IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

EIGHT KHZ, LLC, *Plaintiff,* v. META PLATFORMS, INC.; META PLATFORMS TECHNOLOGIES, LLC; AND TWISTED PIXEL GAMES, LLC, *Defendants.*	Civil Action No. 6:22-CV-00575-ADA **JURY TRIAL DEMANDED**

DEFENDANTS' OPENING CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

Plaintiff Eight kHz LLC ("8K") asserts that the Meta defendants infringe nine patents. From these patents, the parties jointly propose constructions for three terms and have identified eighteen other terms for construction. However, nine terms in dispute raise the same or similar issues about whether they should be construed as means-plus-function terms under § 112(f) (they should be) and are indefinite due to lack of sufficient algorithmic structure (they are). Thus, there are effectively ten disputes in total.

Defendants' proposed constructions stay true to the claim language and the asserted patents' specifications as *Phillips* mandates. They are consistent with the meanings that persons of ordinary skill in the art would attribute to disputed terms. And they correctly apply settled precedent dictating that (i) computer-implemented means-plus-function terms be limited to "algorithm[s] for performing [] claimed functions" and (ii) "[i]f the patentee fails to disclose adequate corresponding structure, the claim is indefinite." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1352 (Fed. Cir. 2015). In contrast, 8K's proposed constructions ignore the words of the claims and the specifications' actual disclosures, disregard how a person of ordinary skill in the art would interpret the disputed terms, and rest on fundamental legal errors.

Defendants respectfully ask the Court to adopt their constructions and reject 8K's improper attempts to broaden the scope of its claims.

II. LEGAL STANDARDS

Claim construction is a question of law for the Court. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Claim terms "are generally given their ordinary and customary meaning," which is "the meaning that the term[s] would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005). In construing claim terms, courts look to "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.* at 1314.[1] The specification is "always highly relevant" and "[u]sually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* at 1315.

III. JOINT PROPOSED CONSTRUCTIONS

The parties have agreed to jointly propose the following claim constructions:

Claim(s)	Term	Joint Proposed Constructions
'090 pat., cls. 8, 14, 15; '196 pat., cls. 1, 4, 15, 19; '628 pat., cls. 9, 12; '509 pat., cls. 9, 10, 17; '737 pat., cls. 1, 14, 15, 16; '316 pat., cls. 9, 10, 14; '836 pat., cls. 8 and 10[2]	"sound localization point" / "SLP"	Plain and ordinary meaning, but if the Court prefers to construe this term, then "location where a listener localizes sound"
'836 pat., cls. 8 and 10	"near-field distance"	"distance less than one meter"
'836 pat., cls. 8 and 10	"far-field distance"	"distance greater than or equal to one meter"

[1] Unless otherwise noted, internal citations and quotations are omitted and emphasis is added.

[2] The asserted patents—U.S. Patent Nos. 9,226,090 (the "'090 patent"), 9,282,196 (the "'196 patent"), 9,674,628 (the "'628 patent"), 10,917,737 (the "'737 patent"), 10,368,179 (the "'179 patent"), 10,448,184 (the "'184 patent"), 10,798,509 (the "'509 patent"), 11,173,316 ("the '316 patent"), and 11,290,836 (the "'836 patent")—are exhibits to 8K's complaint. *See* Dkt. 1-2 to 1-10. Overviews of the asserted patents are provided in the Declaration of Dr. Kyla McMullen ("McMullen Decl.") ¶¶ 52-138, filed concurrently.

IV. CONSTRUCTION OF DISPUTED CLAIM TERMS

A. "electronic call," "electronic phone call," and "telephone call"

Claim(s)	Term	Defendants' Proposed Construction	8K's Proposed Construction
'090 pat., cls. 8, 14	"electronic call"	Plain and ordinary meaning, which is "call between at least two parties"	This term should be given its ordinary and customary meaning, but if the Court requires a construction, "voice communication over an electronic network between at least two parties"
'090 pat., cls. 15	"electronic phone call"	Plain and ordinary meaning, which is "call between at least two parties using at least one phone"	This term should be given its ordinary and customary meaning, but if the Court requires a construction, "voice communication over an electronic network between at least two parties"
'628 pat., cls. 9, 12, 16	"telephone call"	Plain and ordinary meaning, which is "call between at least two parties using at least one phone"	This term should be given its ordinary and customary meaning, but if the Court requires a construction, "voice communication over an electronic network between at least two parties"

8K identified the "electronic call," "electronic phone call," and "telephone call" terms for construction. Defendants did not identify these terms for construction because the plain language of these terms would be easily understood by a person of ordinary skill based on the claim language alone. The parties now agree that the plain meaning of "call" requires at least two parties, but they dispute how these terms should otherwise be construed. Defendants' proposed constructions should be adopted because a person of ordinary skill would understand that both a "phone call" and "telephone call" require a phone. *See O2 Micro Int'l, Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008) ("'[P]lain and ordinary meaning' may be inadequate when … reliance on a term's 'ordinary' meaning does not resolve the parties' dispute."). Beyond this,

no further construction of the term "call" is required because a person of ordinary skill in the art would readily know what a "call" is. *Id.* at 1362 ("[D]istrict courts are not (and should not be) required to construe *every* limitation present in a patent's asserted claims.") (italics in original).

Based on the claims themselves, a person of ordinary skill would have known that both an "electronic phone call" and a "telephone call" are different than an "electronic call" because the "phone call" terms specify at least one phone whereas the "electronic call" terms do not. "[C]laims are interpreted with an eye toward giving effect to all terms in the claim," and the '090 patent recites "electronic call" in claims 8 and 14, but "electronic *phone* call" in claim 15. *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (collecting cases); *see also Bd. of Regents of the Univ. of Texas Sys. v. BENQ Am. Corp.*, 533 F.3d 1362, 1371 (Fed. Cir. 2008) ("Different claim terms are presumed to have different meanings.") (citing *CAE Screenplates Inc. v. Heinrich Fiedler GmbH & Co. KG*, 224 F.3d 1308, 1317 (Fed. Cir. 2000)). The specifications of the '090 and '628 patents also recognize this distinction, repeatedly describing telephone calls as calls between at least two parties made using at least one phone. *See, e.g.*, '090 patent at 5:32-44, 11:52-55, 12:9-11, 18:48-50, 33:56-60, 38:57-59; '628 patent at 5:37-50, 11:63-66, 12:20-22, 19:1-3, 34:37-41, 39:42-45; *see also Phillips*, 415 F.3d at 1321 ("[T]he specification is the single best guide to the meaning of a disputed term."). The specifications also disclose that devices other than "a smartphone" and "a telephone," e.g., a computer or a smartwatch, can be used to make an "electronic call," further demonstrating that "electronic phone calls" and "telephone calls" are not coextensive with "electronic calls" (as 8K contends). '090 patent at 9:4-11 ("electronic call can be commenced with … a smartphone, a computer (such as a tablet computer, a notebook computer, a desktop computer, etc.), a handheld portable electronic device (HPED), a wearable electronic device (such as electronic glasses, an electronic watch, an electronic earpiece, headphones, etc.),

a telephone, a computer system, and an electronic system."); '628 patent at 9:11-18 (same).

