UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NXP USA, INC.,
Petitioner,

v.

INSIDE SECURE and NFC TECHNOLOGY, LLC,
Patent Owners.

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Case IPR2016-00692
Patent No. 7,905,419 B2

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Before the Honorable KEN B. BARRETT, PATRICK M. BOUCHER, and CHARLES J. BOUDREAU, *Administrative Patent Judges*.

**PETITIONER NXP USA, INC.'S NOTICE OF APPEAL**

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
United States Patent and Trademark Office
P.O. Box. 1450
Alexandria, VA 22313-1450

Pursuant to 35 U.S.C. §§ 141, 142, and 319, and 37 C.F.R. §§ 90.2-90.3, notice is hereby given that Petitioner NXP USA, Inc. appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision of the Patent Trial and Appeal Board ("Board") entered on August 30, 2017 (Paper 21) in IPR2016-00692, and from all underlying orders, decisions, rulings, and opinions regarding this *inter partes* review of U.S. Patent No. 7,905,419 ("'419 patent"). A copy of the Final Written Decision (Paper 21) is attached.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Petitioner further indicates that the issues on appeal include, but are not limited to, the following: (1) the Board's determination that claims 1, 3, 7, 11, 12, 14, 18 and 22 of U.S. Patent No. 7,905,419 have not been shown to be unpatentable; (2) the Board's determination that Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 3, 11, 12, 14 and 22 of the '419 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over US 2004/0065734 A1 ("Piikivi") and Harry J. R. Dutton & Peter Lenhard, Asynchronous Transfer Mode (ATM): Technical Overview, 2d ed. (IBM 1995) ("IBM"); (3) the Board's determination that Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 3, 7, 11, 12, 14, 18

and 22 of the '419 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Piikivi, US 2005/0077356 A1 ("Takayama"), and IBM; (4) the Board's consideration of the expert testimony, prior art, and other evidence in the record; (5) the Board's factual findings, conclusions of law or other determinations supporting or related to those issues; as well as (6) all other issues decided adversely to Petitioner in any orders, decisions, rulings, and opinions.

Simultaneous with this submission, a copy of this Notice of Appeal is being filed with the PTAB through the E2E System. In addition, copies of the Notice of Appeal, along with the required docketing fee, are being filed with the Clerk's office for the United States Court of Appeals for the Federal Circuit.

Dated: October 31, 2017

Respectfully submitted,

By: _____*/Mark Rowland/*_____

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## CERTIFICATE OF FILING

It is certified that, in addition to being filed electronically through the Patent Trial and Appeal Board's E2E System, a copy of PETITIONER NXP USA, INC.'S NOTICE OF APPEAL has been filed by hand on October 31, 2017, with the Director of the United States Patent and Trademark Office, at the following address:

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
10B20, Madison Building East,
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Dated: October 31, 2017

Respectfully submitted,

*/Mark Rowland/*
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*Counsel for Petitioner NXP USA, Inc.*

**CERTIFICATE OF FILING**

It is certified that, a copy of PETITIONER NXP USA, INC.'S NOTICE OF APPEAL was filed electronically through the United States Court of Appeals for the Federal Circuit's CM/ECF system on October 31, 2017 and one paper copy delivered by hand on October 31, 2017, with the Clerk of the Court of the Federal Circuit, at the following address:

Clerk of the Court
717 Madison Place, N.W.
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Dated: October 31, 2017

Respectfully submitted,

*/Mark Rowland/*
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**CERTIFICATE OF SERVICE**

The undersigned certifies that a true and copy of the foregoing PETITIONER NXP USA, INC.'S NOTICE OF APPEAL was served on October 31, 2017 in its entirety by causing the aforementioned document to be electronically mailed, pursuant to the parties' agreement, to the following attorneys of record:

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*Counsel for Patent Owner NFC Technology, LLC*

Pursuant to the parties' agreement, the undersigned further certifies that a copy of the foregoing was also caused to be emailed to the following email addresses:

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Dated: October 31, 2017

Respectfully submitted,

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Paper 21
Entered: August 30, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NXP USA, INC.,
Petitioner,

v.

INSIDE SECURE and NFC TECHNOLOGY, LLC,
Patent Owner.

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Case IPR2016-00692
Patent 7,905,419 B2

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Before KEN B. BARRETT, PATRICK M. BOUCHER, and CHARLES J. BOUDREAU, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

# FINAL WRITTEN DECISION
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

NXP USA, Inc.[1] ("Petitioner") filed a Petition (Paper 3, "Pet.") to institute an *inter partes* review of claims 1, 3, 4, 7, 11, 12, 14, 15, 18, and 22 of U.S. Patent No. 7,905,419 B2 ("the '419 patent"). After consideration of a Preliminary Response (Paper 8) filed by exclusive licensee NFC Technology, LLC ("NFCT" or "Patent Owner"),[2] we instituted review of claims 1, 3, 7, 11, 12, 14, 18, and 22. Paper 9 ("Dec."), 24. During the trial,

[1] According to updated mandatory notice information filed under 37 C.F.R. § 42.8, "effective November 7, 2016, original petitioner NXP Semiconductors USA, Inc. merged with and into original petitioner Freescale Semiconductor, Inc., which then changed its name to 'NXP USA, Inc.'" Paper 16, 1. We have updated the caption accordingly.

[2] The inventor of the '419 patent assigned the patent to Inside Contactless, in an assignment recorded with the Office on June 13, 2007, at Reel 19424, Frame 532. Name changes of Inside Contactless to Inside Secure were recorded on September 2, 2012, at Reel 28901, Frame 695, and October 28, 2013, at Reel 31505, Frame 332. On October 1, 2013, a license was recorded at Reel 31317, Frame 264, from Inside Secure and France Telecom S.A. to France Brevets SAS. It is unclear what interest France Telecom S.A. has or had in the '419 patent. NFCT asserts that "[t]he real parties in interest are NFCT and France Brevets, S.A.S[.] ('France Brevets')," and that it is a wholly owned subsidiary of France Brevets. Paper 6, 2. NFCT further asserts that it owns "'the right to defend the validity and/or enforceability of the ['419 patent].'" *Id.* (citing Ex. 2001, 3; Ex. 2002, 2) (references in Paper 6 to "the '770 patent" are believed to be intended to refer to "the '419 patent"). NFCT also asserts that its "exclusive rights also include the right to enforce the ['419] patent, enjoin others from infringing the ['419] patent, and grant licenses to the ['419] patent." *Id.* (citing Ex. 2001, 3; Ex. 2002, 2). NFCT contends that it "is therefore the 'effective patentee,'" and that it "has standing to step into the shoes of the Patent Owner in the proceeding." *Id.* (citations omitted). In light of NFCT's representations, we have treated NFCT as Patent Owner throughout this proceeding and continue to do so for purposes of this Decision, as reflected by the caption.

Patent Owner timely filed a Response (Paper 13, "PO Resp."), to which Petitioner timely filed a Reply (Paper 18, "Reply"). An oral hearing was held on June 9, 2017, and a copy of the transcript was entered into the record. Paper 22 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has not shown, by a preponderance of the evidence, that claims 1, 3, 7, 11, 12, 14, 18, and 22 of the '419 patent are unpatentable.

## I. BACKGROUND

### *A. The '419 Patent*

#### *1. Overview*

The '419 patent describes routing data in a Near Field Communication ("NFC") chipset. *See* Ex. 1001, col. 1, ll. 6–17. A portable device (such as a mobile telephone) with an integrated NFC reader includes one or more host processors (such as a main processor and a SIM card of the portable device), a controller, and an NFC interface coupled to an antenna for sending or receiving data. *See id.* at col. 1, l. 60–col. 2, l. 3, col. 2, ll. 52–60. With applications installed on the host processor(s), the portable device can operate in different modes. It can operate as a reader to read or write to a contactless integrated circuit ("reader" mode); it can operate as a card to be read by another reader, such as in payment or access-control applications ("card emulation" mode); and it can communicate with another portable device using the NFC chipset ("device" mode). *Id.* at col. 2, ll. 9–43. Because of the possibility of multiple host processors, multiple installed

applications, and different operating modes with different associated protocols, multiple data paths may exist between a host processor and the NFC interface in the portable device, and outgoing data streams may be sent in accordance with a variety of specified configurations. *Id.* at col. 2, l. 52–col. 3, l. 36, Figs. 3A, 3B. It is, therefore, desirable for the processor to specify a mode/protocol configuration to be used by the NFC interface to transmit individual data streams. *Id.*

The ’419 patent explains that the traditional method used “data frames, each comprising header fields and data fields,” with the header fields “specifying the starting and destination points of the data, the operating mode and the protocol to be used” by the interface. *Id.* at col. 3, ll. 44–49. But the data frames in such a traditional method had “long and complex” header fields that required considerable processing time before the data in the frames was processed. *Id.* at col. 3, ll. 50–52. “This problem is referred to as ‘overheading’, which means that excessively long frame headers overload the data streams and increase the data transmission time.” *Id.* at col. 3, ll. 52–55. In addition, “[t]hese large header fields further require large buffers and high processing capacity.” *Id.* at col. 3, ll. 55–56.

