra illustrates a distributable software set and is reproduced below:

FIG.3



As shown above in Fig. 3, the software contains encrypted (E_{AK} (SOFTWARE)) and unencrypted (plain text) portions, and an encrypted software decryption key AK also is provided to the coprocessor. IPR2016-01520, Ex. 1041, 3:55–57, 4:29–36, 14:15–39. The software decryption key AK is encrypted using an encryption key CSK. *Id.* at 4:29–36, 5:36–46, 6:7–10, 14:15–39. In the case that there are multiple CSKs, the encrypted

software decryption key AK contains a header, index, or address to identify the appropriate CSK. *Id.* at 4:33–36, 23:4–14, 26:28–32. The coprocessor uses the specified encryption key CSK to decrypt the software decryption key AK, and thereafter employs the software decryption key AK to decrypt the protected software, for execution of the software. *Id.* at Abstr., 14:15–39, 24:64–68.

2. Analysis of Asserted Anticipation by Chandra

a. Alleged Anticipation of Claim 18

Petitioner argues that Chandra discloses the method of processing signals at a receiver station recited in claim 18 by disclosing a digital content protection scheme that involves processing signals representing encrypted software, plain text software, and an encrypted software key in a composite computing system. 1520-Pet. 29–30 (citing Ex. 1001 ¶ 114; Ex. 1041, 3:52–63, 4:29–36, 5:36–66, 6:7–10, 6:33–42). Petitioner argues that the claimed "receiving at least one encrypted digital information transmission, wherein the at least one encrypted digital information transmission is unaccompanied by any non-digital information transmission" is met by Chandra's disclosure of receiving a transmission via a communication link (telephone line, CATV, etc.), the transmission containing encrypted software, plain text software, an encrypted software decryption key, and a header, index, or address. *Id.* at 30 (citing Ex. 1001 ¶¶ 115–116; Ex. 1041, 8:14–19, 12:26–28, 14:15–41, 23:1–9, 25:13–19, 26:28–32). Specifically, Petitioner contends that "[a]ll of these are digital, at least some are encrypted, and no non-digital information transmission accompanies this digital information transmission." *Id.* (citing Ex. 1001 ¶¶ 115–116).

Petitioner argues that the claimed "locating code" is met by Chandra's disclosure of system firmware commands "'which the PC may request from the coprocessor,' one of which is a '[l]oad, decrypt, and run application (LDR)' command." Pet. 30 (citing IPR2016-01520, Ex. 1001 ¶¶ 117–120; Ex. 1041, 15:62–68). In addition, Petitioner argues that Chandra's disclosure of a fetch operation in which instructions are retrieved from memory meets the claim limitation "locating code." *Id*. at 31 (citing IPR2016-01520, Ex. 1041, 16:64–17:6, 17:15–19, 17:43–47; IPR2016-01520, Ex. 1001 ¶ 120). Petitioner argues that the claimed "passing said code to a processor" is met by Chandra's disclosure of passing the code (i.e., load, decrypt, and run application (LDR) firmware commands) to a processor (i.e., coprocessor CPU). *Id.* (citing IPR2016-01520, Ex. 1001 ¶¶ 117–121; Ex. 1041, 27:34–49, 24:58–68, Fig. 9B).

Furthermore, Petitioner argues that the claimed "controlling a decryptor that decrypts encrypted digital data to decrypt in a specific fashion on the basis of said code" is met by Chandra's disclosure of controlling a coprocessor that decrypts encrypted software in accordance with the instructions which comprise the load, decrypt, and run application (LDR) process. 1520-Pet. 32 (citing Ex. IPR2016-01520, 1001 ¶¶ 122–123; Ex. 1041, 27:34–49, 24:58–68, Fig. 9B). Petitioner also argues that the claimed "decrypting a portion of said at least one information transmission in said specific fashion" is met by Chandra's disclosure of decrypting the protected software in accordance with the instructions that comprise the LDR process. *Id.* (citing IPR2016-01520, Ex. 1001 ¶¶ 122–124; IPR2016-01520, Ex. 1041, 27:34–49, 24:58–68, Fig. 9B).

Finally, Petitioner argues that the claimed "passing said decrypted portion of said at least one encrypted digital information transmission to one of said processor and an output device" is met by Chandra's disclosure of storing the decrypted software application in temporary memory of the coprocessor. 1520-Pet. 32–33 (citing IPR2016-01520, Ex. 1001 ¶¶ 125–127; Ex. 1041, 27:45–51). Petitioner contends that the coprocessor executes the decrypted software application and that, in order to do this, the operating instructions of the decrypted software application are passed from the temporary memory to the coprocessor CPU. *Id.* at 33 (citing IPR2016-01520, Ex. 1041, 24:58–68; Ex. 1001 ¶ 127).

In the Institution Decision, we weighed the evidence and arguments put forth by Petitioner and Patent Owner and determined that Petitioner established a reasonable likelihood of prevailing in showing that claim 18 is anticipated by Chandra. 1520-DI 30. Considering Patent Owner's arguments (1520-PO Resp. 62–64) and Petitioner's reply (1520-Pet. Reply 20–22), we determine that Petitioner has shown by a preponderance of the evidence that claim 18 is unpatentable as being anticipated by Chandra. The specific arguments of the parties are discussed below.

Regarding the claim limitations "passing said code to a processor" and "controlling a decryptor that decrypts encrypted digital data to decrypt in a specific fashion on the basis of said code," Patent Owner argues that Petitioner cites to the same component, the coprocessor's CPU, to teach both the "processor" element and the "decryptor" element of claim 18. 1520-PO Resp. 62 (citing Ex. 1001 ¶¶ 121–126; Ex. 1041, 17:58–67; Ex. 2023 ¶ 297). Petitioner responds that the CPU of Chandra's coprocessor was cited for the "processor" element and to Chandra's coprocessor was cited for the

"decryptor" element. 1520-Pet. Reply 20–21. The coprocessor in Chandra has multiple components and performs multiple functions, including, as part of the LDR sequence, loading, decrypting, and running applications. IPR2016-01520, Ex. 1041, 19:16–25.

Patent Owner also argues that Chandra fails to disclose "receiving at least one encrypted digital information transmission . . . unaccompanied by any non-digital information transmission" because Patent Owner "has not cited to any evidence that explicitly or inherently discloses that these transmissions [1520-Pet. 30] are not accompanied by any non-digital information." 1520-PO Resp. 63 (citing IPR2016-01520, Ex. 2023, ¶¶ 292–93; IPR2016-01520, Ex. 2020, 64:17–65:2, 68:23–69:5). In response, Petitioner cites to Dr. Weaver's deposition, where he provided the following:

> Q So in the situation where the software set is going to be distributed over a telephone line, would you agree with me that such a transmission would be unaccompanied by any non-digital information transmission?
>
> A Yes.