In contrast to Defendants' proposed constructions, 8K's proposed constructions ignore the actual language used to define the scope of the asserted claims. In fact, 8K invites legal error by trying to expand that scope by proposing the same construction for all three terms despite the difference the intrinsic record shows exists between an "electronic phone call"/"telephone call" and an "electronic call." *See Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 972 (Fed. Cir. 1999) ("[D]ifferent words or phrases used in separate claims are presumed to indicate that the claims have different meanings and scope."); *Absolute Software, Inc. v. World Comput. Sec. Corp.*, No. 1:09-cv-142, 2014 WL 496879, at *11 (W.D. Tex. Feb. 6, 2014) (recognizing and applying the "presumption that two independent claims have different scope when different words or phrases are used in those claims"). 8K's proposed constructions also invite confusion and create unnecessary ambiguity about the meaning of "call." 8K's proposed constructions replace the term "call" with terms that do not appear in the claims or in the specification—"voice communication" and "electronic network"—and the unexplained requirement that the former travel "over" the latter. These claim language alterations are unnecessary and unsupported by the intrinsic record.

For these reasons, Defendants' proposed constructions for "electronic call," "electronic telephone call," and "telephone call," which "stay[] true to the claim language and most naturally align[] with the patent's description[s]," should be adopted. *Renishaw PLC v. Marposs Societa' Per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998).

B. "away from and proximate to"

Claim(s)	Term	Defendants' Proposed Construction	8K's Proposed Construction
'090 pat., cls. 8, 14, 15;	"away from and proximate to"	Indefinite	This term should be given its ordinary and customary meaning, but if the Court requires a construction "a distance from"

’196 pat., cls. 1, 4, 15, 19			

The term “away from and proximate to” is indefinite because it “fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). The ’090 and ’196 patents’ claims and specifications provide no guidelines or objective boundaries that would allow a person of ordinary skill in the art to determine what is (and is not) covered by the claims reciting the “away from and proximate to” term. *See* McMullen Decl. ¶¶ 148-49; *see also id.* ¶¶ 5, 140-62.

The claims use “away from and proximate to” to describe a location of a “sound localization point” or “SLP” relative to a user. *See* ’090 patent, cl. 8 (“the sound localization point in empty space is located away from and proximate to the first individual”), cl. 14 (“move the sound localization point from a first point in empty space that is away from and proximate to the first individual to a second point in empty space that is away from and proximate to the first individual”). But the claims do not offer any guidance to explain how an SLP could be both “away from” an individual and yet “proximate to” that individual at the same time—two seemingly contradictory conditions occurring in parallel.

The specifications of the ’090 and ’196 patents likewise fail to explain what “away from and proximate to” means. For example, it is unclear and unexplained how far “away from” an individual an SLP may be while still being “proximate to” the individual. The specifications restate the “away from and proximate to” language in a few instances, but never explain at what distance a location would be both “away from and proximate to” someone or how to determine that distance. McMullen Decl. ¶¶ 151-57. The specifications also fail to explain when a location would *not* be “away from and proximate to” someone. *Id.* ¶ 150.

At best, the ’090 and ’196 patents’ specifications identify a handful of distances that refer

to being either "away from" or "proximate to" someone (not both), but these passages never disclose boundaries or guidelines for when an SLP is "away from" *and* "proximate to" someone. *See, e.g.*, '090 patent at 4:39-40 (describing "proximate to" as being "in a same room"), 4:40-41 (describing "far away from" as "several kilometers away"), 5:25-28 (describing "away from" as "being two feet away … to being thirty feet away"), 15:15-16 (describing "proximate to" as "between one and three feet from a face and/or mouth"), 17:47-50 (describing "twenty (20) feet" as "away from the listener").[3] Because there is no clear boundary defining when a distance meets both requirements, the specifications' limited examples do not inform "with reasonable certainty" what "away from and proximate to" means. *Nautilus*, 572 U.S. at 901; *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1363-64 (Fed. Cir. 2018) (finding "minimal redundancy" indefinite because "[t]he specification contain[ed] no point of comparison for skilled artisans to determine an objective boundary of 'minimal,'" used inconsistent terminology, and was "highly subjective"); *see also* McMullen Decl. ¶¶ 141, 147-58 (explaining that skilled artisans could not discern from the '090 and '196 patents the bounds of "away from and proximate to" recited in the claims).

In addition to lacking objective boundaries, "away from and proximate to" is internally inconsistent. "Away" means "not close in time or space," and its synonyms include "distant," "far," and "remote." Ex. A, MERRIAM WEBSTER'S INTERMEDIATE THESAURUS (2004), at 55; Ex. B, WEBSTER'S 9TH NEW COLLEGIATE DICTIONARY (1987), at 120.[4] "Proximate," in contrast, means "very near" or "close." Ex. B at 949; *see also Phillips*, 415 F.3d at 1322 ("Dictionaries … are often useful to assist in understanding the commonly understood meaning of words and have

[3] Because the '090 and '196 patents share the same specification, only the '090 patent is cited above. The '196 patent includes the same disclosures.

[4] Unless otherwise noted, lettered exhibits are attached to the Declaration of Gabrielle A. LaHatte ("LaHatte Decl."), filed concurrently.

been used both by our court and the Supreme Court in claim interpretation."). These contradictory meanings render unreasonably uncertain the claims requiring SLPs to be positioned at, or moved to, locations that are both "away from ***and*** proximate to" a person. *See Maxell, Ltd. v. Amperex Tech. Ltd.*, No. 6:21-cv-00347, 2022 WL 16858824, *20-21 (W.D. Tex. Nov. 10, 2022) (finding claim indefinite because it recited an element that was "simultaneously [] optional and required," which was "a contradiction on its face"); *cf. Synchronoss Techs., Inc. v. Dropbox, Inc.*, 987 F.3d 1358, 1366-67 (Fed. Cir. 2021) (holding indefinite claims that required an impossible result).