The improvement described by the ’419 patent is thus motivated by an expressed desire “to provide a method for routing data in an NFC chipset that is simple to implement and does not require any long header fields, while enabling the protocol and the operating mode parameters of the contactless data send/receive interface to be set.” *Id.* at col. 3, ll. 57–61. The Specification explains that a “routing table” is used, in which each data path is identified by a “routing channel number” and which includes routing parameters corresponding to each channel number. *Id.* at col. 7, l. 64–col. 8,

l. 9. Each routing channel number is allocated to a data path between a "source point" and a "destination point," and the routing parameters include at least one identifier of the source point and one identifier of the destination point. *Id.* at col. 8, ll. 10–12. The routing parameters may also include the operating mode and the contactless communication protocol used by the interface to send or receive data. *Id.* at col. 8, ll. 13–16.

Figure 4 of the '419 patent, reproduced below, provides an illustration of the routing-table implementation.

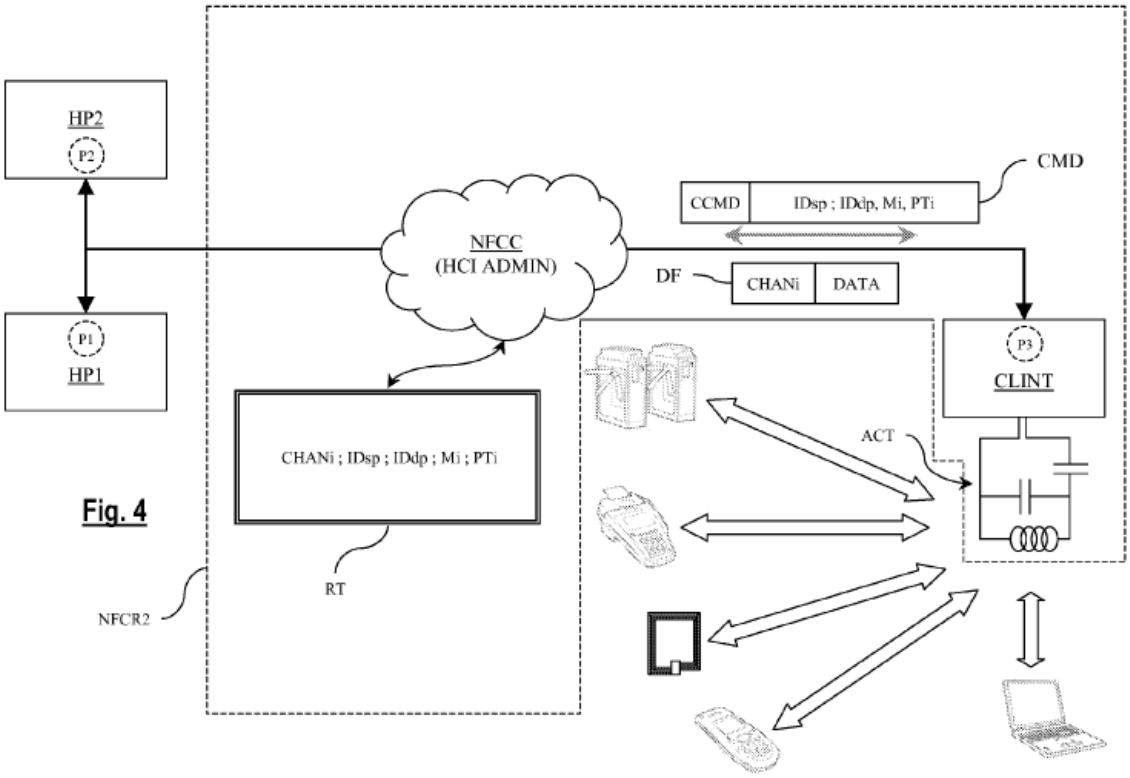



Fig. 4

Figure 4 is a schematic illustration of a routing method disclosed by the '419 patent. *Id.* at col. 7, ll. 34–36. The NFC chipset includes host processors HP1 and HP2, and NFC reader NFCR2, which has controller NFCC and a contactless data send/receive interface CLINT equipped with an antenna circuit ACT. *Id.* at col. 7, ll. 46–52. In the illustration, interface CLINT sends or receives data according to three protocols PTi, i.e., PT1 (ISO

14443-A), PT2 (ISO 14443-B), and PT3 (ISO 15693). *Id.* at col. 7, ll. 52–56. The three operating modes identified above are designated as Mi, i.e., M1 ("reader" mode), M2 ("card emulation" mode), and M3 ("device" mode). *Id.* at col. 7, ll. 56–59. Source or destination points of a data stream in the chipset are designated P1 (point located in host processor HP1), P2 (point located in host processor P2), and P3 (point located in contactless interface CLINT). *Id.* at col. 7, ll. 60–63. Controller NFCC administers the protocol that controls data routing inside the portable device based on a routing table in which routing channel parameters are saved. *Id.* at col. 7, l. 64–col. 8, l. 16.

Appendix 2 of the '419 patent provides exemplary routing tables, examples of which are reproduced below for Table 1 and Table 2, annotated by Patent Owner. PO Resp. 7.

TABLE 1

Example of dynamic routing table with source points located in HP1 or HP2

| CHAN | IDdp | PTi | Mi | IDdp Send | IDdp Notify | Comments |
|---|---|---|---|---|---|---|
| 1 | ID(P1) | PT1 | M1 | ID(P3) | ID(P2) | Host processor HP1 to interface CLINT in ISOA reader mode |
| 2 | ID(P1) | PT2 | M1 | ID(P3) | — | Host processor HP1 to interface CLINT in ISOB reader mode |
| 3 | ID(P1) | PT3 | M1 | ID(P3) | — | Host processor HP1 to interface CLINT in ISO15 reader mode |
| 4 | ID(P1) | PT1 | M3 | ID(P3) | ID(P2) | Host processor HP1 to interface CLINT in ISOA device mode |
| 5 | ID(P1) | PT2 | M3 | ID(P3) | — | Host processor HP1 to interface CLINT in ISOB device mode |
| 6 | ID(P1) | PT3 | M3 | ID(P3) | — | Host processor HP1 to interface CLINT in ISO15 device mode |
| 7 | ID(P1) | — | — | ID(P2) | | Host processor HP1 to SIM card (HP2) |
| 8 | ID(P2) | — | — | ID(P1) | — | SIM card (HP2) to host processor |
| 9 | ID(P2) | PT1 | M1 | ID(P3) | — | SIM card (HP2) to interface CLINT in ISOA reader mode |
| 10 | ID(P2) | PT2 | M1 | ID(P3) | ID(P2) | SIM card (HP2) to interface CLINT in ISOB reader mode |
| 11 | ID(P2) | PT3 | M1 | ID(P3) | ID(P2) | SIM card (HP2) to interface CLINT in ISO15 reader mode |
| 12 | ID(P2) | PT1 | M3 | ID(P3) | — | SIM card (HP2) to interface CLINT in ISOA device mode |
| 13 | ID(P2) | PT2 | M3 | ID(P3) | ID(P2) | SIM card (HP2) to interface CLINT in ISOB device mode |
| 14 | ID(P2) | PT3 | M3 | ID(P3) | ID(P2) | SIM card (HP2) to interface CLINT in ISO15 device mode |