IPR2016-01520, Ex. 1051, 118:1–6. As such, Petitioner has shown that Chandra discloses receiving a transmission via a telephone line containing digital information, some of which is encrypted, and no non-digital information. *See* 1520-Pet. 30; IPR2016-01520, Ex. 1001 ¶¶ 115–16; IPR2016-01520, Ex. 2020, 65:15–22. Based on the foregoing discussion and record developed during this proceeding, we determine that Petitioner has shown by a preponderance of the evidence that Chandra anticipates claim 18.

b. Alleged Anticipation of Claim 20

Claim 20 is similar to claim 18 and Petitioner's challenge of anticipation of claim 20 by Chandra primarily relies upon the same disclosures cited with respect to claim 18. 1520-Pet. 33–35. Claim 20 also recites "detecting a plurality of signals on said at least one encrypted digital information transmission," which Petitioner argues is met by Chandra's disclosure of receiving a transmission including a plurality of signals (i.e., encrypted software, plain text software, an encrypted software decryption key, and a header, index, or address). *Id.* at 33–34 (citing IPR2016-01520, Ex. 1001 ¶¶ 115–116, 130; IPR2016-01520, Ex. 1041, 8:14–19, 12:26–28, 14:15–41, 23:1–9, 25:13–19, 26:28–32). According to Petitioner, the signals are detected in and extracted from the information transmission. *Id.* at 34 (citing IPR2016-01520, Ex. 1041, 22:50–53, 24:60–65, 26:20–24).

Petitioner argues that the claimed "decrypting at least one of said plurality of signals, said at least one decrypted signal embedded with at least one instruct signal which is effective to instruct" is met by Chandra's disclosure of decrypting the received encrypted software and that such decrypted software contains "operating instructions," which are instruct signals effective to instruct. *Id.* (citing IPR2016-01520, Ex. 1001 ¶¶ 124, 131; IPR2016-01520, Ex. 1041, 6:33–60, 24:58–68, 27:34–57). Petitioner further argues that the claimed "passing the at least one decrypted instruct signal to a controllable device" is met by Chandra's disclosure of storing the decrypted software application in the temporary memory of the coprocessor. *Id.* at 34–35 (citing IPR2016-01520, Ex. 1001 ¶¶ 125–127, 132; Ex. 1041, 27:45–51). Specifically, Petitioner contends that Chandra discloses the coprocessor executing the decrypted software application, and that in order to execute the application, the operating instructions of the decrypted

software application are passed from the temporary memory to the coprocessor CPU, which is controllable. *Id.* at 35 (citing IPR2016-01520, Ex. 1041, 24:58–68; Ex. 1001 ¶ 132).

Finally, Petitioner argues that Chandra meets the claim limitation "controlling said controllable device on the basis of decrypted information included in said at least one decrypted instruct signal" in that Chandra's coprocessor executes the operating instructions of the decrypted software application. 1520-Pet. 35 (citing IPR2016-01520, Ex. 1001 ¶¶ 125–127, 133; IPR2016-01520, Ex. 1041, 24:58–68). According to Petitioner, "[b]y executing the operating instructions of the decrypted software application, the coprocessor CPU is controlled thereby." *Id.* (citing IPR2016-01520, Ex. 1001 ¶ 133).

Patent Owner provides no additional arguments with respect to claims 20, other than those made and discussed above regarding claim 18. 1520-PO Resp. 62–64. Based on the foregoing discussion and record developed during this proceeding, we determine that Petitioner has shown by a preponderance of the evidence that Chandra anticipates claim 20.

c. Alleged Anticipation of Claim 32

Claim 32 is similar to claims 18 and 20 and Petitioner's challenge of anticipation of claim 32 based on Chandra primarily relies upon the same disclosures cited with respect to claims 18 and 20 for the majority of the limitations in claim 32. 1520-Pet. 35–38.

Claim 32 also recites "detecting a plurality of signals on said one or more encrypted digital information transmissions, at least a first of one of said plurality of signals including a control signal," which Petitioner argues is met by Chandra's disclosure of a plurality of signals on the encrypted

digital information transmission (i.e., encrypted software, plain text software, an encrypted software decryption key, and a header, index, or address). *Id.* at 36 (citing IPR2016-01520, Ex. 1001 ¶¶ 130, 136–137). Specifically, Petitioner contends that a header, index, or address in the encrypted software key AK controls which of multiple coprocessor supervisor keys CSK is used to decrypt the encrypted software key AK, and that the received header, index, or address is thus a control signal. *Id.* (citing IPR2016-01520, Ex. 1041, 23:1–9, 26:28–32; IPR2016-01520, Ex. 1001 ¶ 137).

Petitioner argues that the claim limitation "controlling a decryptor that decrypts encrypted digital data in response to said control signal" is met by Chandra's decryptor (i.e., coprocessor) decrypting the encrypted software decryption key AK using the coprocessor supervisor key CSK, which is selected in response to the received header, index, or address. 1520-Pet. 36–37 (citing Ex. 1001 ¶¶ 136–138; Ex. 1041, 23:1–9, 26:28–32).

Furthermore, Petitioner argues that the claimed "decrypting or enabling communication of at least a second of said plurality of signals on the basis of said step of controlling said decryptor" is met by Chandra's disclosure of decrypting encrypted software on the basis of the controlling step. *Id.* at 37–38 (citing IPR2016-01520, Ex. 1001 ¶¶ 136–137, 139; IPR2016-01520, Ex. 1041, 23:1–9, 26:28–32, 6:33–46, 24:58–68, 27:34–57). Specifically, Petitioner argues that Chandra's header, index, or address controls the coprocessor supervisor key CSK used to decrypt the encrypted software key AK, which then is used as the basis for decrypting the received encrypted software. *Id.*

Patent Owner provides no additional arguments with respect to claims 32, other than those made and discussed above regarding claim 18. 1520-PO Resp. 62–64. Based on the foregoing discussion and record developed during this proceeding, we determine that Petitioner has shown by a preponderance of the evidence that Chandra anticipates claim 32.

As discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contention that Chandra anticipates claims18, 20, and 32. Accordingly, in light of the foregoing, we determine Petitioner has shown by a preponderance of evidence that claims 18, 20, and 32 are anticipated by Chandra.

d. Alleged Anticipation of Claim 13

Claim 13 is similar to claims 18 and 20 and Petitioner's challenge of anticipation of claim 13 by Chandra primarily relies upon the same disclosures cited with respect to claims 18 and 20 for the majority of the limitations in claim 13. 1520-Pet. 38–40. Claim 13 also recites "changing a decryption technique in response to at least a first of said plurality of signals," which Petitioner argues is met by Chandra's disclosure of changing the coprocessor supervisor key CSK used to decrypt the encrypted software key AK in response to the received header, index, or address. *Id.* at 39 (citing IPR2016-01520, Ex. 1001 ¶¶ 164–165; IPR2016-01520, Ex. 1041, 23:1–9, 26:28–32). That is, Petitioner argues that the coprocessor supervisor key, a decryption technique, is changed in response to the header, index, or address. *Id.*

For the claim limitation "decrypting a second of said plurality of signals on the basis of said changed decryption technique, wherein said

decrypted second of said plurality of signals is embedded with executable instructions," Petitioner relies upon Chandra's disclosure of decrypting the encrypted software based on decryption of the software key AK using the specified coprocessor supervisor key CSK (the changed decryption technique). 1520-Pet. 39–40 (citing IPR2016-01520, Ex. 1001 ¶¶ 122–123, 166; IPR2016-01520, Ex. 1041, 23:1–9, 26:28–32). According to Petitioner, Chandra discloses that the decrypted software contains "executable instructions." *Id.* at 40 (citing IPR2016-01520, Ex. 1041, 6:33–60, 24:58–68, 27:34–57; IPR2016-01520, Ex. 1001 ¶ 166).

For the claim limitation "passing said decrypted second of said plurality of signals to a controllable device," Petitioner argues that Chandra discloses passing the decrypted application software instructions to the coprocessor CPU, which is a controllable device. 1520-Pet. 40 (citing IPR2016-01520, Ex. 1001 ¶¶ 132, 167). Finally, Petitioner argues that the claimed "controlling said controllable device on the basis of said embedded executable instructions of said passed decrypted second of said plurality of signals" is met by Chandra's disclosure of controlling the coprocessor CPU by executing the decrypted application software computer instructions. *Id.* (citing Ex. 1001 ¶¶ 133, 168).

Patent Owner raises the same arguments with respect to claim 13 that it raised against claims 18 and 20. 1520-PO Resp. 62–64. As with respect to claims 18 and 20, we are similarly unpersuaded by this argument with respect to claim 13.

Accordingly, as discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contention that Chandra anticipates claim 13. Accordingly, in

light of the foregoing, we determine Petitioner has shown by a preponderance of evidence that Chandra anticipates claim 13.

H. Asserted Obviousness Based on Chandra and Nachbar – Claim 33

Petitioner argues that claim 33 would have been obvious in view of Chandra and Nachbar. 1520-Pet. 41–45.

1. Overview of Nachbar

Nachbar is titled "When Network File Systems Aren't Enough: Automatic Software Distribution Revisited" and describes a system that automates installing new releases of software. IPR2016-01520, Ex. 1042, Abs., 159. A subscriber machine may request new copies of files that are more current than its own. *Id.* at 161. The system includes a measure of currentness, e.g., the time of last modification, of each file and distributes file copies to authorized subscribers upon request. *Id.* at 161–162.

2. Analysis of Alleged Obviousness of Claim 33 In View of Chandra and Nachbar

Claim 33 is similar to claims 18 and 20. Petitioner's challenge of obviousness of claim 33 based on Chandra and Nachbar primarily relies upon the same disclosures recited with respect to claims 18 and 20 for the majority of the limitations in claim 33. 1520-Pet. 42–45.

Claim 33 also recites "selecting, by processing selection criteria, a first signal of said plurality of signals including downloadable code." Petitioner argues that "Chandra in combination with Nachbar teaches selecting, by processing selection criteria (*i.e.*, time of last modification, as disclosed by Nachbar), a first signal of the plurality of signals including downloadable code (*i.e.*, encrypted and/or plaintext software files, as disclosed in Chandra)." *Id.* at 43 (citing IPR2016-01520, Ex. 1001 ¶¶ 145–150). According to Petitioner, Chandra discloses receiving a transmission

that includes encrypted and plain text software. *Id.* (citing IPR2016-01520, Ex. 1041, 8:14–19, 12:26–28, 14:15–41, 25:13–19, Fig. 3). Petitioner adds that "Nachbar discloses using 'the time of last modification as its measure of currentness' and that 'a subscriber machine … request[s] new copies of files that are more current than its own.'" *Id.* (citing IPR2016-01520, Ex. 1042, 161–162) (alterations in original). Petitioner argues that it would have been obvious to a person of ordinary skill in the art to modify Chandra such that the transmitted software files are accompanied by their time of last modification, as disclosed by Nachbar, so that the recipient computer would select and install more current software. *Id.* (citing IPR2016-01520, Ex. 1001 ¶ 149). Petitioner also argues that Nachbar discloses "distributing bug fixes as well as new releases of software packages or even [operating system software]" and that a person of ordinary skill in the art would have been motivated to apply Nachbar's software update methods to Chandra's software transmission methods to provide updates or bug fixes for the system firmware, including the LDR command instructions in Chandra. *Id.* at 43–44 (citing IPR2016-01520, Ex. 1042, 166; Ex. 1001 ¶ 149).

Petitioner also argues that the claimed "passing said downloadable code to a processor" is met by Chandra in combination with Nachbar because it would have been obvious to a person of ordinary skill in the art to pass updated LDR instructions to the coprocessor CPU. *Id.* at 44 (citing IPR2016-01520, Ex. 1001 ¶¶ 151–154; IPR2016-01520, Ex. 1041, 27:34–49, 24:58–68, Fig. 9B). Petitioner further argues that the claimed "controlling a decryptor that decrypts encrypted digital data to decrypt in a specific fashion on the basis of said downloadable code" is met by Chandra in combination with Nachbar. *Id.* at 44–45 (citing IPR2016-01520, Ex. 1001

¶¶ 122–123, 145–150, 155–158; IPR2016-01520, Ex. 1041, 27:34–39, 24:58–68, Fig. 9B). Specifically, Petitioner argues that Chandra in combination with Nachbar discloses controlling a decryptor (i.e., coprocessor, as disclosed by Chandra) to decrypt in a specific fashion on the basis of the downloadable code (i.e., updated LDR firmware commands, as suggested by Chandra in view of Nachbar). *Id.*

In the Institution Decision, we weighed the evidence and arguments put forth by Petitioner and Patent Owner and determined that Petitioner established a reasonable likelihood of prevailing in showing that claim 33 is obvious over Chandra and Nachbar. 1520-DI 30. Considering the record anew with Patent Owner's arguments (1520-PO Resp. 59–62), and Petitioner's reply (1520-Pet. Reply 22–23) and the evidence cited therein, we now determine that Petitioner has shown by a preponderance of the evidence that claim 33 is unpatentable as being obvious over Chandra and Nachbar. The specific arguments of the parties are discussed below.

