UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

CIVIL MINUTES – GENERAL

Case No.	LA CV20-06339-JAK-GJS	Date	March 9, 2022
Title	One-E-Way, Inc. v. Apple Inc.		

Present: The Honorable	JOHN A. KRONSTADT, UNITED STATES DISTRICT JUDGE
T. Jackson	Not Reported
Deputy Clerk	Court Reporter / Recorder
Attorneys Present for Plaintiffs:	Attorneys Present for Defendants:
Not Present	Not Present

Proceedings: **(IN CHAMBERS) ORDER REGARDING CLAIM CONSTRUCTION**

I. Introduction

On July 16, 2020, One-E-Way, Inc. ("Plaintiff" or "OEW") brought this action against Apple Inc. ("Defendant" or "Apple"). Complaint (Dkt. 1). On September 15, 2020, Plaintiff filed the Second Amended Complaint ("SAC"), which is the operative one, alleging that Defendant has infringed U.S. Patent Nos. 10,129,627 ("the '627 Patent") and 10,468,047 ("the '047 Patent") (collectively, "the Patents-in-Suit"). Dkt. 22.[1] This Order addresses the parties' claim construction disputes as to certain terms in the Patents-in-Suit.

On November 22, 2021, the parties filed a Joint Claim Construction and Prehearing Statement. Dkt. 63. They then filed their respective opening claim construction briefs and responsive claim construction briefs. Dkts. 65, 66, 70, 71. Based on a review of the filings, it was determined that the issues presented are appropriate for decision without oral argument and the scheduled hearing was taken off the January 24, 2022 calendar, and the matter taken under submission. Dkt. 79. *See* Fed. R. Civ. P. 78; Local Rule 7-15. The disputed claim terms are construed in this Order.

II. Background

A. Patents-in-Suit

The Patents-in-Suit are all titled "Wireless Digital Audio Music System," share a common specification, and claim priority to U.S. Patent App. No. 10/027,391, filed on December 21, 2001, and published as U.S. Patent App. Pub. No. 2003/0118196 ("the '196 Publication"). The '627 Patent issued on November 13, 2018 and the '047 Patent issued on November 5, 2019. The named inventor on each of the Patents-

[1] The parties agreed to dismiss Plaintiff's claim of infringement of U.S. Patent No. 8,131,391 ("the '391 Patent") with prejudice on January 25, 2022. Dkt. 82.

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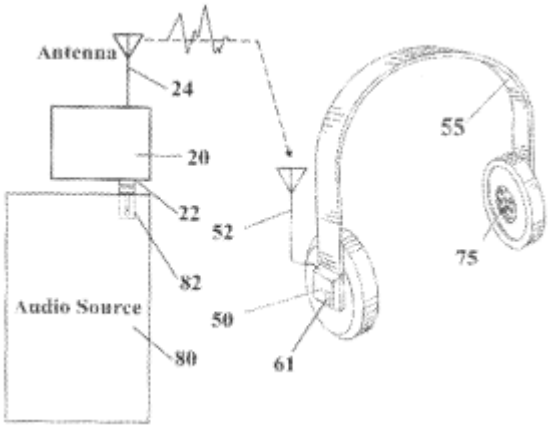
in-Suit is C. Earl Woolfork, and the listed assignee is OEW.

The Patents-in-Suit relate "to audio player devices and more particularly to systems that include headphone listening devices," and are "generally directed to a wireless digital audio system for coded digital transmission of an audio signal from any audio player with an analog headphone jack to a receiver headphone located away from the audio player." 627 Patent at 1:26–28; 1:67–2:3. The Patents-in-Suit disclose that prior art devices did "not allow use of a simple plug in (i.e., plug in to the existing analog audio headphone jack) battery powered transmitter for connection to any music audio player device jack … by headphones of audio music for private listening without interference where multiple users occupying the same space are operating wireless transmission devices," and state that there was a need for such a system. *Id*. at 1:36–62. According to the specification, "The wireless digital audio music system provides private listening without interference from other users or wireless devices and without the use of conventional cable connections." *Id*. at 2:10–13. For example, Figure 1 of the Patents-in-Suit "schematically illustrates a wireless digital audio system in accordance with the present invention":



See id. at 2:23–24, Fig. 1.