TABLE 2

Example of pre-saved routing table with source points located in HP1 or HP2

| CHAN | IDdp | PTi | Mi | IDdp Send | IDdp Notify | Busy | Comments |
|---|---|---|---|---|---|---|---|
| 1 | ID(P1) | PT1 | M1 | ID(P3) | ID(P2) | 1 | Host processor HP1 to interface CLINT in ISOA reader mode |
| 2 | ID(P1) | PT2 | M1 | ID(P3) | — | 0 | Host processor HP1 to interface CLINT in ISOB reader mode |
| 3 | ID(P1) | PT3 | M1 | ID(P3) | — | 0 | Host processor HP1 to interface CLINT in ISO15 reader mode |
| 4 | ID(P1) | PT1 | M3 | ID(P3) | ID(P2) | 0 | Host processor HP1 to interface CLINT in ISOA device mode |
| 5 | ID(P1) | PT2 | M3 | ID(P3) | — | 0 | Host processor HP1 to interface CLINT in ISOB device mode |
| 6 | ID(P1) | PT3 | M3 | ID(P3) | — | 0 | Host processor HP1 to interface CLINT in ISO15 device mode |
| 7 | ID(P1) | — | — | ID(P2) | | 1 | Host processor HP1 to SIM card (HP2) |
| 8 | ID(P2) | — | — | ID(P1) | — | 0 | SIM card (HP2) to host processor HP1 |
| 9 | ID(P2) | PT1 | M1 | ID(P3) | — | 0 | SIM card (HP2) to interface CLINT in ISOA reader mode |
| 10 | ID(P2) | PT2 | M1 | ID(P3) | ID(P2) | 0 | SIM card (HP2) to interface CLINT in ISOB reader mode |
| 11 | ID(P2) | PT3 | M1 | ID(P3) | ID(P2) | 0 | SIM card (HP2) to interface CLINT in ISO15 reader mode |
| 12 | ID(P2) | PT1 | M3 | ID(P3) | — | 1 | SIM card (HP2) to interface CLINT in ISOA device mode |
| 13 | ID(P2) | PT2 | M3 | ID(P3) | ID(P2) | 0 | SIM card (HP2) to interface CLINT in ISOB device mode |
| 14 | ID(P2) | PT3 | M3 | ID(P3) | ID(P2) | 0 | SIM card (HP2) to interface CLINT in ISO15 device mode |

Annotated Tables 1 and 2 of the ’419 patent, reproduced above, illustrate that the routing table saves, for each data path in the portable device, a routing channel number (highlighted in red by Patent Owner) and routing parameters corresponding to the routing channel number. Ex. 1001, cols. 15–18; PO Resp. 7. According to Patent Owner, the result is that “data transmitted on the data path can be encapsulated in a frame having a header containing the routing channel *number without the routing parameters*.” PO Resp. 7 (emphasis added). This characterization by Patent Owner is consistent with the ’419 patent’s Specification, which asserts that “it is not necessary for the source point that sends the data to the processor to specify all the parameters of the routing channel used.” Ex. 1001, col. 9, ll. 17–19.

### *2. Illustrative Claim*

Independent claim 1 of the ’419 patent is illustrative of the claims at issue:

> 1. A method for routing data in a chipset arranged in a portable device, the chipset comprising at least one host processor, a controller, and a Near Field Communication (NFC)-type contactless data send/receive interface, the method comprising:
>
> causing a source point located in the host processor in the portable device to send a command for opening a first data path designating a destination point located in the contactless data send/receive interface in the portable device;
>
> in response to the command for opening the first data path, defining, by the controller in the portable device, the first data path by allocating to the first data path a routing channel number and by saving in a routing table the routing channel number and routing parameters comprising at least one identifier of the source point and one identifier of the destination point;
>
> causing the source point to send to the controller data encapsulated in a frame having a header field comprising the routing channel number; and
>
> upon receiving the data encapsulated in the frame having a header field comprising the routing channel number, causing the controller to search for a destination point of the data in the routing table by using the routing channel number as an index to select the destination point to which the controller subsequently sends the data.

### *3. Prosecution History*

During prosecution of the application that matured into the ’419 patent, the Examiner cited US 2004/0065734 A1 (“Piikivi”), a reference applied by Petitioner in each of the challenges upon which we instituted review. Ex. 1002, 374–84, 435–44. The Examiner found that Piikivi does not disclose certain features of the claims, notably including the recited use

of a routing table, but relied on other references for these features in initially rejecting the claims. *See, e.g.*, *id.* at 375. Following these rejections, the applicant amended the claims to limit the context in which a routing table is used, requiring that the device be "portable," and that the "contactless data send/receive interface" be a "Near Field Communication (NFC)-type" instead of an "RFID type." *Id.* at 399–405, 673–78.

### *B. Instituted Grounds of Unpatentability*

Petitioner relies on the following references.

| | | | |
|---|---|---|---|
| Piikivi | US 2004/0065734 A1 | April 8, 2004 | Ex. 1004 |
| Takayama | US 2005/0077356 A1 | April 14, 2005 | Ex. 1005 |

Harry J. R. Dutton & Peter Lenhard, *Asynchronous Transfer Mode (ATM): Technical Overview*, 2d ed. (IBM 1995) (Exs. 1006, 1007[3]) ("IBM")

We instituted trial based on 35 U.S.C. § 103(a) over the following combinations of references. Dec. 24.

| References | Claims Challenged |
|---|---|
| Piikivi and IBM | 1, 3, 11, 12, 14, and 22 |
| Piikivi, Takayama, and IBM | 1, 3, 7, 11, 12, 14, 18, and 22 |

[3] Exhibit 1006 is a copy of the reference certified by the Library of Congress. Ex. 1006, 1. Both parties cite instead to Exhibit 1007, which is not certified, but which Petitioner characterizes as a more readable "larger copy." Pet. 16 n.5. Patent Owner does not contest that Exhibits 1006 and 1007 are otherwise the same. Following the practice of the parties, we cite to Ex. 1007 herein.

### *C. Real Parties in Interest and Related Proceedings*

Petitioner identifies NXP Semiconductors N.V., NXP B.V., and NXP Semiconductors Netherlands B.V. as real parties in interest with itself for this proceeding. Paper 16, 1. Patent Owner identifies France Brevets, S.A.S., as a real party in interest with itself for this proceeding. Paper 6, 2; *see supra* note 2.

The parties assert that the '419 patent is involved in *NFC Technology, LLC v. Samsung Electronics Co.*, No 2:15-cv-00283-JRG-RSP (E.D. Tex.) ("the related litigation"). Pet. 7; Paper 6, 3. Petitioner additionally asserts that the '419 patent was involved in *NXP Semiconductor USA, Inc. v. France Brevets, SAS*, No. 3:14-cv-01225 (N.D. Cal.), which was dismissed without prejudice. Pet. 7 (citing Exs. 1014, 1015).

## II. ANALYSIS

### *A. Legal Principles*

A claim is unpatentable under § 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) objective evidence of non-obviousness, i.e., secondary considerations.[4] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of "whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")); *see also In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) ("As part of the obviousness inquiry, we consider 'whether a [person of ordinary skill in the art] would have been motivated to combine the prior art to achieve the claimed invention and whether there would have been a reasonable expectation of success in doing so.'" (quoting *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006))).

### *B. Level of Skill in the Art*

Based on testimony by its expert, Richard T. Mihran, Ph.D., Petitioner contends that a person of ordinary skill in the art at the time of the claimed invention would have "a minimum of a bachelor's degree in electrical engineering, computer engineering, computer science, or a comparable field, and approximately two years of professional experience with data communications and routing, including in the context of wireless communications as applied to RFID systems, or other relevant industry experience." Pet. 13 (citing Ex. 1003 ¶ 30). Patent Owner does not dispute

[4] The parties do not address secondary considerations, which, accordingly, do not form part of our analysis.

this level of skill, and asserts that Patent Owner and its expert, Martin G. Walker, Ph.D., have used this definition in their analysis. PO Resp. 8 (citing Ex. 2003 ¶ 27).

We see no compelling reason to apply a different level of skill than that accepted by both parties, and accordingly adopt the level of skill advocated by Petitioner.