8K argues that this term should be afforded its plain and ordinary meaning, which 8K asserts is synonymous with "a distance from." First, for reasons discussed immediately above, the term "away from and proximate to" does not have an ordinary and customary meaning. Instead, it combines two phrases with inconsistent or even opposite meanings. *See also* McMullen Decl. ¶¶ 148, 159. Second, 8K's alternative proposed construction—"a distance from"—improperly tries to both rewrite the claims and render superfluous their express recitations of "away" and "proximate to." Everything that is not touching is "a distance from" something else. So 8K's construction is just as vague and boundless as the claims' use of "away from." Moreover, 8K's proposed construction further reads "proximate to" out of the claims entirely. This is legal error. "[C]ourts may not redraft claims, whether to make them operable or to sustain their validity." *Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1339 (Fed. Cir. 2011) (citing *Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004)); *Power Mosfet Techs., LLC v. Siemens AG*, 378 F.3d 1396, 1410 (Fed. Cir. 2004) ("[I]nterpretations that render some portion of the claim language superfluous are disfavored."). Additionally, 8K's proposed construction suffers from the same flaws found in the claim language—neither "a distance from" nor "away from and proximate to" informs with reasonable certainty what it means to be both "a distance

from" or "away from" and yet also "proximate to" an individual.

For these reasons, the term "away from and proximate to" as used in claims 8, 14, and 15 of the '090 patent and claims 1, 4, 15, and 19 of the '196 patent is indefinite.

C. "a binaural voice"

Claim(s)	Term	Defendants' Proposed Construction	8K's Proposed Construction
'090 pat., cl. 15	"binaural voice"	"vocal sound waves as they would be received by each of the left and right ears of a listener, which a listener can localize"	This term should be given its ordinary and customary meaning, but if the Court requires a construction "a binaural sound"

The Court should adopt Defendants' proposed construction of "binaural voice" because it will aid the jury in understanding this technical term. *See O2 Micro*, 521 F.3d at 1362 ("[C]laim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement."); *Funai Elec. Co., Ltd. v. Daewoo Elecs. Corp.*, 616 F.3d 1357, 1366 (Fed. Cir. 2010) (affirming construction because it "aid[ed] the court and the jury in understanding the term as it is used in the claimed invention"). "Binaural voice" is not a common term and is likely to confuse a jury without further explanation, and Defendants' proposed construction is the meaning a person of ordinary skill in the art would attribute to this term, including in view of the '090 patent's disclosures.

The dictionary definition of "binaural" is "pertaining to both ears," and when used in the context of sound, this term is routinely used to describe sounds that mimic how a listener would ordinarily hear sounds with his or her ears, as if it comes from its original direction. *See* Ex. C, WILEY ELECTRICAL AND ELECTRONICS ENGINEERING DICTIONARY (2004) at 71 (defining "binaural" as "[p]ertaining to both ears, as in binaural sound" and defining "binaural sound" as

"[s]ound which is recorded placing two microphones approximately where the ears of a listener would be if present" that produces "the effect of being at the recording location"); Ex. D, MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS (6th ed. 2003) at 237 (defining "binaural" as "[p]ertaining to sound that reaches the listener over two paths, to give the effect of auditory perspective," and providing that binaural sound "result[s] from a reproduction system which has two channels … so that a listener hears sounds coming from their original directions (with reference to the separated microphones used in recording the original sounds)"); McMullen Decl. ¶¶ 173-75; *see also Phillips*, 415 F.3d at 1322 (recognizing utility of dictionary definitions in claim construction).

Consistent with these definitions, the '090 patent explains how "binaural cues [] enable sound localization":

> In order to determine a location of sound, humans process and compare monaural cues from each ear. This comparison reveals difference cues or binaural cues that enable sound localization. These cues include interaural time differences (ITDs), interaural level differences (ILDs), and head-related transfer functions (HRTFs). Cues thus result from changes to the sound wave from an interaction with the human anatomy.

'090 patent at 2:53-59. The patent also depicts and further describes how sound waves reaching a listener's left and right ears result in such "binaural cues." *See id.* at Figs. 13A-15, 27:16-21 ("FIG. 13C shows the sound source 1300 that provides a sound wave 1350 to a listener 1320. The listener 1320 is directly in front of the sound wave 1350, but a head of the listener is rotated ninety degrees (90°) to the right such that the sound wave 1350 arrives at the left ear first and later in time at the right ear."), 27:22-26 ("FIG. 13D shows a graph 1360 of the sound wave arriving at the left ear and subsequently at the right ear. The sound wave at the right ear is offset by an amount of time required for the sound wave to travel to the right ear.").

The '090 patent then applies this basic understanding of binaural cues and sound

localization to allegedly provide improved audio during calls by mimicking how humans localize sound with "binaural voice." *See, e.g.*, '090 patent at Abstract ("During an electronic call between two individuals, a sound localization point simulates a location in empty space where an origin of a voice of one individual occurs for the other individual."), 2:42-46 (summarizing the alleged invention as a "computer system [that] positions a voice of one person at a sound localization point that is proximate to the other person"); *id.* at cl. 15 ("position[ing] a sound localization point[5] of the binaural voice to a location that is away from and proximate to the first person, wherein the sound localization point represents an origin of the binaural voice of the second person to the first person"). Thus, the patent describes capturing a person's voice as it would be received by a listener's ears, i.e. capturing a binaural voice, so the listener can localize that voice. *See id.* at 18:48-67 (explaining that if the "voice of [a] second individual" is "captured at the location of the second individual" and "processed as captured binaural sound," a first individual can "localize[] the sound" so "the voice of the second individual originates in the [first individual's] office as if the second individual were present"), 30:64-31:1 ("The wearable electronic device 1815 of the speaker 1820 captures binaural sound, and the HPED 1805 provides this sound to the listener such that the listener localizes a voice of the speaker 1820 to a sound localization point 1850.").[6]

Accordingly, a person of ordinary skill would have understood that claim 15 of the '090 patent is directed to capturing a voice (vocal sound waves) of a person on a phone call, and would have known that those vocal sound waves should be captured as they would be received

[5] The parties agree that SLP should be given its plain and ordinary meaning, but if the Court prefers to construe this term, then "location where a listener localizes sound." *See* Section III.

[6] *See also* '090 patent at 3:5-29 ("binaural sound" can be captured by using "spaced microphones on a real human head (e.g., placing microphones in eardrum or at the ear of the human head)"), 5:32-36 ("Both the listener and the [listener's] mother wear electronic devices in or near their ears that … record binaural sound of the speaker"), 10:51-53, 11:52-55.

by each of the left and right ears of a listener, because that is what will allow the listener to localize the voice to an SLP. *See* McMullen Decl. ¶¶ 166-68.