Plaintiff asserts that Defendant infringes Claims 1–6, and 10–12 of the '627 Patent and Claims 1–6, 8–15, and 17–20 of the '047 Patent ("the Asserted Claims"). Dkt. 24-2 at 1. The SAC alleges that Defendant has infringed Claims 1 and 17 of the '047 Patent and Claims 1 and 5 of the '627 Patent. Dkt. 22 ¶¶ 36, 51, 58, 59, 77, 78. Claims 1 and 17 of the '047 Patent recite:

1. A portable spread spectrum audio ***receiver*** configured to receive and store a unique user code, said portable spread spectrum ***receiver*** configured to receive wireless modulation transmissions from a spread spectrum ***transmitter*** coupled to a music ***audio source***, said wireless modulation transmissions representative of an audio signal representation, said portable spread spectrum audio ***receiver*** comprising:

a ***direct conversion module*** configured to receive wireless modulation transmissions representative of said audio signal representation and which have been processed to

reduce intersymbol interference, and wherein said portable spread spectrum audio ***receiver*** further processes said received wireless modulation transmissions for reduction of intersymbol interference;

a digital-to-analog converter (DAC) configured to provide an analog audio output signal corresponding to said audio signal representation;

a speaker configured to generate an audio signal corresponding to said analog audio output signal, wherein said generated audio signal does not include audible audio content originating from any audio signals transmitted in a spectrum used by said spread spectrum ***transmitter*** that do not originate from said spread spectrum ***transmitter***;

wherein said portable spread spectrum audio ***receiver*** is configured to use independent code division multiple access communication and to use said unique user code to communicate with only said spread spectrum ***transmitter*** during a wireless connection;

wherein said portable spread spectrum audio ***receiver*** is further configured to perform at least one of a plurality of demodulations on at least one of said received wireless modulation transmissions, wherein said plurality of demodulations includes a differential phase shift keying (DPSK) demodulation and a non-DPSK demodulation; and

wherein said further processing for reduction of intersymbol interference is separate from said performance of at least one of said plurality of demodulations.

17. A portable spread spectrum audio ***transmitter*** coupled to a music ***audio source***, said ***transmitter*** configured to transmit a unique user code and wireless modulation transmissions representative of an audio signal representation, said portable spread spectrum audio ***transmitter*** configured to:

encode a first representation of an audio signal to reduce intersymbol interference associated with a transmitted representation of the audio signal;

perform at least one of a plurality of modulations on the first representation of the audio signal;

generate a modulated signal based on the performance of at least one of the plurality of modulations, wherein the plurality of modulations includes a differential phase shift keying (DPSK) modulation and a non-DPSK modulation; and

use the modulated signal and independent code division multiple access communication to wirelessly transmit a transmitted representation of the audio signal.

’047 Patent, Claims 1, 17 (emphasis added).

Claims 1 and 5 of the ’627 Patent recite:

1. A wireless digital audio spread spectrum ***receiver***, capable of mobile operation, configured to receive a unique user code and a ***high quality audio signal representation*** with a frequency range of 20 Hz to 20 kHz from a digital audio spread spectrum transmitter, said audio signal representation representative of audio from a portable ***audio source***, said digital audio spread spectrum ***receiver*** operative to communicate wirelessly with said digital audio spread spectrum ***transmitter***, said digital audio spread spectrum ***receiver***

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comprising:

a ***direct conversion module*** configured to receive wireless spread spectrum signal transmissions representative of the unique user code and the ***high quality audio signal representation***, wherein the received transmissions are encoded to reduce intersymbol interference, wherein the wireless digital audio spread spectrum ***receiver*** is capable of processing the high quality audio signal having a frequency range of 20 Hz to 20 kHz;

a digital-to-analog converter (DAC) configured to generate an audio output from said ***receiver*** audio signal representation; and

a speaker configured to reproduce said generated audio output, wherein said reproduction does not include audible audio content originating from any transmitted audio signals in the wireless digital audio spread spectrum ***transmitter*** spectrum that do not originate from said digital audio spread spectrum ***transmitter***;

wherein the wireless digital audio spread spectrum ***receiver*** is configured to use independent code division multiple access communication and to use the received unique user code to communicate with only said wireless digital audio spread spectrum ***transmitter*** for the duration of a wireless connection; and

wherein the wireless digital audio spread spectrum ***receiver*** is further configured to:

demodulate a received modulated transmission, and

generate a demodulated signal based on the received modulated transmission by performing at least one of a plurality of demodulations, wherein the plurality of demodulations includes a differential phase shift keying (DPSK) demodulation and also includes a non-DPSK demodulation.