### *C. Claim Construction*

The Board interprets claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

#### *1. Preliminary Constructions Applied in the Institution Decision*

In the Institution Decision, we adopted the following preliminary constructions, which correspond to constructions agreed to by Patent Owner in the related litigation under a different standard than the one applied in this proceeding and which were advocated for adoption by Petitioner. Dec. 7–8; *see* Ex. 1012; *see also* Pet. 12–13 (arguing that Patent Owner "should not be allowed to dispute" that the broadest reasonable interpretation "must at least include its proposed constructions in litigation"). "Patent Owner agrees that the constructions listed in the table also correspond to the broadest reasonable construction." PO Resp. 9.

| Claim Term | Construction |
|---|---|
| "source point located in a/the host processor" | software in a host processor through which data is sent |
| "destination point" | software through which data is received |
| "command for opening a first data path [. . .] designating a destination point" | command for making accessible a first data path that designates a destination point |
| "routing table" | a collection of data including at least one routing channel number and corresponding routing parameter(s) |

In light of the parties' agreement, and based on the complete record developed during the trial, we see no compelling reason to alter these preliminary constructions, and adopt them for this Final Written Decision.

*2. "header field"*

Patent Owner contends that "header field," which is recited in each of independent claims 1 and 12, "excludes the claimed 'routing parameters' saved in the 'routing table.'" PO Resp. 10. Petitioner counters that "'[h]eader field' should have its plain and ordinary meaning, but to the extent it must be construed for purposes of these proceedings, it should be construed under BRI as 'a field preceding data that contains information about the data.'" Reply 4. Petitioner contends that Patent Owner "cannot identify any 'express disclaimer' that would justify" the "negative limitation" that Patent Owner proposes. *Id.* at 3 (citing *Omega Eng'g v. Raytek*, 334 F.3d 1314, 1323 (Fed. Cir. 2003)). In particular, Petitioner argues that Patent Owner's "citation to an embodiment using a channel number to identify a destination point (Ex1001 9:13-23) does not

demonstrate a clear intention to limit the claim scope and certainly does not support excluding *all* 'routing parameters' from the 'header field.'" *Id.* at 4 (citations omitted).

Although the Federal Circuit has endorsed application of the broadest reasonable interpretation in construing claims during postgrant proceedings before the Board, it has cautioned that such endorsement "is not to say, however, that the Board may construe claims during IPR so broadly that its constructions are *unreasonable* under general claim construction principles." *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015). "Rather, 'claims should always be read in light of the specification and teachings in the underlying patent.'" *Id*. (quoting *Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010)). In addition, "[t]he PTO should also consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review." *Id.* (citing *Tempo Lighting Inc. v. Tivoli LLC*, 742 F.3d 973, 978 (Fed. Cir. 2014)). The Federal Circuit has emphasized that, even under the broadest reasonable interpretation, "the Board's construction 'cannot be divorced from the specification and record evidence,'" *id.* (quoting *In re NTP, Inc.*, 654 F.3d 1279, 1288 (Fed. Cir. 2011)), and "'must be consistent with the one that those skilled in the art would reach,'" *Id.* (quoting *In re Cortright*, 165 F.3d 1353, 1358 (Fed. Cir. 1999)).

With these principles in mind, we determine that Patent Owner's proposed construction conforms with the broadest reasonable interpretation of "header field," which excludes the "routing parameters" that are saved in the "routing table." At the oral hearing, Patent Owner conceded that "if you look at the term header field in a vacuum without any context, it could mean

a lot of things and it could potentially not exclude routing parameters stored in the table." Tr. 28:23–29:2. But the structure of the challenged claims supports Patent Owner's proposed construction, particularly how one of skill in the art would understand the interaction of the steps recited in independent method claim 1 and similarly recited in independent apparatus claim 12.

Claim 1 requires "causing the controller to search for a destination point of the data in the routing table by using the routing channel number as an index to select the destination point to which the controller subsequently sends the data." This recited step interacts with the step of "saving in a routing table the routing channel number and routing parameters comprising at least one identifier of the source point and one identifier of the destination point." According to the claim, the controller data are "encapsulated in a frame having a header field comprising the routing channel number." The claim thus sets forth a scheme in which the routing channel number in the header field is used as an index to select the destination point from the routing table. In considering how these steps interact, we agree with Patent Owner that

> [i]t makes no sense for the claimed invention to save a "routing parameter" in the "routing table," while also including that "routing parameter" in the "header field" as in the traditional method, because in the claimed invention the "routing parameter" is determined by using the "routing channel number" as an index to look up the "routing table." To save the "routing parameter" in the "routing table" while also including it in the "header field" makes the "header field" unnecessarily longer, which is inconsistent with the purpose of the claimed invention and the description in the '419 patent.

PO Resp. 11–12.

The Specification of the ’419 patent provides clear context that a significant point of the invention is to address the problem of “overheading” in NFC chipsets, as manifested by overloaded data streams that increase data transmission time, require large buffers, and require high processing capacity. *See* Ex. 1001, col. 3, ll. 50–60; *see also* Tr. 26:7–8 (statement by Patent Owner that “this is really the crux of the invention, if you will, the purpose . . . driving the invention”). At the oral hearing, Patent Owner represented that the Specification includes no examples inconsistent with Patent Owner’s position that “if the routing parameters are stored in the routing table, they wouldn’t also be stored in the hea[d]er.” Tr. 29:7–15. This representation is consistent with our independent review of the written description provided in the ’419 patent.

Patent Owner’s proposed construction is also “consistent with the one that those skilled in the art would reach.” *Cortright*, 165 F.3d at 1358. Patent Owner’s position is supported directly by testimony of Dr. Walker, who explains that his “interpretation is based on the problem to be solved by the ’419 patent.” Ex. 2003 ¶¶ 45–51. Although Petitioner’s expert, Dr. Mihran, disagrees, opining that “[t]he term ‘header field’ is a well known term in the art and should have its plain and ordinary meaning,” Dr. Mihran does not adequately address the context of how the term is used by the challenged claims in light of the Specification. Ex. 1024 ¶ 27. The portions of the Specification that Dr. Mihran relies upon to support his opinion are directed not at how the term would be understood in the context of the invention, but how the term would be understood in the context of the traditional implementation without a routing table. *See id.* ¶¶ 23–24. For example, Dr. Mihran points to column 3, lines 37–49, of the ’419 patent,

which is a description of the "BACKGROUND OF THE INVENTION" explaining the traditional structure. *Id.* ¶ 23; *see* Tr. 29:16–24. Dr. Mihran also identifies the following disclosure from the "DETAILED DESCRIPTION OF THE INVENTION":

> Those skilled in the art will note that the routing of the incoming data according to the method described above can be implemented using a classic HCI protocol, i.e., without using a routing table and data frames having a small header field.

Ex. 1001, col. 11, ll. 7–11; *see* Ex. 1024 ¶ 23. But this disclosure's reference to "using a classic HCI protocol" has little, if any, relevance to construing "header field" in the claims because it refers, at best, to unclaimed embodiments. All claims of the '419 patent specifically and explicitly recite the "routing table" that the cited passage excludes.

In contrast, Patent Owner supports its position by reference to an embodiment that includes the "routing table":

> The transmission of the data received in the data frames is also under the control of the controller NFCC, which refers to the routing table RT to determine the destination points of these data. Advantageously, as can be seen in the format of the data frames described in Appendix 1, it is not necessary for the source point that sends the data to the processor to specify all the parameters of the routing channel used; the header field of the data frame simply comprises parameterizing bits T and L and 6 channel number bits (enabling 63 data paths to be routed simultaneously, the channel "0" being reserved for the administration of the HCI protocol).

Ex. 1001, col. 9, ll. 13–23; *see* PO Resp. 11. As Patent Owner explains, this embodiment teaches that "[w]hen the controller receives the frame, the controller looks up the routing table to determine the routing parameters corresponding to the routing channel number in the header." PO Resp. 11.

In addressing this argument, Petitioner mischaracterizes Patent Owner's proposed construction of "header field" when contending that "PO's citation to an embodiment using a channel number to identify a destination point . . . does not demonstrate a clear intention to limit the claim scope and certainly does not support excluding *all* 'routing parameters' from the 'header field.'" Reply 4 (citation omitted). Patent Owner's proposed construction does not require that *all* routing parameters be excluded from the "header field," only those that would otherwise duplicatively be "saved in the 'routing table.'" *See* Tr. 29:7–11 (statement by Patent Owner that "to be clear, . . . we're not arguing that there can't be any routing parameters in the header. We're just saying that if the routing parameters are stored in the routing table, they wouldn't also be stored in the hea[d]er.").

