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Paper No. 8
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHENZHEN HUIDING TECHNOLOGY CO., LTD.,
Petitioner,

v.

SYNAPTICS INCORPORATED,
Patent Owner.

Case IPR2015-01739
Patent 8,558,811 B2

Before JAMESON LEE, BART A. GERSTENBLITH, and CHARLES J. BOUDREAU, *Administrative Patent Judges*.

LEE, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

On August 17, 2015, Petitioner filed a Petition (Paper 2, "Pet.") to institute an *inter partes* review of claims 1–25 of U.S. Patent No. 8,558,811 B2 (Ex. 1001, "the '811 patent"). On November 23, 2015, Patent Owner filed a Preliminary Response (Paper 6, "Prelim. Resp.").

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a):

> THRESHOLD.—The Director may not authorize an inter partes review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

Having considered both the Petition and the Preliminary Response, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of each of claims 1–25 of the '811 patent. Accordingly, we institute an *inter partes* review of claims 1–25.

B. Related Matters

The parties indicate that the '811 patent is at issue in *Synaptics Inc. v. Goodix Technology Inc.*, No. 5:15-cv-01742 (N.D. Cal.), and *In the Matter of Certain Touchscreen Controllers and Products Containing the Same*, Inv. No. 337-TA-957 (ITC). Papers 2, 5.

C. The ’811 Patent

The ’811 patent describes that position sensors are commonly used as input devices for computers, personal digital assistants, media players, video game players, consumer electronics, wireless phones, payphones, point-of-sale terminals, automatic teller machines, kiosks, and the like. Ex. 1001, 1:22–26. The ’811 patent also describes that a common type of sensor used in such applications is the touchpad, and that a user operates such a sensor by moving a finger, stylus, or other stimulus near a sensing region of the sensor. *Id.* at 1:26–31. The ’811 patent further describes that such stimulus creates a capacitive, inductive, or other electrical effect upon a carrier signal applied to the sensing region that can be detected and correlated to the position of the stimulus. *Id.* at 1:31–35.

The ’811 patent explains that in recent years, significant attention has been paid by engineers to reducing the effects of noise generated by display screens, power sources, radio frequency interference, and other sources outside of the sensor. *Id.* at 1:44–48. It is stated: “Accordingly, it is desirable to provide systems and methods for quickly, effectively and efficiently detecting a position-based attribute of an object in the presence of noise.” *Id.* at 1:51–53.

The ’811 patent is directed to methods and devices for detecting a position-based attribute of a finger, stylus, or other object with a touchpad or other sensor having a touch-sensitive region that includes a plurality of electrodes. Ex. 1001, Abstr. Specifically, modulation signals are produced as a function of ***distinct digital codes*** and applied to a number of electrodes to obtain a resultant signal that is affected by the position of the object. *Id.*

The resultant signal is demodulated by use of the ***distinct digital codes*** to discriminate electrical effects produced by the object. *Id.* The position of the object is determined from the electrical effects. *Id.*

Of all the challenged claims, claims 1, 12, and 16 are independent. Claim 1 is directed to a controller for a capacitive position sensor. Claim 12 is directed to a method of capacitive sensing. Claim 16 is directed to a touch screen. Claims 1, 12, and 16 are reproduced below:

> 1. A controller for a capacitive position sensor, the controller comprising:
>
> drive circuitry configured to simultaneously transmit a first signal with a first transmitter electrode and a second signal with a second transmitter electrode, wherein the first and second signals are ***distinct signals based on distinct digital codes***; and
>
> receiver circuitry configured to receive resultant signals with a plurality of receiver electrodes proximate to and capacitively coupled with the first transmitter electrode and the second transmitter electrode; wherein the controller is configured to ***adjust a frequency of the first and second signals based on observed noise in the resultant signals***.
>
> 12. A method of capacitively sensing, the method comprising:
>
> simultaneously transmitting a first signal with a first transmitter electrode and a second signal with a second transmitter electrode, wherein the first and second signals are ***distinct signals based on distinct digital codes***;
>
> receiving resultant signals with a plurality of receiver electrodes proximate to and capacitively coupled with the first transmitter electrode and the second transmitter electrode; and

adjusting a frequency of the first and second signals based on observed noise in the resultant signals.