5. A wireless digital coded audio spread spectrum ***transmitter*** operatively coupled to a portable ***audio player*** and configured to transmit a unique user code and a representation of an audio signal with a frequency range of 20 Hz to 20 Khz, wherein said digital coded audio spread spectrum ***transmitter*** is configured to wirelessly communicate with a digital audio spread spectrum ***receiver*** and is configured to be moved in any direction during operation, said wireless digital coded audio spread spectrum ***transmitter*** comprising:

an encoder operative to encode a first representation of an audio signal to reduce intersymbol interference associated with a transmitted representation of the audio signal, said encoder configured to process signals in the frequency range of 20 Hz to 20 kHz for representation in said first representation of an audio signal;

wherein the wireless digital coded audio spread spectrum ***transmitter*** is further configured to perform at least one of a plurality of modulations on the first representation of the audio signal and generate a modulated signal based on the performance of the plurality of modulations, wherein the plurality of modulations includes a differential phase shift keying (DPSK) modulation and a non-DPSK modulation;

wherein said plurality of modulations are separate from the encoding and processing by the encoder; and

wherein the wireless digital coded audio spread spectrum ***transmitter*** is further configured to use the modulated signal and to use independent code division multiple access

> communication to wirelessly transmit a transmitted representation of the audio signal, and wherein the transmitted unique user code distinguishes the transmitted representation of the audio signal from other transmitted audio signals in the spread spectrum ***transmitter*** spectrum, said other transmitted audio signals not originating from said wireless digital coded audio spread spectrum ***transmitter***.

'627 Patent, Claims 1, 5 (emphasis added).

III. Analysis

A. Legal Standards

1. Claim Construction Principles

Claim construction is the process of determining the meaning and scope of the patent claims. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). It is a matter that is addressed by the court. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 331 (2015).

"[T]he words of a claim are generally given their ordinary and customary meaning," which is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (internal citations and quotations omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id*. at 1314. "In such circumstances, general purpose dictionaries may be helpful. In many cases that give rise to litigation, however, determining the ordinary and customary meaning of the claim requires examination of terms that have a particular meaning in a field of art." *Id*.

"Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to 'those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.'" *Id*. (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). "Those sources include '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*.

Claim construction "begins and ends" with the words of the claims. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). "Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claim terms." *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id*. In addition to the words of the claim(s) being construed, "[o]ther claims of the

patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term. Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims." *Id*. (citations omitted). "Differences among claims can also be a useful guide in understanding the meaning of particular claim terms." *Id*. "For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim." *Id*. at 1314–15. However, "[c]laim differentiation is a guide, not a rigid rule. If a claim will bear only one interpretation, similarity will have to be tolerated." *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991) (quoting *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 404 (Ct. Cl. 1967)). "[C]laims must be construed so as to be consistent with the specification, of which they are a part." *Merck & Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1371 (Fed. Cir. 2003). "[T]he person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Phillips*, 415 F.3d at 1313. "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id*. at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

"[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Phillips*, 415 F.3d at 1316. To be a lexicographer, the inventor must "clearly express an intent to redefine the term." *Thorner v. Sony Computer Entertainment America, LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). "In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor. In that instance as well, the inventor has dictated the correct claim scope, and the inventor's intention, as expressed in the specification, is regarded as dispositive." *Phillips*, 415 F.3d at 1316. The inventor must demonstrate intent by "representing a clear disavowal of claim scope" in the specification. *Thorner*, 669 F.3d at 1366.

Despite the importance of a specification, limitations of the described embodiments of the invention must not be read into the claims. The Federal Circuit "expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment." *Phillips* at 1323. Conversely, "an interpretation [which excludes a preferred embodiment] is rarely, if ever, correct and would require highly persuasive evidentiary support." *Vitronics*, 90 F.3d at 1583. Overall, limitations from the specification should not be read into claims. *Thorner*, 669 F.3d at 1366–67.

The prosecution history is also relevant intrinsic evidence. "[T]he prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation" and for this reason "often lacks the clarity of the specification." *Phillips*, 415 F.3d at 1317. However, it can nonetheless "often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Id.*

"Although [the Federal Circuit has] emphasized the importance of intrinsic evidence in claim construction, [it has] also authorized district courts to rely on extrinsic evidence, which 'consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.'" *Id*. (quoting *Markman*, 52 F.3d at 980). The use of "technical words or phrases not commonly understood" may give rise to a factual dispute, the determination of which will precede the ultimate construction. *Teva*, 574 U.S. at 326.