Patent Owner argues that Chandra in view of Nachbar fails to disclose "selecting, by processing selection criteria," the first signal as claimed. 1520-PO Resp. 59 (citing IPR2016-01520, Ex. 2023 ¶¶ 271–272). Specifically, Patent Owner asserts that the limitation would have been understood as "selecting, by processing a plurality of rules for selecting a signal, said first signal." *Id.* Patent Owner argues that a "modification date," as cited by Petitioner in Chandra, is not "selection criteria" as claimed because it is not a plurality of rules that are processed by the receiver device in order to determine how to select a signal. *Id.* Patent Owner adds that even if the "time of last modification" is considered to be a selection criter*ion*, there is not a plurality of criteria, as required by claim 33. *Id.*

We continue to be persuaded by Petitioner's argument that Chandra, combined with Nachbar's disclosure of selecting software using "the time of last modification as its measure of currentness" to provide updates or bug fixes, and that "a subscriber machine . . . request[s] new copies of files that are more current than its own," teaches or suggests the claim limitation "selecting, by processing selection criteria, a first signal of said plurality of signals including downloadable code," because these criteria disclosed in Nachbar determine when an update is necessary. *See* 1520-Pet. 43 (citing Ex. 1042, 161–162, 166); 1520-Pet. Reply 22.

With respect to the multiplicity of the criteria, we determine that it would have been obvious to use multiple criteria even if "time of last modification" is a single criterion. As Mr. Wechselberger testifies, "[i]nstalling additional decryption algorithm*s* would also accommodate the decryption and processing of software applications that have been encrypted differently." IPR2016-01520, Ex. 1001 ¶ 150 (emphasis added). Given the choice between algorithms, there must be multiple criteria to allow for selections to be made.

Similar to its arguments regarding claim 18 above, Patent Owner argues that Chandra combined with Nachbar fails to disclose the "unaccompanied by any non-digital information transmission" limitation recited in claim 33. 1520-PO Resp. 60. As with claim 18, we are unpersuaded by this argument with respect to claim 33.

Patent Owner further argues that one of ordinary skill in the art would not have modified Chandra using Nachbar in the manner that Petitioner contends. 1520-PO Resp. 60–62. Patent Owner, based on the opinion of Dr. Weaver, contends that combining Chandra and Nachbar "would not be

an obvious, simple task," because Chandra's coprocessor is not a general-purpose device, but rather is specialized and operates under a different operating system architecture. *Id.* at 60–61 (citing IPR2016-01520, Ex. 2023 ¶¶ 276–284). We are not persuaded by this argument, as Petitioner's proposed combination is not limited to a bodily incorporation of the features of one reference into another. *See* 1520-Pet. 42–45; *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

Patent Owner further contends combining Chandra with Nachbar to "update or add decryption algorithm[s]" would render the coprocessor incompatible and unable to decrypt keys and computer programs previously encrypted using an old algorithm. 1520-PO Resp. 60–61 (citing IPR2016-01520, Ex. 2023 ¶ 284). We are not persuaded, however, that by updating the LDR instructions in Chandra, all previous encryption algorithms necessarily must be deleted. As explained by Petitioner's Declarant, Mr. Wechselberger, Chandra's "architecture mirrors most of the 'moving parts' required to implement the teachings of Nachbar" and that "one of ordinary skill in the art would have understood that there may be a need to update or add decryption algorithms . . . for example, to recover from a compromised (hacked) decryption algorithm." IPR2016-01520, Ex. 1001 ¶¶ 148, 150.

Patent Owner also argues that the Chandra architecture teaches away from allowing direct modification to a coprocessor's decryption algorithm and the data stored therein because Chandra provides security by separating the functions of the coprocessor from the user computer, and such modification would be counter to key security principles of Chandra. 1520-PO Resp. 61–62 (citing IPR2016-01520, Ex. 2023 ¶¶ 277–278, 281;

IPR2016-01520, Ex. 1041, 14:30–37, 18:61–19:15; IPR2016-01520, Ex. 1001 ¶ 150).

KSR undermines Patent Owner's arguments. *See KSR*, 550 U.S. at 418, 321. In *KSR*, the Supreme Court determined that the conclusion of obviousness can be based on 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. The skilled artisan is "a person of ordinary creativity, not an automaton." *Id.* at 421. Based on its arguments and supporting evidence, we are persuaded, that Petitioner has articulated sufficient reasoning to support its conclusion of obviousness. *See id.* at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Accordingly, as discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contention that Chandra and Nachbar render claim 33 obvious. Accordingly, in light of the foregoing and our analysis of secondary considerations discussed below, we determine Petitioner has shown by a preponderance of evidence that claim 33 is obvious in view of Chandra and Nachbar.

I. Asserted Anticipation by Seth-Smith – Claims 4 and 7

Petitioner argues that Seth-Smith anticipates claims 4, 7, 21, and 28–30. 1520-Pet. 49–55. Of those claims, only claims 4 and 7 were instituted as a part of the instant ground of unpatentability, such that only those claims remain for our consideration: dependent claims 4 and 7. We note that claims 4 and 7 directly depend from independent claim 2. Patent Owner indicates that it has disclaimed independent claim 2. IPR2016-00754, Paper

7, 6. In order to evaluate the challenge against dependent claims 4 and 7, however, we must also analyze claim 2 in view of Seth-Smith.

1. Overview of Seth-Smith

Seth-Smith is titled "Method and Apparatus for Communication of Video, Audio, Teletext, and Data to Groups of Decoders in a Communication System" and describes a system for transmission of encrypted teletext messages, audio, and video to decoders of individual subscribers. IPR2016-01520, Ex. 1043, Abs., Fig. 1, 9:56–57, 12:17–23. A composite signal including the information to be transmitted and decoder control signals is transmitted. *Id.* at Abs. The composite signal includes a vertical blanking interval (VBI) portion illustrated by Fig. 5 of Seth-Smith, which is reproduced below:

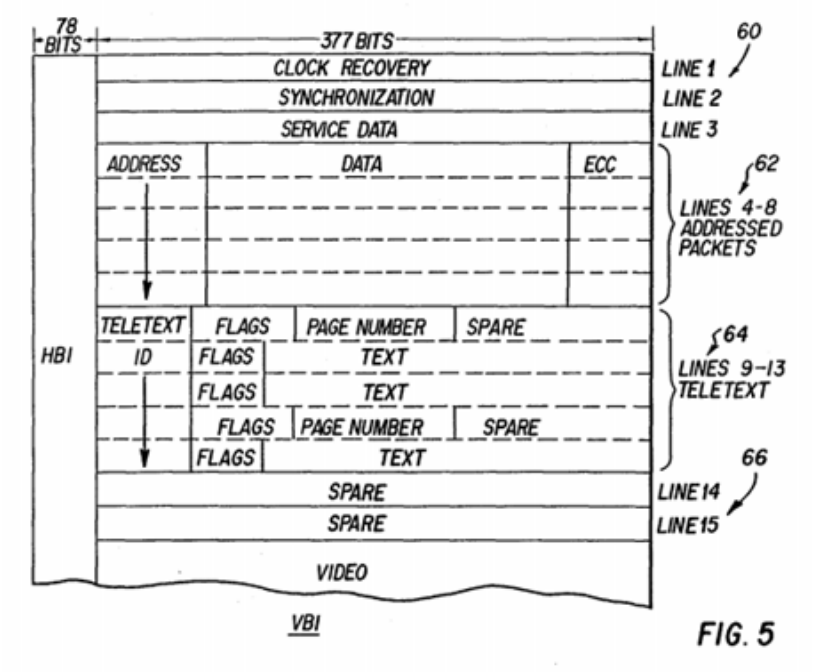


FIG. 5

"Fig. 5 shows an overview of the material carried in the 16 lines of the" VBI. IPR2016-01520, Ex. 1043, 7:11–12. As shown above in Fig. 5, the

VBI contains system/service data,[14] addressed packets, teletext, and video. Both the system/service data and the addressed packets "include key information which must be used by the decoder to decode the various encrypted portions of the signal." *Id*. at 6:17–20. The addressed packets are decrypted to output a Key-Of-the-Month ("KOM"), which is required to decode the encrypted system/service data. *Id.* at 29:25–29, 29:45–57. The system/service data includes a system/service (encryption) key used by the decoder for decryption of the video, audio, and teletext material. *Id.* at 6:37–40, 12:26–29, 13:60–62. Thus, a double level of security is provided. *See id.* at 9:64–10:3.

2. Analysis of Alleged Anticipation of Claim 4

In order to evaluate the challenge against dependent claims 4 and 7, we also analyze claim 2 in view of Seth-Smith. Addressing independent claim 2, Petitioner argues that Seth-Smith discloses the method for controlling the decryption of programming at a subscriber station recited in claim 2 by disclosing a method for controlling decryption of video, audio, and teletext information that has been transmitted to a subscriber's decoder. 1520-Pet. 45–46 (citing IPR2016-01520, Ex. 1001 ¶¶ 171–172; IPR2016-01520, Ex. 1043, 6:36–39, 9:56–10:11). Petitioner argues that the claimed "receiving programming, said programming having a first encrypted digital control signal portion and an encrypted digital information portion" is met by Seth-Smith's disclosure of receiving a first encrypted digital control

[14] Petitioner explains that "Seth-Smith refers in some places to a system key and in others to a service key to refer to the same decryption key. Similarly, Seth-Smith refers in some places to system data and in others to service data to refer to the same information." Pet. 46 n.2.

signal portion (i.e., an encrypted system/service key) and an encrypted digital information portion (i.e., encrypted teletext) on various lines of a television programming signal. *Id.* at 46–47 (citing IPR2016-01520, Ex. 1001 ¶¶ 173–175; IPR2016-01520, Ex. 1043, 13:55–64, 14:17–18, 12:17–31, 5:41–44, 9:56–10:11, 17:30–33, 30:35–37, 40:46–47).

For the claim limitation "detecting said first encrypted digital control signal portion of said programming," Petitioner relies upon Seth-Smith's disclosure of the decoder detecting the received signal, and the system/service data, including the encrypted system/service key, being detected by virtue of being separated from the television signal and remainder of the transmitted data. 1520-Pet. 47 (citing IPR2016-01520, Ex. 1001 ¶¶ 176–177; Ex. 1043, 9:56–10:11, 28:34–38, 27:65–28:12). For the claim limitation "passing said first encrypted digital control signal portion of said programming to a first decryptor at said subscriber station," Petitioner cites Seth-Smith's disclosure of passing the system/service data, including the encrypted system/service key, to decryption unit 174 in the decoder's secure microprocessor. *Id.* at 47–48 (citing IPR2016-01520, Ex. IPR2016-01520, 1043, 27:65–28:12, 28:34–38, 29:11–18, 29:54–57, Fig. 18). Regarding the claim limitation "decrypting said first encrypted digital control signal portion of said programming using said first decryptor at said subscriber station," Petitioner relies upon Seth-Smith's disclosure of the decryption unit 174 decrypting the encrypted system/service data, including the system/service key. *Id.* at 48 (citing IPR2016-01520, Ex. 1001 ¶¶ 179–180; Ex. 1043, 29:54–57, Fig. 18).

Petitioner contends that the claimed "passing said encrypted digital information portion of said programming and the decrypted control signal

portion to a second decryptor at said subscriber station" is met by Seth-Smith's disclosure of passing encrypted teletext and the decrypted system/service key to a second decryptor (i.e., MATS chip 122) for decryption of teletext data. 1520-Pet. 48–49 (citing IPR2016-01520, Ex. 1001 ¶¶ 181–183; IPR2016-01520, Ex. 1043, 27:66–28:9, 29:54–30:5, Figs. 17–18, 18:12–14, 38:22–35). Further, Petitioner argues that the claimed "decrypting said encrypted digital information portion of said programming using said second decryptor at said subscriber station based on the decrypted control signal portion" is met by Seth-Smith's disclosure of passing the output of decryption unit 174, including the now decrypted system/service key, to MATS chip 122 for decryption of teletext data. *Id.* at 49 (citing IPR2016-01520, Ex. 1001 ¶¶ 182, 184; IPR2016-01520, Ex. 1043, 29:54–30:5, 38:22–35). Finally, Petitioner contends that the claimed "presenting said programming" is met by Seth-Smith's disclosure of presenting the decrypted teletext programming on display 128 via character generator 126. *Id.* (citing IPR2016-01520, Ex. 1001 ¶¶ 185–186, Ex. 1043, 27:1–5, 28:9–12, 28:30–33). Patent Owner does not present separate arguments specifically directed against the limitations of claim 2 as anticipated by Seth-Smith.

Dependent Claim 4 requires "said programming further includes encrypted video." For this claim, Petitioner cites Seth-Smith's disclosure that "the teletext information . . . is assembled together with video [and] . . . multichannel audio," that "the assembled teletext, video and audio signal is encrypted," and that "[t]he composite, encrypted signal is transmitted . . . via a satellite 20, by a landline or a combination of both to receiving antenna 22," where it is passed to decoder 24. 1520-Pet. 49–50 (citing IPR2016-

01520, Ex. 1001 ¶¶ 187–188; IPR2016-01520, Ex. 1043, 9:46–10:11, 6:36–39).