8K contends that "binaural voice" should be given its purported plain and ordinary meaning, but then proposes a construction for that so-called plain meaning that merely repeats "binaural," which is not within the understanding of a jury. *See Funai Elec.*, 616 F.3d at 1366 (affirming construction because it helped "the jury in understanding [a] term"); *LBS Innovations, LLC v. Apple Inc.*, No. 2:19-cv-00119, 2020 WL 1929423, at *18 (E.D. Tex. Apr. 20, 2020) (construing the term "name field," even though it had "a plain meaning to one of skill in the art," because construction "would help the jury"). 8K's proposed construction thus fails to help the jury understand this technical term. Additionally, 8K substitutes "sound" for "voice," improperly broadening the scope of the claim to encompass any "binaural *sound*," e.g., a bird chirping or rain. The claim, however, requires capturing the "binaural *voice*" of a person on an electronic phone call. *See Enzo Biochem Inc. v. Applera Corp.*, 780 F.3d 1149, 1154 (Fed. Cir. 2015) (refusing to "read out" a claim term because that "would [] impermissibly broaden the claim").

For these reasons, 8K's requests should be rejected, and Defendants' proposed construction for "binaural voice" should be adopted.

D. "head related transfer functions" / "HRTFs"

Claim(s)	Term	Defendants' Proposed Construction	8K's Proposed Construction
'628 pat., cls. 9, 12, 16; '737 pat., cls. 1, 14, 15, 16; '179 pat., cl. 14; '184 pat., cl. 14; '836 pat., cls. 8, 10	"head related transfer functions" / "HRTFs"	Plain and ordinary meaning, which is "functions of frequency and three spatial variables—distance, azimuth angle, and elevation angle—that represent how sound reaches the ears of a listener"	This term should be given its ordinary and customary meaning, but if the Court requires a construction, "functions that describe transformation of sound that modify the spectrum and time of arrival at a listener's ears"

As 8K's patents explain, "head related transfer functions" (or "HRTFs") "are functions of frequency and three spatial variables." '628 patent at 28:62-63; '737 patent at 39:46-47 ("A HRTF is a function of frequency (f) and three spatial variables"); '836 patent at 28:52-53 (same). The "three spatial variables" the patents describe are distance, azimuth angle, and elevation angle ("r," "θ," and "ϕ" in a "spherical coordinate system"). '737 patent at 39:46-58; '836 patent at 28:52-64.[7] Additionally, 8K's patents explain that head-related transfer functions represent how sound reaches the ears of a listener:

> The complex and unique shape of the human pinnae transforms sound waves through spectral modifications as the sound waves enter the ear. These spectral modifications are a function of the position of the source of sound with respect to the ears along with the physical shape of the pinnae that together cause a unique set of modifications to the sound called head related transfer functions or HRTFs. A unique pair of HRTFs (one for the left ear and one for the right ear) can be modeled or measured for each position of the source of sound with respect to a listener.

'737 patent at 39:36-45; '836 patent at 28:42-51 (same); *see also* '628 patent at 28:54-60 ("The ears, face, and head of people alter the amplitude and phase of sound waves entering each ear. Changes to these waves from the anatomy of the human body are calculated as head-related transfer functions (HRTFs)."). This is consistent with how a person of ordinary skill in the art would understand the "head-related transfer functions" term. *See* McMullen Decl. ¶¶ 180-85; Ex. C at 335 (defining "head-related transfer function": "Its abbreviation is HRTF. A transfer function

[7] *See also* '737 patent at 39:46-58 ("r is the radial distance from a recording point where the sound is recorded or a distance from a listening point where the sound is heard to an origination or generation point of the sound"; "θ (theta) is the azimuth angle between a forward-facing user at the recording or listening point and the direction of the origination or generation point of the sound relative to the user"; and "ϕ (phi) is the polar angle, elevation, or elevation angle between a forward-facing user at the recording or listening point and the direction of the origination or generation point of the sound relative to the user"), '836 patent at 28:52-64 (same); '737 patent at 41:7-9 (describing head-related transfer functions in terms of radial distance (r), azimuth angle (θ), and elevation angle (ϕ)), 34:32-35, 39:29-35, 40:56-58, 41:7-25; '836 patent at 28:35-41, 29:43-45, 30:2-11, 30:36-43, 34:5-18 (same); '628 patent at 29:1-3 (same); '179 patent at 21:49-51 ("spherical coordinate system" used for SLP placement); '184 patent at 21:49-51 (same).

that takes into account factors involved in sound reaching the ears of a listener, for sound localization and the determination of the arriving spectrum of sound. Variables such as the dimensions of the ear canal, the exterior part of the ear, head, and torso, and how these modify the spectrum of the sound heard are combined with the azimuth, elevation, range, and frequency of the sound source, the slightly different time at which a sound arrives at each ear, and so on. Each listener has a unique HRTF."). Accordingly, Defendants' proposed construction for "head-related transfer functions" is the meaning a person of ordinary skill in the art would attribute to this term based on the intrinsic and extrinsic record.

8K's "ordinary and customary meaning" argument is belied by the fact that 8K, not Defendants, identified this term for construction. In any event, the Court should reject 8K's proposed construction. That proposal inaccurately cribs from 8K's patents' specifications, omitting key language concerning the spatial variables of distance, azimuth angle, and elevation angle. And it is unclear how 8K contends head-related transfer functions "modify the spectrum and time of arrival at a listener's ears." Head-related transfer functions are auditory functions that capture and represent "how a sound wave changes as it interacts with the torso, head, and pinnae of [a] listener"; they do not, themselves, change the sound wave by modifying "the spectrum" of sound or the "time of arrival at a listener's ears." *See* '836 patent at 2:24-26, 28:42-51; '737 patent at 39:36-45; '628 patent at 28:54-60; *see also* McMullen Decl. ¶¶ 185-86, 189. Thus, 8K's proposed construction is both inaccurate and confusing. McMullen Decl. ¶ 189.

For these reasons, 8K's positions should be rejected, and Defendants' proposed construction for "head related transfer functions" should be adopted.

E. "digital signal processor" / "DSP"

Claim(s)	Term	Defendants' Proposed Construction	8K's Proposed Construction
'836 pat., cls. 8, 10; '179 pat., cl. 14; '184 pat., cl. 14;	"digital signal processor" / "DSP"	"specialized processor with better power performance and efficiency than a general-purpose microprocessor"	This term should be given its ordinary and customary meaning, but if the Court requires a construction "specialized processor or software optimized for transforming an input signal at its output"

The Court should adopt Defendants' proposed construction of "digital signal processor" because it reflects the meaning a person of ordinary skill in the art would have attributed to this term, including the well-understood distinction between digital signal processors and general-purpose microprocessors.

The parties agree that a digital signal processor is a "specialized processor," and the intrinsic record demonstrates that a person of ordinary skill would have understood that digital signal processors and general-purpose processors are different, including because digital signal processors provide better power performance and efficiency.