For these reasons, we adopt, as the broadest reasonable interpretation, Patent Owner's proposed construction that "header field" excludes the recited "routing parameters" saved in the "routing table."

*3. "routing table"*

As noted above, Patent Owner accedes to the preliminary construction of "routing table" applied in the Institution Decision as "a collection of data including at least one routing channel number and corresponding routing parameter(s)." PO Resp. 9. Nevertheless, as part of its argument directed at application of that construction to the prior art, Patent Owner asserts that "[o]ne of ordinary skill in the art would understand that the construction of 'routing table' requires a one-to-one correspondence between the routing channel number and each corresponding routing parameter, such that the controller can use the routing channel number as an index to identify a

*corresponding* routing parameter." *Id.* at 57. Petitioner contends that such an assertion improperly attempts to add a further requirement to the construction by requiring not just a correspondence between the routing channel number and routing parameters, but a "one-to-one correspondence." Reply 2.

We have reviewed the Markman Order from the related district-court litigation, in which Patent Owner advocated for our adopted construction under a claim-construction standard that is necessarily no broader than the broadest reasonable interpretation we apply in postgrant proceedings before the Board. Ex. 1025, 40–43; *Facebook v. Pragmatus AV, LLC*, 582 Fed. App'x 864, 868–69 ("The broadest reasonable interpretation of a claim term may be the same as or broader than the construction of a term under the *Phillips* standard. But it cannot be narrower."). We agree with Petitioner that our adopted construction does not require a "one-to-one" correspondence.[5]

[5] At the oral hearing, Patent Owner conceded that no language is needed in the construction of "routing table" other than what we adopt herein. Tr. 34:3–9 (statement by Patent Owner that "we're fine with the routing table being a collection of data including at least one routing channel number and corresponding parameters. We're not asking for any further construction, any insertion of any one to one or only limitations because that's in the claim itself.").

*D. Scope and Content of the Prior Art*

*1. Piikivi*

Piikivi relates to "the use of smart cards and security components and security chips in wireless communication devices." Ex. 1004 ¶ 1. Figure 4 of Piikivi is reproduced below.

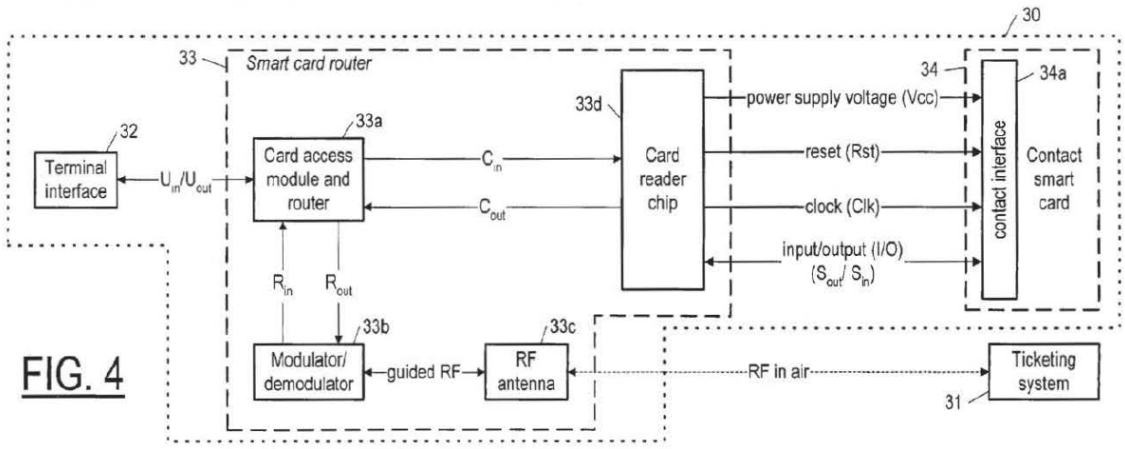



FIG. 4

Figure 4 is a block diagram illustrating a mobile terminal, such as a mobile phone or personal digital assistant ("PDA"), that has a smart card router to allow a smart card to communicate both with a terminal interface and a radio frequency ("RF") interface. *Id.* ¶¶ 28, 33, 45, 47.

Mobile terminal 30 enables use of a "multi-application contact smart card" capable of running separate applications, such as for buying bus or train tickets. *Id.* ¶¶ 36, 41. The mobile terminal's card access module and router 33a is coupled to (1) terminal interface 32, (2) an RF interface that comprises modulator/demodulator 33b and RF antenna 33c, and (3) card reader chip 33d that interacts with contact smart card 34. *Id.* ¶ 34. Terminal interface 32 is connected to a terminal microprocessor and includes a user interface (not shown) for operating the device. *Id.* ¶¶ 33, 40. Card reader chip 33d processes received data by routing them to and from card access module and router 33a through logical channels $C_{in}$ and $C_{out}$, and providing

these data to smart card 34 with input/output connection $S_{out}/S_{in}$. *Id.* ¶ 34. Card access module and router 33a may also be connected to a secondary smart card (not shown). *Id.* ¶ 46.

Communications to and from card access module and router 33a are transmitted using Application Protocol Data Unit ("APDU") commands. *Id.* ¶ 9. Piikivi discloses the following:

> The router function is performed by the card access module and router 33*a* inspecting each arriving APDU header, and discerning from the header the intended recipient. It is expected that new protocols will be developed accommodating routing so that for example the ticketing system will indicate over RF that messages to follow, or messages with certain protocol headers or IDs, are to go to destination[s] specified by the ticketing system, such as to the terminal interface (for delivery to the user interface) or to the smart card.

*Id.* ¶ 34. When multiple applications are installed on contact smart card 34, a channel identifier for each APDU is indicated in the header of the APDU, and smart card 34 uses the channel identifier to direct the APDU to the correct application. *Id.* ¶ 36.

*2. IBM*

IBM describes asynchronous transfer mode ("ATM") communications between user devices in networks. Ex. 1007, 42. The devices are referred to generically as "ATM endpoints," which communicate through "ATM switches" or "ATM switching nodes" by transferring data packets ("cells") across virtual connections within physical links. *Id.* at 43–47. In describing such virtual connections, IBM distinguishes between "virtual paths" and "virtual channels." A "virtual path" is "a route through the network

representing a group of virtual channels," and a "virtual channel" is defined as "a unidirectional connection between end users." *Id.* This virtual structure is illustrated in Figure 2-3 of IBM, reproduced below.

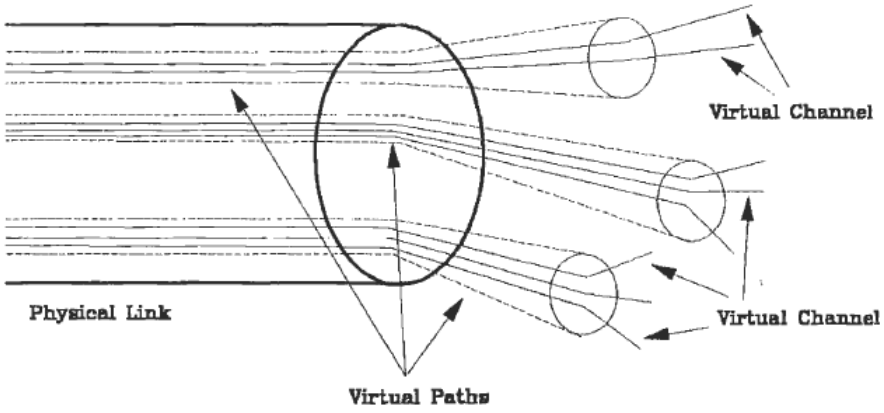
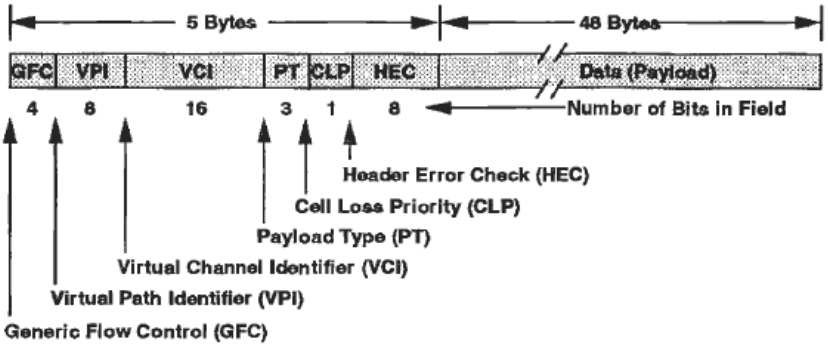



Figure 2-3 illustrates the relationship between physical links, virtual paths, and virtual channels. *Id.* at 48. Within each physical link may be multiple virtual paths, and within each virtual path may be multiple virtual channels. *Id.* at 48.