Patent Owner argues that Seth-Smith fails to satisfy the requirement in claim 4 of "encrypted video" because it "only discloses that video is descrambled." 1520-PO Resp. 57 (citing IPR2016-01520, Ex. 1043, 19:28–30; 29:65-30:5; IPR2016-01520, Ex. 2023, ¶¶258–261. Additionally, Patent Owner asserts that "Seth-Smith's subscriber decoder device has no capability to descramble analog audio and video," where that device only contains a video descrambler and an audio descrambler. *Id.* at 57–58 (citing IPR2016-01520, Ex. 1043, 28:18–30, 29:65–30:1, Fig. 17; IPR2016-01520, Ex. 2023 ¶ 261).

Petitioner responds that "Seth-Smith unquestionably discloses that the teletext, which constitutes video, is digital and encrypted." 1520-Pet. Reply 24 (citing IPR2016-01520, Ex. 1043, 9:46–10:11, 22:38–23:52; IPR2016-01520, Ex. 1001 ¶¶ 44–47, 174). We are persuaded by Petitioner.

Additionally, Patent Owner's Declarant, Dr. Weaver, also observes, Seth-Smith explicitly discloses that "teletext, video and audio are *encrypted*." IPR2016-01520, Ex. 2001 ¶ 196 (emphasis added). Although Dr. Weaver suggests this a reference to "scrambling of these signals" (*id.*), it is clear that Seth-Smith explicitly discusses encryption. As well, Seth-Smith discloses "receiving both an encrypted digital control signal (*i.e.*, encrypted system/service key) and encrypted digital information (*i.e.*, encrypted teletext) on various lines of a television programming signal." IPR2016-01520, Ex. 1043, 5:41–44, 9:56–10:11, 12:17–31, 13:55–64, 14:17–18, 17:30–33, 30:35–37, 40:46–47. As such, we are not persuaded that Seth-

Smith fails to teach "encrypted video" based on the disclosure of Seth-Smith.

Accordingly, as discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record supports Petitioner's contention that Seth-Smith anticipates claim 4. Accordingly, in light of the foregoing, we determine Petitioner has shown by a preponderance of evidence that claim 4 is anticipated by Seth-Smith.

3. Analysis of Alleged Anticipation of Claim 7

Claim 7 requires "said subscriber station detects, in a transmission channel including said programming, a second control signal portion used to decrypt the first control signal portion." For this claim, Petitioner relies upon Seth-Smith's disclosure of detecting a second control signal portion (i.e., key-of-the-month KOM) used to decrypt the first control signal portion (i.e., encrypted system/service key). 1520-Pet. 50 (citing IPR2016-01520, Ex. 1001 ¶¶ 189–191). According to Petitioner, Seth-Smith discloses that "address packets" are decrypted by decryption unit 176 and "[t]he output of decryption unit 176 . . . includes the key-of-the-month (KOM)," which is passed to decryption unit 174 and thereafter used to decode the system data, including the system/service key. *Id.* at 50–51 (citing IPR2016-01520, Ex. 1043, 28:34–38, 29:25–32, Fig. 18, 29:45–57, 29:14–18; IPR2016-01520, Ex. 1001 ¶¶ 190–191). Patent Owner does not address arguments to the anticipation of claim 7, apart from those addressing claim 4, which have been addressed above. *See* 1520-PO Resp. 57–59.

We are persuaded by Petitioner's assertions that Seth-Smith discloses all of the elements of claim 7. Accordingly, as discussed above, we have reviewed the Petition and the supporting evidence and briefs, and we

determine the record supports Petitioner's contention that Seth-Smith anticipates claim 7. Accordingly, in light of the foregoing, we determine Petitioner has shown by a preponderance of evidence that claim 7 is anticipated by Seth-Smith.

J. Asserted Obviousness Based On Campbell – Claim 3

Petitioner argues that claim 3 is obvious over Campbell. 1520-Pet. 55–60.

1. Overview of Campbell

Campbell is titled "Addressable Cable Television Control System with Video Format Data Transmission" and describes a system for controlling the transmission of television and data signals between a cable head end station and remote subscribers at user stations. IPR2016-01520, Ex. 1044, Abs., Fig. 1, 4:43–45. Fig. 1 of Campbell illustrates a cable television system and is reproduced below:

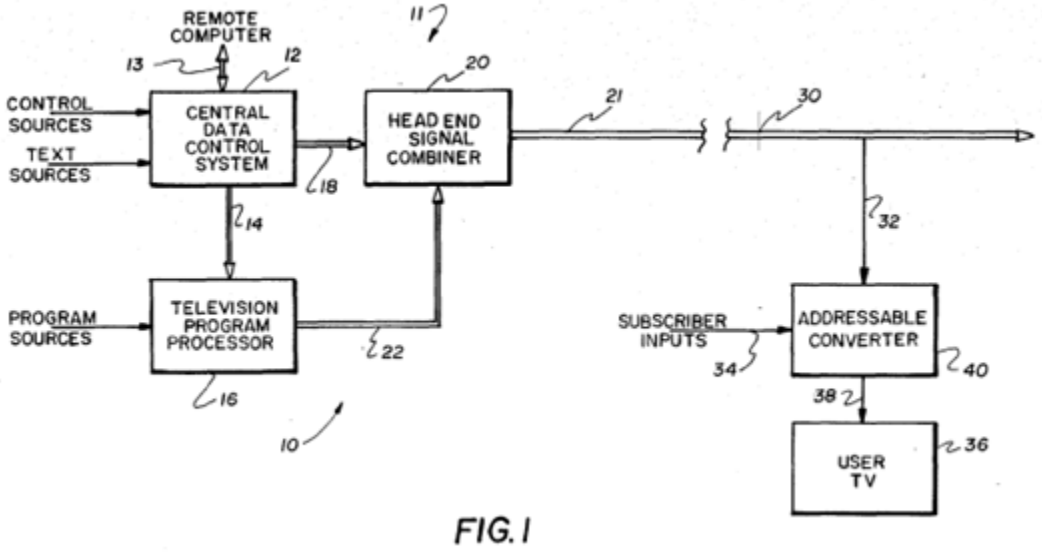


FIG. 1

As shown above in Fig. 1, head end station 11 includes central data control system 12 linked with a remote computer, "which may be used for central control and billing functions." IPR2016-01520, Ex. 1044, 4:24–33.