16. A touch screen comprising:

a plurality of transmitter electrodes;

a plurality of receiver electrodes; and

a controller coupled to the plurality of transmitter electrodes and the plurality of receiver electrodes, the controller configured to:

simultaneously transmit a first signal with a first transmitter electrode of the plurality of transmitter electrodes and a second signal with a second transmitter electrode of the plurality of transmitter electrodes, wherein the first and second signals are ***distinct signals based on distinct digital codes***;

receive resultant signals with a plurality of receiver electrodes proximate to and capacitively coupled with the first transmitter electrode and the second transmitter electrode; and

adjust a frequency of the first and second signals based on observed noise in the resultant signals.

Id. at 13:40–53, 14:25–37, 14:47–64 (emphases added).

As is evident from the above-quoted text, claims 1, 12, and 16 are essentially the same with respect to the underlying operations and functions that are recited. Claim 1 provides the context of a controller for sensing. Claim 12 provides the context of a method for sensing. And claim 16 provides the context of a touch screen having a controller. All of them require simultaneous transmission of first and second signals from first and second transmitter electrodes, respectively, based on distinct digital codes,

and adjusting a frequency of the first and second signals based on observed noise in resultant signals received from receiver electrodes.

D. Evidence Relied Upon

Petitioner relies on the following references:

Reference		Date	Exhibit
Smith	Joshua Reynolds Smith, *Electric Field Imaging* (Ph.D. thesis, Massachusetts Institute of Technology)	Dec. 31, 1999[1]	Ex. 1004
Mulligan	U.S. Pub. No. 2004/0119701 A1	June 24, 2004	Ex. 1005
Chen	Qingxin Chen, Elvoni S. Sousa, and Sabbarayan Pasupathy, *Multicarrier CDMA with Adaptive Frequency Hopping for Mobile Radio Systems*, IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS, vol. 14, no. 9 1852–58 (December 1996)	Dec. 1996	Ex. 1009
Dietz	U.S. Patent No. 6,498,590 B1	Dec. 24, 2002	Ex. 1010
Gerpheide	U.S. Patent No. 5,565,658	Oct. 15, 1996	Ex. 1011
Jaeger	U.S. Patent No. 7,084,860 B1	Aug. 1, 2006	Ex. 1013

[1] Petitioner asserts that Smith was published in 1999. Pet. 13; Ex. 1003 ¶¶ 72–78. The MIT Libraries index information offered by Petitioner for Smith indicates the "Publisher" as Massachusetts Institute of Technology and the "Date Issued" as 1999. Ex. 1003, App. C. On this record, we regard December 31, 1999, as the publication date of Smith.

Petitioner also relies on the Declaration of Joshua R. Smith, Ph.D. Ex. 1003.

E. The Asserted Grounds

Petitioner asserts the following grounds of unpatentability:

References	Basis	Claims Challenged
Smith, Mulligan, and Chen	§ 103(a)	1–6, 8–19, and 21–25
Smith, Mulligan, Chen, and Jaeger	§ 103(a)	7 and 16–25
Dietz and Gerpheide	§ 103(a)	1–6, 8–19, and 21–25
Dietz, Gerpheide, and Jaeger	§ 103(a)	7 and 20

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1275–79 (Fed. Cir. 2015); *cert. granted sub nom. Cuozzo Speed Techs. LLC v. Lee*, 72016 WL 205946 (U.S. Jan. 15, 2016) (No. 15-446). Even under the rule of broadest reasonable interpretation, claim terms also are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Claims are not interpreted in a vacuum but are a part of and are read in light of the specification. *See Slimfold Mfg. Co. v. Kinkead Indus., Inc.*, 810 F.2d 1113, 1116 (Fed. Cir. 1987). Although it is improper to read a limitation from the specification into the claims, *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993), the claims still must be read in view of the specification of which they are a part. *See Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1347 (Fed. Cir. 2004).

If a feature is not necessary to give meaning to what the inventor means by a claim term, it would be "extraneous" and should not be read into the claim. *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 950 (Fed. Cir. 1993); *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988). If the applicants for patent desire to be their own lexicographer, the purported definition must be set forth in either the specification or prosecution history. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). Such a definition must be set forth with reasonable clarity, deliberateness, and precision. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998); *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Only terms which are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

"distinct digital codes"

Each of independent claims 1, 12, and 16 recites the term "distinct digital codes." Ex. 1001, 13:46, 14:31, 14:58. Petitioner urges that no

special construction is necessary and that the broadest reasonable construction for this term is its plain and ordinary meaning—digital codes that are different from one another or each other. Pet. 12. Patent Owner does not offer a construction for this term. On this record, we construe the term "distinct digital codes" as ***digital codes that are different from one another***.