The claims of the '836 patent distinguish digital signal processors from general processors. Claim 8 recites "one or more processors" but then also recites "wherein the one or more processors include a digital signal processor (DSP)." '836 patent, cl. 8; *c.f. id.*, cl. 1 (reciting only "one or more processors"). Further, the '836 patent specification distinguishes digital signal processors and general-purpose microprocessors, explaining that "a DSP has a better power performance or power efficiency compared to a general-purpose microprocessor." *Id.* at 39:10-14, 35:33-36 ("Server 1204 includes … a processor or processing unit 1252, and a DSP 1254"), Fig. 12 (depicting "processing unit 1252" and "DSP 1254" as distinct components); *see also id.* at 4:26-27, 27:34-35, 28:28-29, 39:14-27. The '179 and '184 patents likewise distinguish digital signal

processors from general-purpose processors. *See* '179 patent at 5:33-34 ("An example embodiment uses a DSP or other processor to filter the binaural sound"), 35:42-45 ("Sound localization system 1728 includes or is in communication with … digital signal processor (DSP)"), Fig. 17 (depicting "sound localization system 1728" and separate "processor 1724").[8] Thus, the intrinsic evidence supports Defendants' proposed construction. *See Phillips*, 415 F.3d at 1321.

The extrinsic evidence also supports finding that "digital signal processors" are "specialized processor[s] with better power performance and efficiency than a general-purpose microprocessor." *See, e.g.*, *Vocalife LLC v. Amazon.com, Inc.*, No. 2:19-cv-00123, 2020 WL 1698779, at *12 (E.D. Tex. Apr. 6, 2020) (digital signal processor "is a specialized processor"); *see also* Ex. E, COMPREHENSIVE DICTIONARY OF ELECTRICAL ENGINEERING (2nd ed. 2005) at 194 (defining "digital signal processor" as a "microprocessor specifically designed for processing digital signals. DSPs are typically well suited to perform multiplications and additions in chain, even in floating point. They are less suitable for managing interrupts and large amounts of memory.").[9]

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[8] Because the '179 and '184 patents are related and share the same specification, only the '179 patent is cited above. The '184 patent includes the same disclosures.

[9] *See* Ex. G, NEWTON'S TELECOM DICTIONARY, (27th ed. 2013) at 396, 426 ("A digital signal processor is a specialized semiconductor device or specialized core in a semiconductor device that processes very efficiently and in real time a stream of digital data that is sampled from analog signals ranging from voice, audio and video and from cellular and wireless to radio and television. As opposed to a general-purpose processor, a DSP is often designed to solve specific processing problems. A DSP architecture focuses on algorithmic efficiency and may use an instruction set that is more or less tailored toward the problem the DSP is solving. General purpose processors, on the other hand, may sacrifice algorithmic efficiency for general-purpose capability and push clock-speed to achieve performance. A DSP typically has much greater mathematical computational abilities than a standard microprocessor."); Ex. H, Tom Thompson, *Digital Signal Processor*, *in* COMPUTERWORLD 66 (Mar. 12, 2001) (defining "digital signal processor" as "a special-purpose programmable microprocessor designed to manipulate in real time a communications stream of large amounts of digital data in order to improve its quality or modify it in specific ways," and providing that "[a] DSP differs markedly from the microprocessor" because "a DSP is built to be a specialist"); Ex. I, DATA & TELECOMMUNICATIONS DICTIONARY

8K's argument that this term does not require construction should be dismissed because that will not help the jury. 8K's alternative proposed construction—"specialized processor or software optimized for transforming an input signal at its output"—should be rejected because it invites confusion. For example, 8K seems to contend that a digital signal processor can be "software" alone, but this flies in the face of the well-understood meaning of a digital signal *processor* (see above), and no intrinsic or extrinsic evidence supports 8K's interpretation. The meaning of 8K's "transforming an input signal at its output" also is unclear and equally lacking in support from intrinsic or extrinsic evidence. While the specifications do mention input signals a handful of times, *see, e.g.*, '836 patent at 30:50-56, 31:4-7, 31:27-55, 37:8-14; '179 patent at 36:14-19, they never discuss input signals in the context of a digital signal processor being "optimized for transforming an input signal," let alone for "transforming an input signal at its output."

For these reasons, the Court should reject 8K's positions and adopt Defendants' proposed construction.

F. "wearable electronic device" / "WED"

Claim(s)	Term	Defendants' Proposed Construction	8K's Proposed Construction
'090 pat., cl. 15; '196 pat., cls. 15, 19; '628 pat., cls. 9, 12, 16; '179 pat., cl. 14; '184 pat., cl. 14; '509 pat., cls. 9, 10, 17; '737 pat., cls. 1, 14, 15, 16; '316 pat., cls. 9, 10, 14	"wearable electronic device" / "WED"	No construction is necessary	This term should be given its ordinary and customary meaning, but if the Court requires a construction, "portable wireless electronic device that is worn on or attached to a person"

8K identified the "wearable electronic device" term for construction, but no construction

(1999) at 213 (defining "digital signal processor" as "[a] specialized computer processor designed to work with digitized waveforms, often audio and video samples, in order to speed execution and provide more complex operations").

is necessary because the plain language of "wearable electronic device" (and its acronym, "WED") would have been easily understood by a person of ordinary skill based on the claim language alone. A person of ordinary skill would immediately understand that a "wearable electronic device" means just what it says, an electronic device that is wearable by a user. Moreover, this term is expressly defined in multiple 8K patents in exactly this way. *See* '090 patent at 41:48-49 ("As used herein, a 'wearable electronic device' is a portable electronic device that is worn on or attached to a person."); '196 patent at 41:48-49 (same); '628 patent at 42:36-38 (same). Consequently, the Court should accept the parties' apparently joint position that no construction is necessary.

8K seemingly recognizes that the language of the claims is clear on its face, but then inexplicably seeks to inject "wireless" into the plain meaning of "wearable electronic device." Wearable electronic devices can be wired or wireless (e.g., headphones can connect to a music player with wires or by Bluetooth), and nothing in 8K's patents justifies importing this additional requirement. Therefore, the Court should reject 8K's unsupported construction and find that no construction is necessary.

G. "handheld portable electronic device" / "HPED"

Claim(s)	Term	Defendants' Proposed Construction	8K's Proposed Construction
'196 pat., cls. 1, 4; '737 pat., cl. 1	"handheld portable electronic device" / "HPED"	No construction is necessary	This term should be given its ordinary and customary meaning, but if the Court requires a construction "portable wireless electronic device that is held in the hand of a person"

The parties' positions on the "handheld portable electronic device" term raise the same issues as the "wearable electronic device" term. 8K identified the "handheld portable electronic

device" term for construction. Defendants did not because the plain language of "handheld portable electronic device" (and its acronym, "HPED") would have been easily understood by a person of ordinary skill based on the claim language alone. A skilled artisan would immediately understand what a "handheld portable electronic device" is. And here again, 8K injects "wireless" where it does not belong. Myriad handheld portable electronic devices, for example a portable external speaker connected to a smartphone by a wire, are not "wireless." Nothing justifies importing that requirement into "handheld portable electronic device."