Within central data control system 12 is a programming control system (PCS) that generates a mixture of channel control signals and subscriber addressing signals, including a channel control word and event enable word. *Id.* at Fig. 2, 4:64–67, 13:1–3, 14:1–2. An excerpt of Fig. 11 is reproduced in part below:

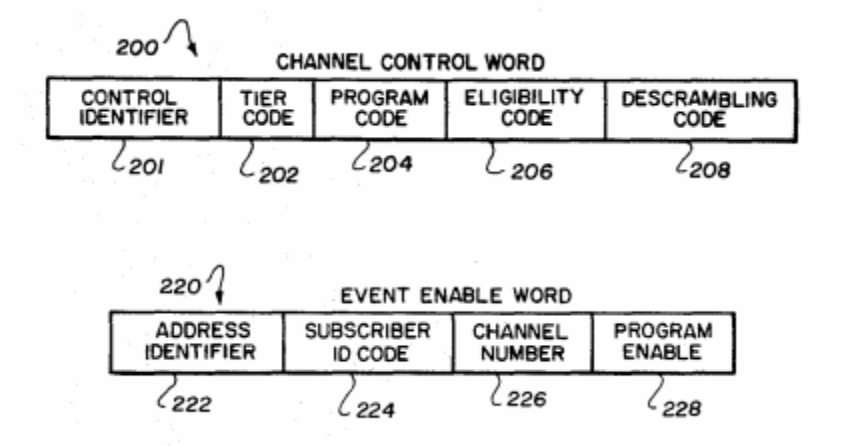


FIG. 11

IPR2016-01520, Ex. 1044, Fig. 11. Fig. 11 above depicts channel control word 200 and event enable word 220. Channel control word 200 is used by each subscriber's converter to determine the subscriber's authorization to receive each television program and to control descrambling of video signals. *Id.* at 5:27–35, 13:1–9. Channel control word 200 includes program identification code 204, which indicates whether the television program in question is a special event requiring further limitation on viewers' access. *Id.* at 13:9–14. Event enable word 220 contains data to enable a subscriber's converter so that the user can view the special event. *Id.* at 13:61–68.

The system additionally provides a "pay-per-view premium programming feature . . . similar to the special event limited access feature described above except no advance authorization is required for the viewer . . . ." *Id.* at 17:50–53. An intelligent converter at the user location allows the

user to request pay-per-view programming via a keyboard. *Id.* at Abs., 17:53–55. The control system commands the converter to allow or disallow the selected program. *Id.* at 17:55–64.

2. Analysis of Alleged Obviousness Based on Campbell

Claim 3 recites a "method of controlling a remote transmitter station to communicate program material to a subscriber station and controlling said subscriber station to process or output a unit of programming," which Petitioner argues is met by Campbell's disclosure of controlling a remote transmitter station (i.e., cable head end station) to communicate programming material (i.e., television programming) to a subscriber station (i.e., subscriber converter box) and controlling the subscriber converter box to output television programming. 1520-Pet. 55–56 (citing IPR2016-01520, Ex. 1001 ¶¶ 206–207; IPR2016-01520, Ex. 1044, 4:24–33, 5:2–4, 7:21–25, 2:68–3:4).

Petitioner argues that the claimed "receiving a control signal which operates at the remote transmitter station to control the communication of a unit of programming and one or more first instruct signals and communicating said control signal to said remote transmitter station" is met by Campbell's disclosure of receiving a control signal (i.e., pay-per-view programming request) which operates at the cable head end to control the communication of television programming and a first instruct signal (i.e., event enable word 220) and communicating the pay-per-view programming request to the cable head end. 1520-Pet. 56–57 (citing IPR2016-01520, Ex. 1001 ¶¶ 208–210; IPR2016-01520, Ex. 1044, 17:42–64, 12:26–33, 12:58–64, 13:61–14:8, 14:67–15:65).

Specifically, Petitioner asserts that, in a two-way interactive embodiment of Campbell, a subscriber requests access to pay-per-view programming via the keyboard of his converter, and the converter sends the request to a data control system at the head end. *Id.* at 56 (citing IPR2016-01520, Ex. 1044, 17:42–64). According to Petitioner, access to pay-per-view programming in Campbell is enabled by event enable word 220, which is an instruct signal transmitted between the data control system and the converter. *Id.* at 56–57 (citing IPR2016-01520, Ex. 1044, 12:26–33, 12:58–64, 13:61–14:8, 14:67–15:65).

Regarding the claim limitation "receiving a code or datum identifying a unit of programming to be transmitted by the remote transmitter station, said remote transmitter station transferring said unit of programming to a transmitter," Petitioner contends that Campbell suggests receiving a code or datum (i.e., program identification code 204) identifying a unit of television programming to be transmitted by the cable head end, said cable head end transferring said unit of television programming to a transmitter (i.e., head end signal combiner). 1520-Pet. 57–58 (citing IPR2016-01520, Ex. 1001 ¶¶ 211–214; IPR2016-01520, Ex. 1044, 13:1–14, 4:64–5:4, 7:21–25, Figs. 1–3). According to Petitioner, in Campbell, a programming control system (PCS) generates codes, including program identification code 204, that identify the program to the converter at the user station. *Id.* at 57 (citing IPR2016-01520, Ex. 1044, 13:1–14). Petitioner argues that it would have been obvious to one of ordinary skill in the art to modify Campbell "such that the functions of the PCS are performed at the 'remote computer' described by Campbell." *Id.* at 57–58 (citing IPR2016-01520, Ex. 1001 ¶ 214). In particular, Petitioner asserts that Campbell's remote computer is

connected to the head end station via a two way link for various control functions, and that a person of ordinary skill in the art would have been motivated to modify Campbell in order to "allow for the system operator to control various geographically distinct head end stations from a single central location." *Id.* at 58 (citing IPR2016-01520, Ex. 1044, 5:2–4, 7:21–25, Figs. 1–3; Ex. 1001 ¶¶ 211–214). Modifying Campbell in this way, Petitioner asserts, would result in program identification code 204 being transmitted via the two-way communication link and received at the head end station. *Id.* (citing IPR2016-01520, Ex. 1001 ¶¶ 211–214).

With respect to the claimed "receiving at said remote transmitter station one or more second instruct signals which operate at the subscriber station to identify and decrypt said unit of programming or said one or more first instruct signals, said remote transmitter station transferring said one or more second instruct signals to said transmitter," Petitioner argues that Campbell suggests receiving at the cable head end a second instruct signal (i.e., channel word 200) which operates at the head end to identify and decrypt said unit of television programming, the head end transferring channel word 200 to the head end signal combiner. 1520-Pet. 58–59 (citing IPR2016-01520, Ex. 1001 ¶¶ 213–217; IPR2016-01520, Ex. 1044, 4:24–5:4, 5:42–51, 13:1–24, 14:67–15:65, Figs. 11–12). Specifically, Petitioner asserts that Campbell's PCS generates channel control word 200, which is an instruct signal combined with television programming and sent to head end signal combiner 20 for transmission to subscribers. *Id.* at 58 (citing IPR2016-01520, Ex. 1044, 4:24–5:4, 5:42–51, 13:1–7). According to Petitioner, Campbell's channel control word 200 includes various codes, including program identification code 204, that identify the program to the

converter at each user station. *Id.* at 59 (citing IPR2016-01520, Ex. 1044, 13:1–24, 14:67–15:65, Figs. 11–12). Petitioner reasserts that a person of ordinary skill in the art would have found it obvious to modify Campbell such that the functions of the PCS would be performed at the remote computer and channel control word 200 is transmitted via the two-way communication link and received at the head end station. *Id.* (citing IPR2016-01520, Ex. 1001 ¶¶ 213–214, 217).