"mathematically independent"

Claim 4 depends from claim 1 and additionally recites: "wherein the distinct digital codes are mathematically independent." Ex. 1001, 14:1–2. Petitioner identifies (Pet. 12–13) the following portion of the Specification:

> The term "substantially orthogonal" in the context of the distinct digital codes is intended to convey that the distinct codes need not be perfectly orthogonal from each other in the mathematical sense, so long as the distinct codes are able to produce meaningful independent results.

Ex. 1001, 5:63–67. On that basis, Petitioner contends that the term "mathematically independent" means substantially orthogonal. Pet. 13. The logic is lacking. The above-quoted text appears to map "substantially orthogonal" to "meaningful independent results," and not just to "independent results." Similarly, "orthogonal" appears to be mapped to "independent results." More importantly, the quoted text indicates that "perfectly orthogonal" is a "mathematical" characteristic. On this record, we construe "mathematically independent" as ***orthogonal***.

B. Alleged Obviousness of Claims 1–6, 8–19, and 21–25 over Smith, Mulligan, and Chen

We have reviewed the Petition and the Preliminary Response, together with the evidence presented therein. Patent Owner has not presented substantive arguments to counter those presented by Petitioner. We determine that Petitioner has shown a reasonable likelihood that it would prevail in establishing unpatentability of claims 1–6, 8–19, and 21–25 as obvious over Smith, Mulligan, and Chen.

Smith

Smith is a doctoral thesis titled "Electric Field Imaging." Ex. 1004, 2. It introduces "Electric Field Imaging," as a new physical channel and inference framework for machine perception of human action. *Id.* at 2, 9. Smith states: "This thesis presents a solution to the inverse problem of inferring geometrical information about the configuration and motion of the human body from electric field measurements." *Id.*

Figure 1–11 of Smith is reproduced below:

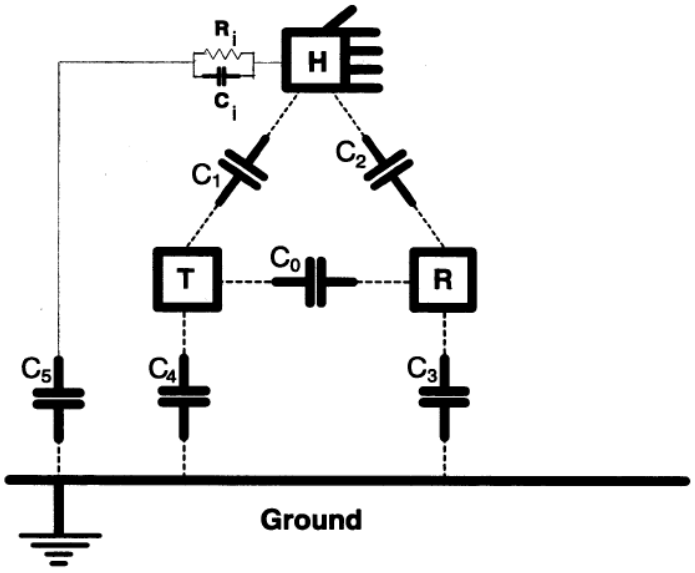

Figure 1-11: Lumped circuit model of Electric Field Sensing

Ex. 1004, 20. Figure 1–11 illustrates a lumped circuit model of electric field sensing. *Id.* at 17. In Figure 1–11, "H" represents a user's hand or finger, "T" represents a transmit electrode, and "R" represents a receiver electrode. *Id.* at 17–21. Smith describes that in all sensing modes, a low frequency signal is applied to the transmitter electrode. *Id.* at 17.

Smith explains:

> *Shunt mode* measurements are most important for this thesis. In the shunt mode regime, C0, C1, and C2 are of the same order of magnitude. As the hand approaches the transmitter and receiver, C1 increases and C0 decreases, leading to a drop in received current: displacement current that had been flowing to the receiver is shunted by the hand to ground (hence the term shunt mode). We measure a baseline received current when the hand is at infinity, and then subtract later readings from this baseline.