As described by IBM, ATM networks communicate data with "cells," the format of which is illustrated in Figure 2-4 of IBM, reproduced below.




As shown in Figure 2-4, a cell is a block of data with a fixed length, including a 5-byte header followed by 48 bytes of data. *Id.* at 31, 49. Figure 2-4 of IBM, which illustrates the ATM cell format at a network node interface, is similar, but omits the generic flow control field and uses a 12-bit

virtual path identifier. *See id.* at 49. The cell header includes a "virtual path identifier" ("VPI") and a "virtual channel identifier" ("VCI"), which together form a "logical connection identifier" that identifies the virtual connection to which the particular cell belongs. *Id.* at 50, 57.

IBM discloses that ATM networks route data using "Logical ID Swapping," which is implemented with routing tables indexed by the logical connection identifiers. *Id.* at 57–60. With "Logical ID Swapping," a connection is carried through the network with a series of pointers in successive ATM switching nodes along the route, with each cell that is sent carrying the VPI and VCI in its header to specify a logical connection. The procedure can be understood with reference to Figure 2-8 of IBM, a version of which, annotated by Petitioner, is reproduced below. Pet. 17.

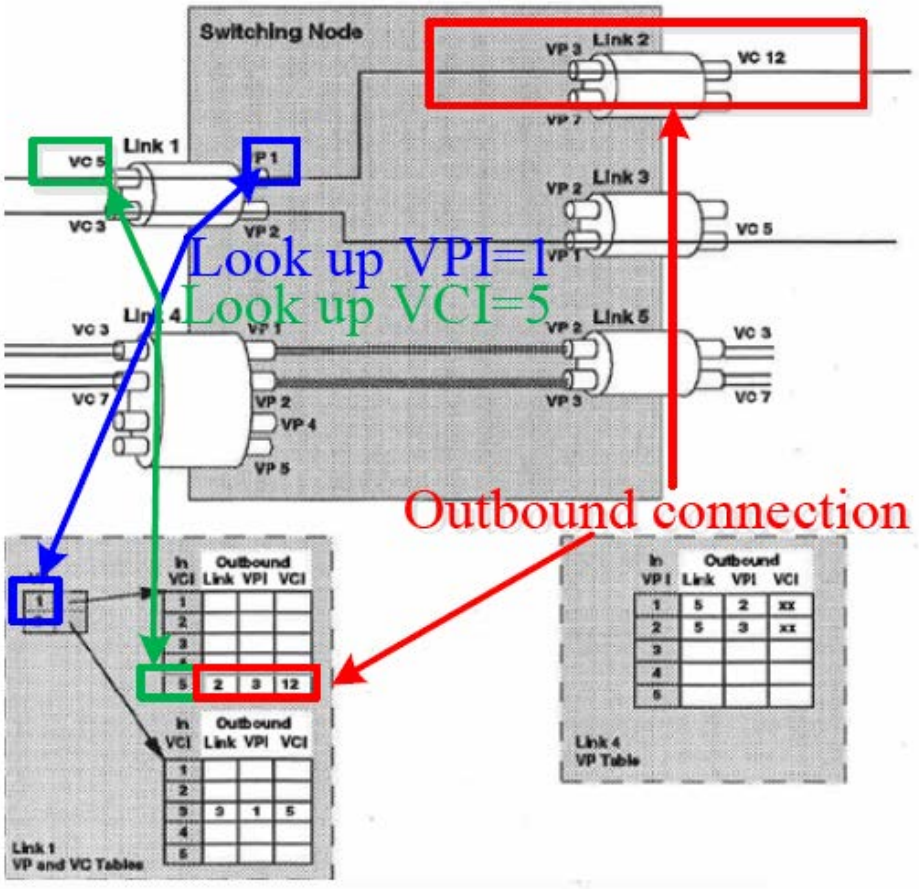


Figure 2-8 illustrates Logical ID Swapping in an ATM. Ex. 1007, 59. In the illustration, the ATM switching node (top grey box) has five links attached, labeled "Link 1" through "Link 5." *Id.* The example described below corresponds to the treatment of a cell that arrives on "Link 1" with a header that specifies VPI=1 and VCI=5, as highlighted respectively by the upper blue and green boxes.

When the ATM cell arrives over the physical link, the receiving node looks to the routing table for Link 1 (lower left grey box), as indicated by the blue annotations. *Id.* at 57–60. Locating VPI=1 in the table, as indicated by the cell header value, the switch then looks to the corresponding virtual-cell table entry for VCI=5 in accordance with the cell header value, as indicated by the green annotations. *Id.* The table entry specifies an outbound connection that the cell is to be routed to Link 2, with VPI=3 and VCI=12, as indicated by the red annotations. *Id.* In accordance with the Logical ID Swapping procedure, the switch thus changes the header to reflect the new VPI and VCI values, and routes the cell to Link 2. *Id.* at 60. When the cell arrives at the next ATM switch, a similar procedure is repeated, causing the cell to propagate from one ATM endpoint to another ATM endpoint, through a series of ATM switches in accordance with the routing tables. *Id.* at 57.

To establish a route, the routing tables within each switch along the path of a virtual connection can be arranged by dynamic request from an ATM endpoint. *Id.* at 58–59. To accommodate common tasks involved with connecting end users to ATM networks, an ATM Adaptation Layer ("AAL") may be provided as a programming interface. *Id.* at 45–46. A user program running on a sending endpoint that seeks to send data to a receiving

user program at a receiving endpoint presents the data to the AAL at an appropriate service access point ("SAP") on the source ATM endpoint. *Id.* at 62, 67, 76. After the data have been provided to the AAL, the AAL processes the data for transmission by breaking frames of received data into cells, and adding necessary header information that enables rebuilding the original block at the received ATM endpoint. *Id.* at 70.

### *3. Takayama*

Takayama discloses a communication system with multiple NFC communication apparatuses that can perform near-field communication with each other based on electromagnetic induction, using carriers having a single frequency. Ex. 1005, Fig. 1, ¶ 51. Each of the NFC communication apparatuses can operate in an active or passive mode, and can perform data transmission at multiple transfer rates. *Id.* ¶¶ 12, 52, 56–61. Figures 5 and 6 of Takayama are reproduced below.

FIG. 5

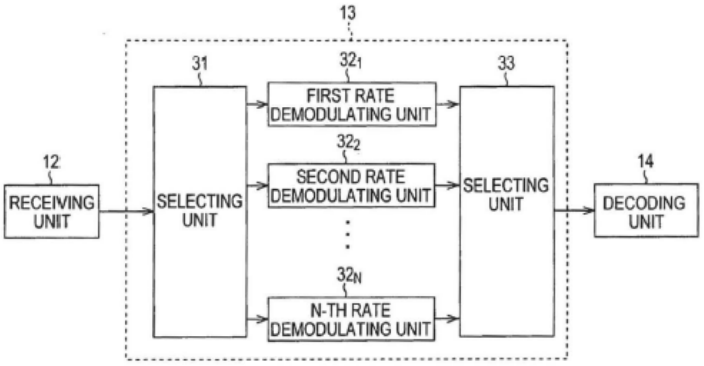


FIG. 6

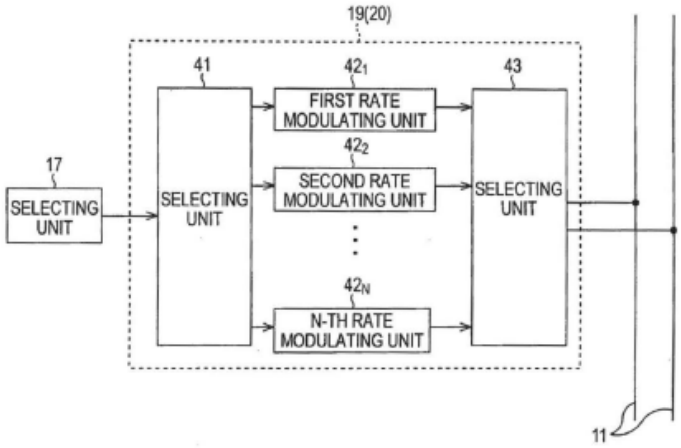



Figure 5 (top) illustrates demodulating units for receiving communications, and Figure 6 (bottom) illustrates modulating units for sending communications in an active mode. *Id.* ¶¶ 24, 25.