Finally, Petitioner argues that the claimed "transmitting from said remote transmitter station an information transmission comprising said unit of programming, said one or more first instruct signals, and said one or more second instruct signals, said one or more first instruct signals being transmitted in accordance with said control signal" is met by Campbell's disclosure of transmitting television programming, event enable word 220, and channel control word 200 from the cable head end station to remote subscribers, the event enable word 220 being transmitted in accordance with the pay-per-view programming request. 1520-Pet. 59–60 (citing IPR2016-01520, Ex. 1001 ¶¶ 218–219, 208–210; IPR2016-01520, Ex. 1044, 4:24–45, 2:53–58, 4:64–5:4).

Patent Owner argues that the claim limitation "decrypt[ing] said unit of programming or said one or more first instruct signals" is not met because Campbell involves scrambling and descrambling, but not decryption. 1520-PO Resp. 49 (citing IPR2016-01520, Ex. 2023 ¶¶ 227–231; IPR2016-01520, Ex. 1044, 2:64–66, 5:31–35, 7:51–57, 10:37–41, 21:22–26). Petitioner responds that Patent Owner's argument is based on its construction of "decrypt," which was not adopted. 1520-Pet. Reply 24 (citing 1520-DI 56). We agree with Patent Owner that Campbell does not render claim 3 obvious.

The ground of unpatentability details that it would have been obvious to modify Campbell "such that the functions of the PCS are performed at the 'remote computer' described by Campbell." 1520-Pet. 59. That is the only modification Petitioner envisions to be made to Campbell to meet the limitation of "decrypt said unit of programming or said one or more first instruct signals." *Id*. at 55–60. As such, given our construction of "decrypt," Campbell is unable to meet such a limitation because it is only directed to scrambling and descrambling of signals.

Accordingly, we have reviewed the Petition and the supporting evidence and briefs, and we determine the record does not support Petitioner's contention that Campbell renders claim 3 obvious, on the basis of the newly adopted claim constructions. Accordingly, we determine Petitioner has not shown by a preponderance of evidence that claim 3 is obvious in view of Campbell.

K. Secondary Considerations

As Petitioner argues, Patent Owner fails to show a nexus to its alleged secondary considerations of non-obviousness: "None of the purported 'evidence' specifically relates to the '635 Patent, let alone the instituted claims." 1520-Pet. Reply 27. By way of example, Patent Owner does not put its licenses in evidence or tie a challenged claim in the '635 Patent to any single one of the licenses. *See* 1520-PO Resp. 64. Patent Owner alleges it "has received professional acclaim and industry recognition of its inventions." *Id*. Again, Patent Owner does not even allege a nexus between the professional acclaim and industry recognition to the challenged claims in the '635 Patent. Similarly, Patent's allegation of citations to the '635 patent family also do not establish a nexus. *Id*.; *see Therasense, Inc. v. Becton,*

Dickinson and Co., 593 F.3d 1289, 1299 (Fed. Cir. 2010) ("Abbott is incorrect in contending that it was entitled to the presumption of a nexus. This is not a situation where the success of a product can be attributed to a single patent, because Abbott's Exactech product embodied at least two patents . . . .") (emphasis added).

The proffered evidence of secondary considerations only would be relevant to the claims instituted on obviousness grounds and not an anticipation challenge, namely, claims 3, 4, 13, 28, 30, and 33. Patent Owner does not cite to anything in its secondary considerations that relates to showing the unobviousness of these claims. To the extent relevant, we incorporate by reference our similar findings from a related case, wherein Patent Owner presented the same or similar evidence with respect to a different patent and different patent claims. *See* IPR2016-01520, Ex. 1037, 45–54 (-01527 case). Even if some loose nexus exists, considering the evidence as a whole, including the anticipation and obviousness discussions above and Patent Owner's arguments regarding secondary considerations, we conclude Petitioner has shown by a preponderance of evidence that challenged claim 4, 13, 28, 30, and 33 would have been obvious.

L. Contingent Motions to Amend

As discussed above, Patent Owner also filed a Contingent Motion to Amend in each proceeding (IPR2016-00754, Paper 15; IPR2016-01520, Paper 16). In respective Final Written Decisions (754-FWD, 1520-FWD), we denied both contingent motions to amend. *See* 754-FWD, 64–71; 1520-FWD, 55–66. As neither the Federal Circuit decision in *PMC*, nor the Order Granting Request for Director Review, addressed the contingent motions to

amend, we incorporate-by-reference our prior analyses and continue to deny those motions, save consideration of one claim, discussed below.

In both Final Written Decisions, we were not persuaded that Patent Owner had demonstrated that the substitute claims had proper written description support, with the exception of one claim in each Motion to Amend, where those latter, substituted claims were not shown to be patentable over the prior art of record. *See* 754-FWD, 64–71; 1520-FWD, 55–66. With respect to IPR2016-01520, substitute claim 41, a proposed substitute for challenged claim 3, was shown to have proper written description support. 1520-FWD, 62–63. As discussed above, however, claim 3 has not been demonstrated to be unpatentable, such that proposed, substitute claim 41 need not be considered, based on the contingencies specified in the Contingent Motion to Amend. IPR2016-01520, Paper 16.

CONCLUSION

After reviewing the record developed during trial anew and taking into account the Federal Circuit's decision, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claims 4, 7, 13, 18, 20, 21, 28–30, 32, and 33 of the '635 Patent are unpatentable, and that Petitioner has not demonstrated by a preponderance of the evidence that claim 3 of the '635 Patent is unpatentable.

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
7, 21, 29	102	Guillou	7, 21, 29	
4, 13, 28, 30	103	Guillou	4, 13, 28, 30	
21, 28–30	103	Aminetzah		21, 28–30
4	103	Aminetzah, Bitzer	4	
13, 18, 20, 32	102	Chandra	13, 18, 20, 32	
33	103	Chandra, Nachbar	33	
4, 7	102	Seth-Smith	4, 7	
3	103	Campbell		3
Overall Outcome			4, 7, 13, 18, 20, 21, 28–30, 32, 33	3

ORDER

For the reasons given, it is:

ORDERED that claims 4, 7, 13, 18, 20, 21, 28–30, 32, and 33 of the '635 Patent have been proven by a preponderance of the evidence to be unpatentable; claim 3 of the '635 Patent has not been proven by a preponderance of the evidence to be unpatentable;

FURTHER ORDERED that Patent Owner's Motions to Amend in each proceeding continue to be *denied*; and

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

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