2. Means-Plus-Function Claim Terms

A claim limitation may be phrased as "a means or step for performing a specified function without the recital of structure, material, or acts in support thereof." 35 U.S.C. § 112, ¶ 6. Whether a claim limitation is a "means-plus-function" phrase is determined during claim construction, with the requirement that such limitations "shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." *Id*. This means plus function interpretation applies "only to purely functional limitations that do not provide the structure that performs the recited function." *Phillips*, 415 F.3d at 1311.

To determine whether 35 U.S.C. § 112, ¶ 6 applies, the Federal Circuit has "long recognized the importance of the presence or absence of the word 'means.'" *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). Its use creates a rebuttable presumption that § 112, ¶ 6 applies. *Id*. The presumption is overcome when the claim language specifies the precise structure necessary to perform the recited function "without need to resort to other portions of the specification or extrinsic evidence for an adequate understanding of the structure." *TriMed, Inc. v. Stryker Corp*., 514 F.3d 1256, 1259 (Fed. Cir. 2008). "Generic terms such as 'mechanism,' 'element,' 'device,' and other nonce words that reflect nothing more than verbal constructs may be used in a claim in a manner that is tantamount to using the word 'means' because they 'typically do not connote sufficiently definite structure' and therefore may invoke § 112, para. 6." *Williamson*, 792 F.3d at 1350 (internal citations omitted). When a claim term does not actually include the word "means" it is presumed that § 112, ¶ 6 does not apply. *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc*., 469 F.3d 1005 (Fed. Cir. 2006). However, that presumption is one that can be rebutted without a heightened evidentiary showing. *Williamson*, 792 F.3d at 1349.

Construing a means-plus-function claim term is a two-step process." *Williamson*, 792 F.3d at 1351. "In construing a means plus function claim, the district court must first determine the claimed function and then identify the corresponding structure in the written description of the patent that performs that function." *Baran v. Med. Device Techs., Inc*., 616 F.3d 1309, 1316 (Fed. Cir. 2010). A district court should "construe the meaning of the words used to describe the claimed function, using ordinary principles of claim construction." *Lockheed Martin Corp. v. Space Sys./Loral, Inc*., 324 F.3d 1308, 1319 (Fed. Cir. 2003). "Structure disclosed in the specification qualifies as 'corresponding structure' if the intrinsic evidence clearly links or associates that structure to the function recited in the claim." *Williamson*, 792 F.3d at 1352.

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3. Invalidity Due to Indefiniteness Under 35 U.S.C. § 112, ¶ 2

A patent must conclude "with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention." 35 U.S.C. § 112, ¶ 2. "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail 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). A patent does not satisfy the definiteness requirement simply because "a court can ascribe some meaning to a patent's claims." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Nautilus*, 572 U.S. at 911). Rather the claims, when read in light of the specification and the prosecution history, must provide objective boundaries that can be understood by those of skill in the art. *Id*. (citing *Nautilus*, 572 U.S. at 911, n.8). The party seeking to show indefiniteness "must establish it by clear and convincing evidence." *Dow Chem. Co. v. Nova Chems. Corp*., 809 F.3d 1223, 1227 (Fed. Cir. 2015). "Indefiniteness under 35 U.S.C. § 112, ¶ 2 is an issue of claim construction and a question of law." *Cordis Corp. v. Boston Scientific Corp*., 561 F.3d 1319, 1331 (Fed. Cir. 2009); *see also Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335, 1339 (Fed. Cir. 2015) (claim construction analysis, including indefiniteness analysis, may include underlying factual questions requiring resolution during that process).

B. Claim Construction

1. Agreed Upon Claim Terms

The parties have agreed to the following constructions:

Term	Agreed Construction
"reduced intersymbol interference coding"	"coding that reduces intersymbol (inter- symbol) interference"
The term "independent" in the context of "configured for independent CDMA communication operation" / "independent" CDMA communication	"performed independent of any central control"
"unique user code"	"fixed code (bit sequence) specifically associated with one user of a device(s)"
The following claim preambles: '047 patent claims 1, 8, 17; and '627 patent claims 1, 3, 5	Each of the identified preambles limits the scope of the respective patent claim.

See Dkt. 63. The parties' agreed constructions are accepted and are binding. *See MyMail, Ltd. v. Am. Online, Inc.*, 476 F.3d 1372, 1377–78 (Fed. Cir. 2007) (rejecting appellate challenge to claim construction agreed to by party).