Communications may be sent in a passive mode using load modulation units, which are similar in configuration to the modulating units. *Id.* ¶¶ 69, 70, 93. A centralized control unit controls selecting units to select the demodulating unit, modulating unit, or load modulator to use. *Id.* ¶¶ 70, 76, 80, 88. Petitioner contends that "[b]y using multiple modulating and demodulating units operating at different rates, Takayama's NFC communication apparatus can accommodate using already-existing and future NFC protocols." Pet. 45 (citing Ex. 1005 ¶¶ 3–8, 55, 95; Ex. 1003 ¶ 95).

### *E. Comparison of Claimed Subject Matter and Prior Art*

#### *1. Obviousness over Piikivi and IBM*

Petitioner challenges claims 1, 3, 11, 12, 14, and 22 as unpatentable under 35 U.S.C. § 103(a) over Piikivi and IBM. Pet. 28–43. The drawing at

page 24 of Petitioner's Reply, reproduced below, illustrates most clearly how Petitioner proposes, in relevant part, to effect the combination of teachings.

**IBM's Teaching:**

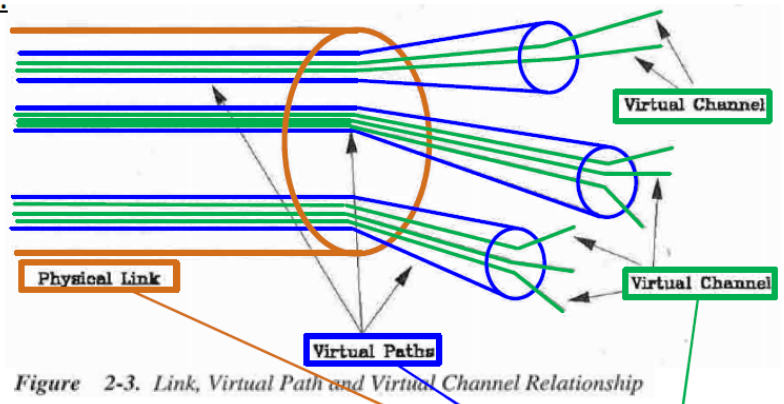
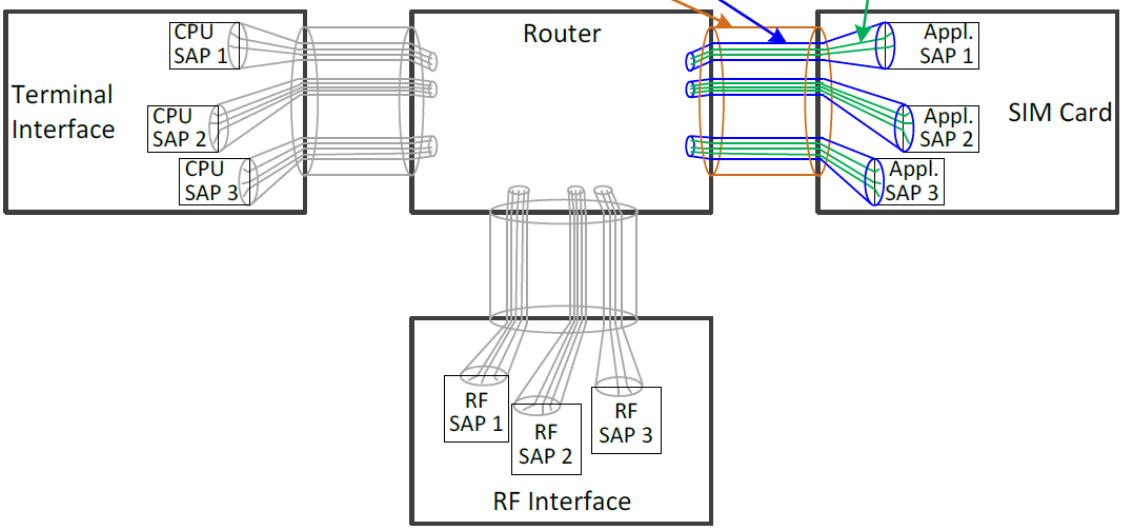



*Figure 2-3. Link, Virtual Path and Virtual Channel Relationship*

**Piikivi in view of IBM's Teaching:**




Petitioner's drawing, reproduced above, includes two parts: the top part of the drawing duplicates Figure 2-3 of IBM, with color added to highlight the physical links, virtual paths, and virtual channels taught by IBM; and the bottom part applies that structure to a schematic version of Piikivi's Figure 4. In the lower portion of the drawing, the "Terminal Interface" corresponds to "Terminal Interface" 32 of Figure 4; the "Router" corresponds to "Card access module and router" 33a of Figure 4; the "SIM

Card" corresponds to "Contact smart card" 34 of Figure 4; and the "RF Interface" corresponds to "Modulator/demodulator" 33b of Figure 4.[6] *See* Reply 23–24 (citing Ex. 1024 ¶ 111; Ex. 1007, 50, 56–57, 62). As the drawing shows, Petitioner proposes a combination in which connections are implemented between the router and applications on the terminal interface, RF interface, and smart card, with each virtual path connected to an application's SAP, and with each application SAP able to use multiple virtual channels. *Id.* at 23.

A portion of Petitioner's drawing on page 25 of the Reply is reproduced below.

| $Link_{in}$ | $VPI_{in}$ | $VCI_{in}$ | $Link_{out}$ | $VPI_{out}$ | $VCI_{out}$ |
|---|---|---|---|---|---|
| SIM Card | Appl. SAP 1 | $Ch_{in}$ 1 | Term. Interface | CPU SAP 1 | $Ch_{out}$ 1 |
| SIM Card | Appl. SAP 1 | $Ch_{in}$ 2 | NFC Interface | RF SAP 1 | $Ch_{out}$ 1 |
| SIM Card | Appl. SAP 2 | $Ch_{in}$ 1 | NFC Interface | RF SAP 1 | $Ch_{out}$ 2 |

The portion of Petitioner's drawing reproduced above provides an illustration of a "routing table" that Petitioner contends would have been obvious to one of skill in the art in light of the combined teachings of Piikivi and IBM. *Id.* at 25. The table specifies parameters for both the inbound and outbound virtual paths under three circumstances. The first row corresponds to an inbound path from the smart card using virtual channel "1" of a virtual path that originates at "Appl. SAP 1," through the router, to an outbound path to the terminal interface using virtual channel "1" of a virtual path that terminates at "CPU SAP 1." The second row corresponds to an inbound path from the smart card using virtual channel "2" of the virtual path that

[6] As Petitioner notes, Patent Owner "does not dispute that Piikivi's RF interface can operate as an NFC interface." Reply 23 n.11 (citing Pet. 14–15, 28–31; Ex. 2003 ¶ 96; Ex. 1024 ¶ 117).

originates at "Appl. SAP 1," through the router, to an outbound path to the NFC (RF) interface using virtual channel "1" of a virtual path that terminates at "CPU SAP 1." The third row corresponds to an inbound path from the smart card using virtual channel "1" of a virtual path that originates at "Appl. SAP 2," through the router, to an outbound path to the NFC (RF) interface using virtual channel "2" of the virtual path that terminates at "CPU SAP 1." *Id.*[7]

Mindful that Petitioner bears the burden of proving a proposition of unpatentability, we determine that there are multiple deficiencies with Petitioner's showing with respect to the proposed combination as related to specifically recited claim limitations. *See* 35 U.S.C. § 316(e); 35 U.S.C. § 312(a) (requiring the petition to identify "in writing and with particularity . . . the grounds on which the challenge to each claim is based"); *see also* 37 C.F.R. § 42.104(b) (requiring "a statement of the precise relief request"). Because we find that even the combination, if effected in the manner proposed by Petitioner, does not meet all limitations recited in the challenged claims, we do not reach the issue of whether Petitioner articulates sufficient reasoning with rational underpinning to effect the combination. *See* Pet. 21–28; PO Resp. 21–47.