Id. at 21. Smith describes that multiple such capacitive sensors can be used in an electrode array. *Id.* at 49, 126. Figure 8–1 of Smith illustrates an embodiment with four transmitter electrodes and one receiver electrode. *Id.* at 130. However, Smith also indicates that two receiver electrodes may be used for the same embodiment. *Id.* at 129. Smith states that its principles "could be applied in virtually any sensing or measurement system in which the quantity being sensed is modulated by a carrier." *Id.* at 125.

Smith describes the use of a microcontroller to control various operations of the sensor. *Id.* at 29, 33, 49–50. With regard to the microcontroller, Smith states: "Not only does it manage communications and handle analog-to-digital conversion, which is common in so-called embedded data acquisition systems, but it also controls the modulation and demodulation operations at the finest scale, which allows these to be adjusted very precisely in software." *Id.* at 50. Smith describes that transmission and demodulation operations are "driven by the microcontroller." *Id.* Smith discloses, specifically, use of chip PIC 16C71 as the microcontroller. *Id.* at 36, 45, 50, 129, Fig. 8–2.

Smith also applies radio techniques to the context of sensing. *Id.* at 125. It describes use of "code division multiplexing" (CDMA) and "Direct Sequence Spread Spectrum" (DSSS) techniques. *Id.* at 125, 127. With DSSS, a pseudorandom carrier signal, usually generated by a maximum length Linear Feedback Shift Register (LFSR), modulates the signal to be transmitted, and with CDMA, the same physical channel can be shared among multiple users by selection of different coded waveforms. *Id.* at 127. Smith further describes that in the ideal case, the transmitted signals should

be orthogonal to one another, so that channels do not interfere. *Id.*

Mulligan

Mulligan discloses a touch-sensing system for detecting the position of a touch on a touch-sensitive surface. Ex. 1005, Abstr. The system includes two capacitive sensing layers, separated by insulating material, where each layer consists of substantially parallel conducting elements. *Id.* The conducting elements of the two layers are substantially orthogonal to each other. *Id.* The conducting elements in each layer are a plurality of capacitive touch-sensitive sensor bars arranged substantially parallel to each other. *Id.* ¶¶ 26, 27. A control circuit may be included to provide an excitation signal to both sets of conducting elements, to receive sensing signals generated by sensor elements when a touch on the surface occurs, and to determine a position of the touch based on the position of the affected bars in each layer. *Id.* at Abstr. Mulligan describes that the excitation of the sensing elements may be "simultaneous or sequential." *Id.* ¶ 34.

Chen

Chen is directed to radio communication and is titled "Multicarrier CDMA with Adaptive Frequency Hopping for Mobile Radio Systems." Ex. 1009. It proposes a modified multicarrier direct-sequence code-division multiple-access (DS-CDMA) system. *Id.* at Abstr. Chen states: "Instead of transmitting data substreams uniformly through subchannels, data substreams hop over subchannels with the hopping patterns *adaptively adjusted* to the channel fading characteristics." *Id.* (emphasis added). Chen further states: "Rather than transmitting one data substream over each subchannel, data substreams can hop to any of the subchannels depending on

the state of the fading process in a subchannel." *Id.* at 2:23–26. Chen notes that by exploiting channel-state information, the modified system outperforms conventional systems. *Id.* at 2:50–53. Chen explains that a reason for the better performance is that the modified system achieves effective reduction in multiple-access interference (MAI). *Id.* at 12:49–53.

Level of Ordinary Skill in the Art

With regard to the level of ordinary skill in the art, we determine that no express finding is necessary, on this record, and that the level of ordinary skill in the art is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

1. Claim 16

Our discussion focuses on representative claim 16, which is directed to a touch screen. Hereinafter, we address certain exemplary elements of claim 16.

Claim 16 recites a touch screen. Although Smith does not specifically describe that its position sensor is for use in a touch screen, we are sufficiently persuaded by Petitioner that it would have been obvious to one with ordinary skill in the art to apply Smith's principles of capacitive touch sensing, described as "Electric Field Sensing," to a touch screen based on capacitive sensing such as that disclosed by Mulligan. Pet. 22–23. Smith's Electric Field Imaging is described as a new physical channel and inference framework for "machine perception of human action." Ex. 1004, 2, 9. Smith even states: "This thesis presents a solution to the inverse problem of inferring geometrical information about the configuration and motion of the

human body from electric field measurements." *Id.* at Abstr. Also, Smith's Figure 1–11, reproduced above, specifically illustrates machine detection of the position of a human hand.