2. Disputed Claim terms

a) "audio player," "audio source," and "transmitter"

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"audio player" ('627 Patent, Claim 5)	Plain and ordinary meaning	"a device for playing audio that has an analog headphone jack"
"audio source" ('047 Patent, Claims 1, 8, 17; '627 Patent, Claims 1, 2)	Plain and ordinary meaning	"a device for providing audio that has an analog headphone jack"
"transmitter" ('047 Patent, Claims 1, 8, 12, 17–20; '627 Patent, Claims 1, 3, 5, 6, 12)	Plain and ordinary meaning	"a device that can be connected into an analog headphone jack to wirelessly transmit an audio signal"

i. The Positions of the Parties

The parties dispute whether the claimed "audio player" and "audio source" must have an "analog audio jack" and whether the claimed "transmitter" must be capable of being "connected into an analog headphone jack."

Defendant argues that, for two reasons, the specification of the Patents-in-Suit clearly disavows audio players and audio sources that do not include analog headphone jacks. Dkt. 66 at 3–4. *First*, Defendant argues that the specification defines the invention as a whole as having a transmitter that connects to an analog headphone jack in the audio player or source. *See id*. at 4–6 (citing '391 Patent at 1:19–28, 1:57–2:7). *Second*, Defendant argues that the specification "distinguish[es] and disparage[s] the prior art on the basis that the prior art relied on wired connections with the 'audio source' or 'audio player' and failed to provide a transmitter to plug in to an existing audio player headphone jack for wireless private listening[.]" *Id*. at 6 (citing '391 Patent at 1:35–53). Defendant also contends that the remaining language of the specification is consistent with those statements, as the "only disclosed embodiment provides a transmitter that connects into the headphone jack of an audio player/source." *Id*. at 7 (citing '391 Patent at 2:11–14, 2:30–36, 2:45–53, Figs. 1, 2).

Defendant also argues that the claims are consistent with the specification because they recite that the transmitter is "coupled" or "operatively coupled" to the audio player/source and do not recite audio players/sources without a headphone jack. *Id*. at 8 (citing '391 Patent, Claims 1, 3–6, 10; '047 Patent, Claims 1, 8, 17; '627 Patent, Claims 1, 3, 5). To support this construction, Defendant cites the examiner's

statements in the prosecution history that the transmitter is "operably connected to the music audio source through the user of a plug/jack configuration." *Id*. at 8–9 (citing Dkt. 66-5 at 6–7). Finally, Defendant states that for the "transmitter" term, "the transmitter itself need not include a headphone plug" and instead "could connect into the jack in other ways, directly or indirectly." *Id*. at 8 (citing '391 Patent at 1:62–64, 2:33–36).

Plaintiff argues that Defendant seeks to import limitations from the specification into the claims without an appropriate basis. Thus, Plaintiff argues that nothing in the claim language suggests that the audio player or source requires an "analog headphone jack." Dkt. 65 at 5. Plaintiff also argues that the specifications of '196 Publication and the Patents-in-Suit only disclose that the embodiments with a headphone jack are exemplary, and that Figure 2 discloses an exemplary embodiment where the "audio player or audio source 80" has no headphone jack. *Id*. (citing Dkt. 67-1 ('196 Publication) ¶¶ 2, 5, 11 & Figs. 1, 2); Dkt. 70 at 2–3 (citing Dkt. 67-1 ¶¶ 5, 11 & Abstract; '391 Patent at 1:57–64). Plaintiff then contends that the disclosure in the specification that the transmitter "may be ***connected*** to the audio source 80 ***to remain therewith***" in the embodiment in Figure 2 "allow[s] for a more permanent connection between the transmitter and audio source." Dkt. 70 at 1 (emphasis in original) (citing Dkt. 67-1 ¶¶ 8, 12, 19). Thus, Plaintiff asserts that there is no clear disclaimer in the specification because such a disclaimer would exclude from the scope of the terms "audio source" and "audio player," which is a preferred embodiment. *Id*. at 1–2 (citing *Accent Packaging, Inc. v. Leggett & Platt, Inc.*, 707 F.3d 1318, 1326 (Fed. Cir. 2013)).

Plaintiff also argues that Defendant's reliance on the "Background of the Invention" section of the specification is misplaced. The basis for this position is that it only describes the state of the art of commercial devices, which "usually" included headphone jacks," and that the invention was "not limited to just adapting to the current state of the art." *Id*. at 2 (citing Dkt. 67-1 ¶¶ 1–4, 10–19). Finally, Plaintiff argues that the examiner's statements in the prosecution history do not support Defendant's construction because only applicant's statements can limit the scope of a claim and the examiner only explained what was depicted in the patent generally. Dkt. 65 at 7 (citing Dkt. 67-8 at OEW_APPLE-0008661).