H. The Means Plus Function Terms

Asserted claims from the '090, '196, '628, '737, '836, '179, and '184 patents include terms that recite "a processor that executes [] instructions" to perform various functions, "processing … with a processor" to perform various functions, "processor(s) that process" to perform various functions, "processing, by a processor" to perform various functions, "processing" so various functions are performed, "processing, by a digital signal processor (DSP)" to perform various functions, and "a digital signal processor (DSP) that processes" to perform various functions. *See* '090 patent, cl. 15; '196 patent, cls. 15, 19; '628 patent, cls. 9, 12, 16; '737 patent, cls. 1, 14; '836 patent, cl. 8; '179 patent, cl. 14; '184 patent, cl. 14. These terms should be construed as means-plus-function terms under § 112(f). And when they are, the claims in which they are recited should be declared invalid for indefiniteness because the patents' specifications fail to disclose sufficient structure for performing the recited functions.

1. The "Processor" Terms

Claim(s)	Term	Defendants' Proposed Construction	8K's Proposed Construction
'090 pat., cl. 15	"a processor that executes the instructions to adjust the binaural voice of the second person during the electronic	Means-plus-function term governed by § 112(f). **Function**: "adjust the binaural voice of the second person	No construction is necessary.

	phone call in order to position a sound localization point of the binaural voice to a location that is away from and proximate to the first person, wherein the sound localization point represents an origin of the binaural voice of the second person to the first person"	during the electronic phone call in order to position a sound localization point of the binaural voice to a location that is away from and proximate to the first person, wherein the sound localization point represents an origin of the binaural voice of the second person to the first person" **Structure**: Inadequate structure for performance of the claimed function and thus this term is indefinite.	
'196 pat., cl. 15	"a processor that executes the instructions to receive a command from the person to move the SLP of the voice of the computer program from the first location in empty space to a second location in empty space that is proximate to the first location and away from and proximate to the person, move the SLP of the voice of the computer program in response to the command from the first location in empty space to the second location in empty space, and provide binaural sound to the person through the wearable electronic device during the voice exchange between the computer program and the person such that an origin of the voice of the computer program occurs at the SLP at the second location in empty space that is proximate to the first location and away from and proximate to the person"	Means-plus-function term governed by § 112(f). **Functions**: "receive a command from the person to move the SLP of the voice of the computer program from the first location in empty space to a second location in empty space that is proximate to the first location and away from and proximate to the person, move the SLP of the voice of the computer program in response to the command from the first location in empty space to the second location in empty space, and provide binaural sound to the person through the wearable electronic device during the voice exchange between the computer program and the person such that an origin of the voice of the computer program occurs at the SLP at the second location in empty space that is proximate to the first location and away from and proximate to the person" **Structure**: Inadequate structure for performance of	No construction is necessary.

		the claimed functions and thus this term is indefinite.	
’196 pat., cl. 19	“The electronic system of claim 15, wherein the processor further executes the instructions to change attenuation and reverberation of the binaural sound in order to add artificial audial cues of virtual objects near the person, wherein the virtual objects do not actually exist near the person but are perceived to exist by the person from the artificial audial cues”	Means-plus-function term governed by § 112(f). **Function:** “change attenuation and reverberation of the binaural sound in order to add artificial audial cues of virtual objects near the person, wherein the virtual objects do not actually exist near the person but are perceived to exist by the person from the artificial audial cues” **Structure:** Inadequate structure for performance of the claimed function and thus this term is indefinite.	No construction is necessary.
’628 pat., cls. 9, 12	“processing, during the telephone call and with a processor, a voice of the calling party with head related transfer functions (HRTFs) so the voice of the calling party localizes to the called party as binaural sound at a sound localization point (SLP) that is one meter to two meters away from the called party”	Means-plus-function term governed by § 112(f). **Function**: “processing a voice of the calling party with head related transfer functions (HRTFs) so the voice of the calling party localizes to the called party as binaural sound at a sound localization point (SLP) that is one meter to two meters away from the called party” **Structure**: Inadequate structure for performance of the claimed function and thus this term is indefinite.	No construction is necessary.
’628 pat., cl. 16	“A non-transitory computer readable storage medium storing instructions that one or more electronic devices in an electronic system execute as a method during a telephone call between a calling party and a called party, the method comprising: … processing,	Means-plus-function term governed by § 112(f). **Functions**: “processing, during the telephone call, a voice of the calling party with head related transfer functions (HRTFs) so the voice of the calling party localizes to the called party as binaural sound at the image of the calling party	No construction is necessary.

	during the telephone call, a voice of the calling party with head related transfer functions (HRTFs) so the voice of the calling party localizes to the called party as binaural sound at the image of the calling party that appears at least one meter away from the head of the called party; … changing, during the telephone call and in response to the head movements of the called party, the HRTFs processing the voice of the calling party so the voice of the calling party continues to localize to the image of the calling party that appears at least one meter away from the head of the called party as the head of the called party moves and changes head orientations."	that appears at least one meter away from the head of the called party … changing, during the telephone call and in response to the head movements of the called party, the HRTFs processing the voice of the calling party so the voice of the calling party continues to localize to the image of the calling party that appears at least one meter away from the head of the called party as the head of the called party moves and changes head orientations" **Structure**: Inadequate structure for performance of the claimed functions and thus this term is indefinite.	
'737 pat., cls. 1, 14, 15, 16	"processing, by a processor, sound with head-related transfer functions (HRTFs) to generate the binaural sound that externally localizes to the user at the location of the SLP in empty space in the zone above the physical floor" / "a processor that processes sound with head-related transfer functions (HRTFs) so sound externally localizes as binaural sound to the user at the SLP in empty space inside the 3D zone defined by movement of the PED"	Means-plus-function term governed by § 112(f). **Function**: "processing … sound with head-related transfer functions (HRTFs) to generate the binaural sound that externally localizes to the user at the location of the SLP in empty space in the zone above the physical floor" / "processes sound with head-related transfer functions (HRTFs) so sound externally localizes as binaural sound to the user at the SLP in empty space inside the 3D zone defined by movement of the PED" **Structure**: Inadequate	No construction is necessary.