Claim 16 recites a plurality of receiver electrodes. As we explained above, although Smith's Figure 8–1 illustrates only one receiver electrode, Smith indicates that two receiver electrodes may be used for the same embodiment. *Id.* at 129. And Smith describes that multiple such capacitive sensors can be used in an electrode array. *Id.* at 49, 126.

Claim 16 requires simultaneously transmitting a first signal with a first transmitter electrode and a second signal with a second transmitter electrode. Dr. Smith testifies that Smith describes simultaneously transmitting multiple different maximum length codes generated by LFSRs through corresponding transmitter electrodes. Ex. 1003 ¶ 113. Also, Mulligan expressly states that the excitation of the sensing elements may be "simultaneous or sequential." Ex. 1005 ¶ 34.

Claim 16 requires that the first and second signals are distinct signals based on distinct digital codes. As discussed above, Smith describes applying CDMA to permit sharing of the same channel by selection and use of "different coded waveforms." Ex. 1004, 127. Petitioner also relies on the testimony of Dr. Smith, who opines that Smith teaches generation of distinct signals based on distinct digital codes. Ex. 1003 ¶ 111. Dr. Smith also has, as noted above, testified that Smith describes simultaneously transmitting multiple different maximum length codes generated by LFSRs through corresponding transmitter electrodes. *Id.* ¶ 113.

Claim 16 requires the controller to adjust a frequency of the first and second signals based on observed noise in the resultant signal. Petitioner relies on the combined teachings of Smith and Chen to satisfy this limitation. Petitioner notes that Smith describes that in CDMA systems, there is a problem in decreased signal-to-noise ratio (SNR) due to interference between channels. Pet. 28 (citing Ex. 1004, 127). Petitioner notes that Chen (Ex. 1009, 1:38–56, 11:59–12:56) describes adjusting the carrier frequencies of distinct CDMA signals, by use of an "adaptive" frequency hopping scheme "based on channel fading characteristics," to achieve a reduction in MAI. *Id.* (citing Ex. 1009, 1:38–56, 11:59–12:56). Dr. Smith testifies that "[c]hannel fading characteristics basically represent a noise profile of the channel that can degrade the channel conditions." Ex. 1003 ¶ 89. Petitioner further explains that Chen discloses a "Channel Quality Estimator" process that evaluates the received signal to assess the quality of the signal and sends signal quality information to an "FH Pattern Generator" process to generate, adaptively, a frequency hopped signal for the next mobile transmission. Pet. 28–29 (citing Ex. 1009, 3:35–5:10).

Thus, Smith identifies a potential issue with signal-to-noise ratio in CDMA, and Chen discloses a specific scheme to improve the signal-to-noise ratio. We determine that Petitioner has sufficiently articulated reasoning with rational underpinnings to combine the teachings of Smith and Chen to account for claim 16's recitation of adjusting a frequency of the first and second signals based on observed noise in the resultant signal.

2. Claims 1–6, 8–15, 17–19, and 21–25

The above discussion has application to independent claims 1 and 12

as well. We also are sufficiently persuaded by Petitioner's arguments and evidence for dependent claims 2, 3, 5, 6, 8–15, 17–19, and 21–25.

Claim 4 depends from claim 1 and further recites: "wherein the distinct digital codes are mathematically independent." Ex. 1001, 14:1–2. We have rejected Petitioner's proposed construction of "mathematically independent," and construed "mathematically independent" as ***orthogonal***. In that regard, Smith states: "In the ideal case, the transmitted waveforms would be orthogonal to one another, so that channels do not interfere." Ex. 1004, 127. That portion of Smith is cited by Petitioner. Pet. 23. Thus, Petitioner has made a sufficient showing with respect to claim 4 as well.