First, we agree with Patent Owner that Petitioner insufficiently shows that the combination it proposes teaches or suggests "using the routing channel number as an index to select the destination point to which the

[7] Although we rely on illustrations of Petitioner's proposed combination as set forth in the Reply because they are more clear, we find those illustrations consistent with the position taken by Petitioner in the Petition. *See* Pet. 24–27.

controller subsequently sends the data." PO Resp. 59–61. This limitation is recited in both independent claims 1 and 12 in the context of searching for a destination point of the data in the routing table. Ex. 1001, col. 19, ll. 6–9, col. 20, ll. 40–43.

In articulating how it draws a correspondence between elements recited in the claims and entries of its proposed routing table, Petitioner makes the following identifications: (1) the recited "routing channel number" corresponds to the channel identifier in the inbound VCI allocated to a first data path defined by the card access module and router; (2) the recited "source point" corresponds to "an identifier of the SAP associated with a smart card application on the contact smart card . . . in the inbound 'VPI'; and (3) the recited "destination point" corresponds to "an identifier of an SAP associated with software . . . in the outbound VPI." Pet. 36. With these correspondences, we agree with Patent Owner that the channel identifier in the inbound VCI cannot function as an "index to select the destination point" as the claims require because there is no unique association of the outbound VPI with the inbound VCI.[8] PO Resp. 59. This is evident from the table provided in the Reply, and reproduced above, in

[8] Although we agree with Petitioner, as explained above in Section II.C.3, that a construction of "routing table" does not require a "*one-to-one* correspondence between the routing channel number and each corresponding routing parameter," *see* PO Resp. 57 (emphasis added), the nature of an "index" nevertheless requires a unique association of the index with what it indexes. That is, an "index to select the destination point" must uniquely identify the selected destination point, even if the same destination point can be selected by multiple indexes. A "one-to-one" correspondence would additionally require that each destination point be selected only by a single index.

which the same $VCI_{in}$ value of "$Ch_{in}$ 1" is associated with different values of $VPI_{out}$, namely "CPU SAP 1" in the first row and "RF SAP 1" in the third row.

As Patent Owner explains, "VCI alone is not sufficient as an index as used in the '419 patent, because the ATM switch cannot identify the 'new VPI and VCI values and the onward routing information' based solely on the VCI." *Id.* at 61 (citing Ex. 2003 ¶¶ 161–64). Petitioner responds that "[t]he Claims only require the channel number be used an as index to select the destination point—not that other information cannot also be used." Reply 27. Although Patent Owner acknowledges that "IBM discloses that the *VPI/VCI* values together can be used as an index into an ATM routing table," PO Resp. 59, Petitioner's argument is not persuasive because it is inconsistent with the nature of an "index." As Patent Owner contends, "since Petitioner asserts that the inbound VPI corresponds to the claimed 'identifier of the source point,' i.e., 'routing parameter,' Petitioner does not, and also cannot, map the combination of the inbound VPI and VCI to the claimed 'routing channel number.'" *Id.* at 61.

Petitioner also contends that "even under [Patent Owner's] improper interpretation, it would have been an obvious implementation choice to use unique channel numbers as discussed in §V.B [of the Reply], such that the destination point is selected only with the channel number." Reply 27–28 (citing Ex. 1024 ¶ 123). We do not consider this argument because it goes beyond the scope of argument made in the Petition. *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) ("It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify 'with particularity' the

'evidence that supports the grounds for the challenge to each claim' [as required by 35 U.S.C. § 312(a)(3)].").

Second, we agree with Patent Owner that Petitioner insufficiently shows that the combination it proposes teaches or suggests "a frame having a header field comprising the routing channel number." PO Resp. 58–59. This limitation is recited in independent claim 1 in the context of encapsulated data sent by the source point to the controller, and recited similarly in independent claim 12 in the context of encapsulated data received by the controller from the source point. Ex. 1001, col. 19, ll. 1–3, col. 20, ll. 38–40. As explained above in Section II.C.2., the broadest reasonable construction of "header field" excludes the recited "routing parameters" saved in the "routing table." As Patent Owner contends, "under Petitioner's interpretation, IBM discloses the header of each ATM cell includes the routing parameter (the inbound VPI) saved in the routing table," contrary to our adopted construction. PO Resp. 59.

Petitioner responds that, even under this construction, "it would have been an obvious implementation choice to include the VPI as part of the transmission, but separate from the header (*e.g.*, the tail of the packet)." Reply 27 (citing Ex. 1024 ¶¶ 121–22). We do not consider this argument because it goes beyond the scope of argument made in the Petition. *Intelligent Bio-Systems*, 821 F.3d at 1369. Nevertheless, we observe that even Petitioner's alternative "implementation choice" would defeat the objective of the '419 patent to avoid overloaded data streams that increase data transmission time, require large buffers, and require high processing capacity. *See* Ex. 1001, col. 3, ll. 50–60.

Third, we agree with Patent Owner that Petitioner insufficiently shows that the combination it proposes teaches or suggests "saving in a routing table the routing channel number and routing parameters comprising at least one identifier of the source point and one identifier of the destination point," as recited in independent claims 1 and 12. PO Resp. 53–58; Ex. 1001, col. 18, ll. 64–67, col. 20, ll. 34–37. As Patent Owner contends, "Petitioner's newly devised ATM routing table itself reflects the mismatch between the information required by the header row of the table and the values populated in the table and, thus, cannot have been obvious to one of ordinary skill in the art." PO Resp. 56. In particular, the headers of Petitioner's table require VPIs, i.e., virtual *path* identifiers, while the entries in the table are SAP IDs, i.e., service access *point* identifiers. *Id.*

Petitioner acknowledges the distinction, but responds that the "beginning and end" of the paths identified by VPIs "identify 'points' (*i.e.*, SAPs in endpoints." Reply 23 (citing Pet. 23–27, Ex. 1024 ¶¶ 111–12; PO Resp. 53–54; Dec. 15). This position is consistent with the Petition's argument that "[t]he claimed source and destination points and routing channel number stored in the routing table are disclosed by the VPI for the 'inbound' and 'outbound' connections *(which correspond to the SAPs of the sending and receiving endpoints)* and the VCI for the 'inbound' connection, respectively." Pet. 2 (citing Ex. 1007, 59–60, 62, 283) (emphasis added). But merely acknowledging that the virtual paths disclosed by IBM have endpoints does not explain sufficiently how the IBM protocol can operably be integrated with the Piikivi structure. *See* Ex. 2003 ¶¶ 145–158.

For the foregoing reasons, we conclude that Petitioner has not demonstrated, by a preponderance of the evidence, that independent claims 1

and 12 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Piikivi and IBM. Because challenged dependent claims 3, 11, 14, and 22 incorporate the limitations of the independent claims, we also conclude that Petitioner has not demonstrated, by a preponderance of the evidence, that those claims are unpatentable under 35 U.S.C. § 103(a).

*2. Obviousness over Piikivi, Takayama, and IBM*

Petitioner challenges claims 1, 3, 7, 11, 12, 14, 18, and 22 as unpatentable under 35 U.S.C. § 103(a) over Piikivi, Takayama, and IBM. Pet. 49–59. Petitioner additionally applies Takayama in these challenges "[t]o the extent [Patent Owner] might argue that further disclosure beyond 'Piikivi' is required for the 'NFC' or 'portable device' limitations as recited [in the preambles of claims 1 and 12] in the analysis provided above . . . (to which the reader is referred for all other support)." *Id.* at 49.

Because our analysis finds deficiencies in the challenge over the combination of Piikivi and IBM beyond those for which Petitioner additionally relies on Takayama, we reach the same conclusion for this challenge. Although Petitioner challenges additional claims (i.e., claims 7 and 18), those claims depend from claim 1 or claim 12, and the challenge suffers from the same deficiencies.

We conclude that Petitioner has not demonstrated, by a preponderance of the evidence, that claims 1, 3, 7, 11, 12, 14, 18, and 22 are unpatentable under 35 U.S.C. § 103(a) over Piikivi, Takayama, and IBM.

## III. ORDER

It is

ORDERED that, based on a preponderance of the evidence, claims 1, 3, 7, 11, 12, 14, 18, and 22 of U.S. Patent No. 7,905,419 B2 have not been shown to be unpatentable; and

FURTHER ORDERED that, because this is 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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