		structure for performance of the claimed function and thus this term is indefinite.	
’836 pat., cls. 8, 10	“one or more processors that process sound for the image to generate binaural sound that has a sound localization point (SLP) with a coordinate location that occurs at a far-field distance located behind the image and along a line-of-sight from the user to the image while the display displays the image to the user at the near-field distance”	Means-plus-function term governed by § 112(f). **Function**: “process sound for the image to generate binaural sound that has a sound localization point (SLP) with a coordinate location that occurs at a far-field distance located behind the image and along a line-of-sight from the user to the image while the display displays the image to the user at the near-field distance” **Structure**: Inadequate structure for performance of the claimed function and thus this term is indefinite.	No construction is necessary.
’836 pat., cls. 8, 10	“a digital signal processor (DSP) that processes the sound for the image with far-field head-related transfer functions (HRTFs) while the electronic device is located at the near-field distance from the head of the user”	Means-plus-function term governed by § 112(f). **Function**: “processes the sound for the image with far-field head-related transfer functions (HRTFs) while the electronic device is located at the near-field distance from the head of the user” **Structure**: Inadequate structure for performance of the claimed function and thus this term is indefinite.	No construction is necessary.
’179 pat., cl. 14; ’184 pat., cl. 14	“processing, by a digital signal processor (DSP), sound with the HRTFs to generate binaural sound that externally localizes to the user at the virtual image in the environment” / “processing, by a digital signal processor (DSP), sound with the HRTFs to generate binaural sound that	Means-plus-function term governed by § 112(f). **Function**: “processing … sound with the HRTFs to generate binaural sound that externally localizes to the user at the virtual image in the environment” / “processing … sound with the HRTFs to generate binaural sound that externally localizes in empty	No construction is necessary.

	externally localizes in empty space from the virtual image in the environment"	space from the virtual image in the environment" **Structure**: Inadequate structure for performance of the claimed function and thus this term is indefinite.	

2. Section 112(f) Applies to the "Processor" Terms

The Federal Circuit has explained that, in determining whether Section 112(f) applies, the "essential inquiry is 'whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.'" *Grecia v. Samsung Elecs. Am. Inc.*, 780 F. App'x 912, 914 (Fed. Cir. 2019) (citing *Williamson*, 792 F.3d at 1348). Where a term lacks the words "means," there is a rebuttable presumption that § 112(f) does not apply, but that presumption is ***not*** a "strong" one. *Williamson*, 792 F.3d at 1349. That presumption is overcome when—as in this case—"the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function." *Diebold Nixdorf, Inc. v. Int'l Trade Comm'n*, 899 F.3d 1291, 1298 (Fed. Cir. 2018). To that end, courts have ruled that "processor" and "computer readable storage medium [with] instructions" terms are means-plus-function terms when (a) the claimed "processor" is "defined only by the function that it performs"; (b) the claimed functions are not basic functions of off-the-shelf general-purpose processors, but are specialized functions requiring special programming; or (c) the claims fail to "describe how the processors interact with each other or with other limitations in the claim to achieve" their functions. *St. Isidore Rsch., LLC v. Comerica Inc.*, No. 2:15-cv-1390, 2016 WL 4988246, at *14 (E.D. Tex. Sept. 19, 2016) (construing term "processor configured to" as a means-plus-function term because the processor was "defined only by the function that it perform[ed]"); *Joao Control & Monitoring Sys., LLC v. Protect Am., Inc.*, No. 1:14-cv-134, 2015 WL 4937464, at *9 (W.D. Tex. Aug. 18, 2015) (construing "processing device" as means-plus-function term);

Ex. F, *WSOU Investments, LLC v. Google LLC*, No. 6:20-cv-00574, Dkt. No. 48 at 5 (W.D. Tex. June 2, 2021) (construing "processor" terms as means-plus-function terms); *Arendi S.A.R.L. v. LG Elecs., Inc.*, No. 1:12-cv-1595, 2019 WL 3891150, at *12 (D. Del. Aug. 19, 2019) ("computer readable medium" term subject to § 112, ¶ 6 because term "d[id] not give a POSA a sufficiently definite indication of the structure (i.e., algorithm) claimed") (cleaned up); *see also Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) ("[T]ypical physical structure that implements software, a computer, cannot be relied upon to provide sufficiently definite structure for a software claim.").

Here, the disputed "Processor" terms must be construed as means-plus-function terms. The "Processor" terms do not recite simple, general purpose computing functions. McMullen Decl. ¶¶ 192, 212, 232, 255, 272, 296, 315; *see also id.* ¶¶ 198, 218, 238, 261, 281, 302, 321. They require the performance of numerous specialized and unique functions such as (i) adjusting the binaural voice of a second person during an electronic phone call in order to position an SLP of the binaural voice to a location that is "away from and proximate to" a first person, (ii) changing attenuation and reverberation of binaural sound to add artificial audial cues of virtual objects near a person, (iii) processing a voice of a calling party with head-related transfer functions so the voice of the calling party localizes to a called party as binaural sound at an SLP that is one meter to two meters away from the called party, (iv) processing sound for an image to generate binaural sound that has an SLP with a coordinate location that occurs at a far-field distance located behind the image and along a line-of-sight from a user to the image while a display displays the image to the user at a near-field distance, and (v) processing sound with head-related transfer functions to generate binaural sound that externally localizes in empty space from a virtual image in an environment. *See id*. ¶¶ 193, 195, 213, 233, 276, 297.

The claims, however, do not recite sufficient structure for performing their recited functions. To the contrary, a person of ordinary skill in the art would know that the few generic structural recitations in the claims—e.g., "processor" or "computer readable storage medium"—cannot perform the claims' recited functions absent specialized programming. *Id.* ¶¶ 192, 198, 212, 218, 231-32, 238, 255, 261, 272, 281, 296, 302, 315, 321; *see also Williamson,* 792 F.3d at 1351 ("[T]he fact that one of skill in the art could program a computer to perform the recited functions cannot create structure where none otherwise is disclosed."); *Soque Holdings (Bermuda) Ltd. v. Keyscan, Inc.,* No. 3:09-cv-2651, 2010 WL 2292316, at *12 (N.D. Cal. June 7, 2010) (finding that "the naked term 'computer' cannot describe sufficient structure when recited directly in the claim limitation"). Because the "Processor" terms fail to recite sufficient structure for performing their recited specialized functions, § 112(f) applies.