C. Alleged Obviousness of Claims 7 and 16–25 over Smith, Mulligan, Chen, and Jaeger

We note that for this alleged ground of obviousness, as directed to claims 16, 18, 21, and 23–25, Petitioner appears not to be adding the teachings of Jaeger to the combined teachings of Smith, Mulligan, and Chen as discussed above for these same claims. Instead, for claims 16, 18, 21, and 23–25, Jaeger appears to be applied as an alternative to, or substitute for, Mulligan. For claims 17 and 19, both of which depend directly from claim 16, the addition of Jaeger does not add to, or change, what Petitioner already argued about these two claims based on the combined teachings of Smith, Mulligan, and Chen. For claims 7, 20, and 22, Petitioner relies on Jaeger as disclosing the limitations added by claims 7 and 20 relative to their base independent claims. Patent Owner has not presented substantive arguments to counter those presented by Petitioner. We are persuaded that Petitioner has shown a reasonable likelihood that it would prevail in establishing

unpatentability of claims 7 and 16–25 over Smith, Mulligan, Chen, and Jaeger.

Jaeger

Jaeger relates to an apparatus and method employing Spread Spectrum (SS) signaling techniques for operation of one or more touch-input devices in a touch-sensing system. Ex. 1013, 1:14–16. Jaeger regards its system as consisting of two parts: (1) a touch-input device, such as a stylus, a pen, or a mouse, and (2) a touch sensing system, such as a touch screen, a writing panel, or a modified mouse pad. *Id.* at 1:22–26. Specifically, the touch screen can track the position of the touch-input devices on the touch screen. *Id.* at 1:26–31.

In Jaeger, the SS signal structure can be based on DSSS signals, which are generated by encoding information with Direct Sequence (DS) codes such as CDMA code. *Id.* at 4:30–47. Jaeger's system and method allow a plurality of devices to be operated simultaneously within one channel. *Id.* at 4:47–49. To accomplish that objective, Jaeger assigns each device a unique CDMA code, which is orthogonal to the CDMA codes used by other devices. *Id.* at 4:49–51.

1. Claims 16–19, 21, and 23–25

For essentially the same reasons why we are sufficiently persuaded that it would have been obvious to one with ordinary skill in the art to apply Smith's "Electric Field Sensing" principles to a touch screen such as that disclosed by Mulligan, we are sufficiently persuaded of the same with respect to the touch screen disclosed in Jaeger. In particular, both Smith and Jaeger disclose use of capacitive sensors. Ex. 1003 ¶ 180. Smith and Jaeger

share additional similarities. In particular, as discussed above, they both use spread spectrum communication techniques for touch-sensing. *Id.* ¶¶ 179, 180. Chen's adaptive frequency adjusting technique also is consistent with Jaeger's use of spread spectrum communication signaling. Thus, for at least the same reasons as discussed above in the context of obviousness over Smith, Mulligan, and Chen, Petitioner has made a sufficient showing with respect to these same claims over Smith, Mulligan, Chen, and Jaeger.

2. Claims 7, 20, and 22

Claim 7 depends from claim 1 and claim 20 depends from claim 16. The limitations of claims 1 and 16 already have been accounted for, above, by the combined teachings of Smith, Mulligan, and Chen, and also by the combined teachings of Smith, Chen, and Jaeger. Each of claims 7 and 20 additionally recites, relative to its base independent claim: "wherein the distinct digital codes comprise one of Walsh-Hadamard codes, Gold codes, Kasami Codes, and Barker Codes." Ex. 1001, 14:12–14, 15:8–10. Petitioner has adequately accounted for this limitation. For instance, Petitioner states:

> In this regard, Jaeger specifically teaches that the codes listed in Claim 7 are well-known codes: "DSSS techniques employ a pseudo-random (PN) code word known to the transmitter and to the receiver to spread the data . . . There are numerous well-known codes, including M-sequences, Barker codes, Walsh codes, Gold codes and Kasami codes." Jaeger at 4:40–5:9. Smith Decla. at 183.

Pet. 40. Additionally, Dr. Smith testifies that the Walsh-Hadamard codes also represent a standard code generation scheme in CDMA, and that selecting one of these well-known codes represents a common design choice

to one with ordinary skill in the art. Ex. 1003 ¶ 182. Dr. Smith further testifies that in Smith there is even disclosure of a need for use of "Fast Hadamard Transform-type codes." *Id.*

Claim 22 depends from claim 20 and further recites: "wherein the controller further comprises a code generation module configured to generate the distinct digital codes." Petitioner adequately accounts for that element on pages 38 and 42 of the Petition.