8K contends that the "Processor" terms are not means-plus-function terms and require no construction, but 8K fails to recognize and address its patents' functional claiming and lack of requisite structure. *Williamson*, 792 F.3d at 1347 (Section 112(f) allows functional claiming, but "plac[es] specific constraints on how such a limitation is to be construed, namely, by restricting the scope of coverage to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof"). Even if, for example, the terms "processor" or "digital signal processor" connote *some* structure, that is not the test—the test is whether the claims recite "sufficient structure" for their recited functions. *Egenera, Inc. v. Cisco Sys., Inc.*, 972 F.3d 1367, 1374 (Fed. Cir. 2020). Because the asserted claims do not recite such structure, § 112(f) applies.[10]

[10] In "rare circumstances," general recitations of functions such as "processing," "receiving," and "storing"—i.e., functions that "can be achieved by any general purpose computer without special programming"—can avoid application of § 112(f). *In re Katz Interactive Call Processing Pat.*

3. Recited Functions of the "Processor" Terms

Once it is determined that § 112(f) applies, the "court must first identify the claimed function[s]" of the "Processor" terms. *Williamson*, 792 F.3d at 1351. To do so, the Court should simply identify the functions set out in the "Processor" terms' claim language. *Creo Prods., Inc. v. Presstek, Inc.*, 305 F.3d 1337, 1344 (Fed. Cir. 2002) ("The function of a means-plus-function limitation [] must come from the claim language itself."); *JVW Enters., Inc. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1331 (Fed. Cir. 2005). Such functions are set out in the table above, in Section IV.H.1. 8K offers no competing functions, so if the Court agrees the "Processor" terms are means-plus-function terms, then there is no dispute that the functions Defendants identified are the proper functions.

4. The "Processor" Terms Are Indefinite Due To Insufficient Corresponding Structure

After identifying the functions for the "Processor" terms, the Court "must determine what structure, if any, disclosed in the specification[s] corresponds to the claimed function[s]." *Williamson*, 792 F.3d at 1351. And because the claimed functions are computer-implemented and require special programming, the specifications must disclose "algorithm[s] for performing" the functions. *Id*. at 1352; *EON Corp. v. AT & T Mobility LLC*, 785 F.3d at 621 (Fed. Cir. 2015) ("It is well-established that the corresponding structure for a function performed by a software algorithm is the algorithm itself."); *see also Function Media, L.L.C. v. Google, Inc*., 708 F.3d 1310, 1319 (Fed. Cir. 2013) ("Here, in contrast, there is no explanation of ***how*** to transmit. Furthermore, it is well established that proving that a person of ordinary skill could devise some method to

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Litig., 639 F.3d 1303, 1316 (Fed. Cir. 2011); *see also EON Corp. IP Holdings LLC v. AT & T Mobility LLC*, 785 F.3d 616, 621-22 (Fed. Cir. 2015). But this "narrow" exception to the rule requiring the disclosure of algorithms for computer-implemented inventions claimed with functional language applies "only where the claimed function is 'coextensive' with a microprocessor itself." *EON Corp.*, 785 F.3d at 621-22 (citing *Katz*). This is not such a case.

perform the function is not the proper inquiry as to definiteness.”).

The ’090, ’196, ’628, ’737, ’836, ’179, and ’184 patent’s specifications, however, fail to disclose the required algorithms, which renders the “Processor” terms indefinite. *Williamson*, 792 F.3d at 1352; *see also Aristocrat Techs. Australia Pty Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1337-38 (Fed. Cir. 2008) (“[T]he patent does not disclose the required algorithm or algorithms, and a person of ordinary skill in the art would not recognize the patent as disclosing any algorithm at all. Accordingly, the means-plus-function limitations … lacked sufficient disclosure of structure under 35 U.S.C. § 112 ¶ 6 and were therefore indefinite under 35 U.S.C. § 112 ¶ 2.”); *Arendi*, 2019 WL 3891150, at *13 (CRM claim indefinite under § 112(f) because “the specification d[id] not explain ***how***, algorithmically,” the claimed function was performed) (emphasis in original); *Joao Control*, 2015 WL 4937464, at *5-6 (claim indefinite because specification did not disclose structure for “performing the [recited] function”); McMullen Decl. ¶¶ 200-07, 220-27, 240-50, 263-67, 283-92, 304-10, 323-29.

The asserted patents’ specifications do disclose “processors” and “digital signal processors” (or “DSPs”). *See, e.g.*, ’090 patent at 41:20-31; ’737 patent at 28:63-65, 29:28-30; ’836 patent at 4:26-31, 27:34-35, 27:43-44, 39:7-27; ’179 patent at 35:42-46. But the specifications fail to disclose adequate algorithmic structure for the performance of the “Processor” terms’ functions. *See* McMullen Decl. ¶¶ 207, 227, 250, 267, 292, 310, 329; *see also id* ¶¶ 200-06, 220-26, 240-49, 263-66, 283-91, 304-09, 323-28. Rather, the specifications just restate these terms’ recited functions, without describing how those functions might be performed. *Id.* ¶¶ 201, 221, 241, 264, 284, 305, 324; *see also Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1317 (Fed. Cir. 2012) (“[P]urely functional language … is insufficient to provide the required corresponding structure.”). At best, the specifications disclose, in certain instances, some audio

inputs that could be used in sound processing methods, for example, head-related transfer functions, interaural time differences, and interaural level differences. *See, e.g.*, '090 patent at 4:20-29, 19:31-20:22; '836 patent at 28:35-39; '179 patent at 3:15-16. As an initial matter, even 8K does not allege that these inputs provide the requisite algorithms for a specialized processor in means-plus-function claims such as these. And, in any event, disclosing potential inputs to a claimed process does not explain ***how*** those inputs might be used, let alone used to perform the specific recited functions. McMullen Decl. ¶¶ 194, 202, 214, 225, 234, 248, 257, 277, 298, 317; *see also Augme Techs., Inc. v. Yahoo! Inc.*, 755 F.3d 1326, 1338 (Fed. Cir. 2014) (disclosing inputs to and outputs from "code assembler instructions" failed to disclose an algorithm for how a claimed assembly function was performed); *Ibormeith IP, LLC v. Mercedes-Benz USA, LLC*, 732 F.3d 1376, 1382 (Fed. Cir. 2013) (A "list[of] inputs without specifying any single formula or function or algorithm defining the contribution of any of the inputs to a computation" is insufficient). For example, disclosing the use of head-related transfer functions does not describe *how* to process sound as claimed. McMullen Decl. ¶¶ 202-04, 222, 224, 243-47, 265-66, 285-88, 290, 307-08, 326-27.

Because the asserted patents' specifications fail to disclose sufficient algorithmic structure for the "Processor" terms' functions, those terms are indefinite. McMullen Decl. ¶¶ 197, 217, 237, 260, 280, 301, 320; *see also id.* ¶¶ 207, 227, 241, 250, 267, 292, 310, 329. As a result, claim 15 of the '090 patent, claims 15 and 19 of the '196 patent, claims 9, 12, and 16 of the '628 patent, claims 1, 14, 15, and 16 of the '737 patent, claims 8 and 10 of the '836 patent, claim 14 of the '179 patent, and claim 14 of the '184 patent are invalid.

V. CONCLUSION

Defendants respectfully request that the Court adopt their proposed constructions for each disputed term.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on April 12, 2023, a copy of the foregoing was served by electronic mail on all ECF-registered counsel in this action.

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