D. Alleged Obviousness of Claims 1–6, 8–19, and 21–25 over Dietz and Gerpheide

For reasons discussed below, we decline to consider institution of *inter partes* review of claims 1–6, 8–19, and 21–25 on this alleged ground of unpatentability.

The rules governing the conduct of an *inter partes* review proceeding were designed to promote fairness and efficiency. For instance, 37 C.F.R. § 42.24(a)(1)(i) sets sixty pages as the limit for a petition for *inter partes* review, and 37 C.F.R. § 42.6(a)(3) prohibits incorporating arguments by reference from one document into another. Parties who violate these rules risk having their arguments not considered by the Board. In this case, although the Petition technically is only sixty pages in length, Petitioner effectively used incorporation by reference to obtain for itself seven additional pages from Exhibit 1017, and three additional pages from paragraphs 31–35 of the Declaration of Dr. Smith (Ex. 1003). Those ten pages contain essential material insofar as the Petition is concerned, and should have been included in the Petition, not incorporated from a separate documents.

Exhibit 1017, titled "Claim Element Numbering for Claims 1–25 of U.S. Patent No. 8,558,811 B2," breaks each of the twenty-five claims into multiple elements and provides a claim element number for each identified element of each claim. Within the Petition itself, Petitioner merely refers to the claim element numbers when analyzing each claim, rather than stating expressly what claim limitation is being discussed. The Petition is unintelligible without the seven-paged exhibit.

Paragraphs 31–35 of Dr. Smith's Declaration present and discuss the level of ordinary skill in the art. In the Petition, Petitioner merely states "[s]ee Smith Decl. at 31–35[,]" in the section labeled "**C. LEVEL OF ORDINARY SKILL IN THE ART**." Pet. 12.

We do not approve of Petitioner's approach. Such practice should be discouraged. *See* 37 C.F.R. § 42.6(a)(3); 37 C.F.R. § 42.24(a)(1)(i). These ten pages, if added to the Petition, would cause the Petition to exceed the page limit by ten pages. If ten pages are taken from the Petition, starting from the end, Petitioner would not have a complete analysis under this alleged ground of obviousness, even for one claim.[2]

Institution of *inter partes* review is discretionary. *See* 35 U.S.C. § 314(a); 37 C.F.R. § 42.108(a). In the circumstances of this case, particularly where we already are instituting review of each challenged claim on at least one other ground of unpatentability, we exercise our discretion and do not consider pages 51–60 of the Petition because doing so

[2] We find without merit, however, Patent Owner's contention that Petitioner incorporated by reference other parts of the Declaration of Dr. Smith.

would effectively result in a petition greater than sixty pages in length. Accordingly, we do not institute review of claims 1–6, 8–19, and 21–25 as obvious over Dietz and Gerpheide.[3]

E. Alleged Obviousness of Claims 7 and 20 over Dietz, Gerpheide, and Jaeger

For the same reasons discussed above with regard to the alleged obviousness of claims 1–6, 8–19, and 21–25 over Dietz and Gerpheide, we exercise our discretion not to institute review of claims 7 and 20 as obvious over Dietz, Gerpheide, and Jaeger.

III. CONCLUSION

Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that each of claims 1–25 of the '811 patent is unpatentable. We have not made a final determination with respect to the patentability of any claim.

[3] Patent Owner's Preliminary Response is directed to arguing that we should deny institution of all grounds raised in the Petition because Petitioner violated the sixty-page limit for petitions by improperly incorporating the claim element numbering from Exhibit 1017 and the discussion of the level of skill in the art from Exhibit 1003. Prelim. Resp. 5–15. We find that the more prudent approach is to reduce the Petition by the same number of pages that would have otherwise been required to be included in the Petition, which results in not instituting on several grounds as discussed above, rather than denying the entire Petition outright.

IV. ORDER

Accordingly, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted as to claims 1–25 of the ’811 patent on the following grounds of unpatentability:

1. Claims 1–6, 8–19, and 21–25 under 35 U.S.C. § 103(a) as obvious over Smith, Mulligan, and Chen; and

2. Claims 7 and 16–25 under 35 U.S.C. § 103(a) as obvious over Smith, Mulligan, Chen, and Jaeger;

FURTHER ORDERED that no other ground of unpatentability, with respect to any claim, is instituted for trial; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this Decision.

For PETITIONER:

Bing Ai
John P. Schnurer
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