Defendant responds that the lack of claim language regarding a "headphone jack" is irrelevant where there is a clear disavowal in the specification. Dkt. 71 at 1. Defendant also argues that Plaintiff's reliance on the '196 Publication is misplaced because that application "was *abandoned* after its claims were rejected, and the patents-in-suit share a *different* written description filed years later." *Id*. at 2 (emphasis in original). Moreover, Defendant asserts that the '196 Publication includes the same disavowals as the Patents-in-Suit, and the changes to the '196 Publication support Defendant's construction. *Id*. at 2–4 (citing Dkt. 67-1 ¶¶ 1–5; '391 Patent at 1:19–61). Defendant further argues that the specification discloses that the embodiment in Figure 2 is the same as the one in Figure 1, and the specification discloses that the "music audio source **80** [in Fig. 2 includes an] analog headphone jack **82**." *Id*. at 4 (citing '391 Patent at 2:15–16, 2:30–36).

ii. Analysis

The specification of the Patents-in-Suit, not the ’196 Publication, governs the scope of the claims. “[T]he relevant specification for claim construction purposes is that of the issued patent, not an early version of the specification that may have been substantially altered throughout prosecution.” *Sun Pharm. Indus., Ltd. v. Eli Lilly & Co*., 611 F.3d 1381, 1388-89 (Fed. Cir. 2010). Thus, to the extent the ’196 Publication includes broader disclosures than the specification of the Patents-in-Suit, the narrower disclosures of the Patents-in-Suit determine whether there is a clear disavowal of the scope of the claims.

Further, the specification of the Patents-in-Suit expressly disavows audio players and sources without a headphone jack. An inventor can express in two ways a clear intent to disclaim the scope of a claim term in the specification without explicitly stating such a disclaimer: (i) through statements defining the invention as a whole, like “the present invention includes;” and (ii) through statements distinguishing or disparaging the prior art based on the absence of a particular feature. *See Poly-America, L.P. v. API Indus., Inc*., 839 F.3d 1131, 1136 (Fed. Cir. 2016).

The Patents-in-Suit define the invention as a whole as having an audio player or source with a headphone jack. *See* ’627 Patent at 1:28–33 (“The new audio system uses an existing headphone jack … of a music audio player … to connect a battery powered transmitter”); 1:66–2:2 (“The present invention is generally directed to a wireless digital audio system for coded digital transmission of an audio signal from any audio player with an analog headphone jack…”); 2:23–24 (“FIG. **1** schematically illustrates a wireless digital audio system in accordance with the present invention”); Fig. 1 (depicting “a portable music audio player or music audio source **80**” with a “headphone jack **82**” and a “transmitter **20**” connected to the headphone jack “using a headphone plug **22**”). The Patents-in-Suit also disparage prior art devices that “do not allow use of a simple plug (i.e., plug in to the existing analog audio headphone jack) battery powered transmitter for connection to any music audio player device jack[.]” *Id*. at 1:26–55. Thus, the specification clearly disavows audio players and sources without a headphone jack.

The remainder of the specification confirms that the inventor intended to disavow audio players or sources without headphone jacks. Plaintiff argues that Figure 2 discloses an embodiment without a headphone jack. However, as the specification discloses, “FIG. **2** is a block diagram of an audio transmitter portion of the wireless digital audio system of FIG. **1**[,]” which depicts a “music audio player or music audio source **80”** with a “headphone jack **82**.” *Id*. at 2:25–26; 2:40–46. Plaintiff also argues that the “Background section does not identify the patentee’s novel combination of interference avoidance techniques.” *See* Dkt. 70 at 2. However, the disclosure in the specification of additional inventive techniques to enable the wireless connection does not bear on whether the specification disavows audio players or sources without headphone jacks. *Id.*

Finally, the “permissive language” in the specification cited by Plaintiff does not warrant a different outcome. None of these statements shows that the headphone jack is optional. For example, the “Summary of the Invention” section states, “A battery-powered digital transmitter may include a headphone plug in communication with any suitable music audio source,” but as Defendant argues, this

could mean that the transmitter with a "headphone plug in communication with any suitable music audio source" is optional. *See* '627 Patent at 2:4–6; Dkt. 66 at 8 (explaining that Plaintiff's own device uses an intermediary wire separate from the transmitter connecting the transmitter and audio source); *see also* '391 Patent at 2:43–46. This also supports Defendant's construction that the claimed "transmitter" is "a device that can be connected into an analog headphone jack" rather than requiring the use of a "headphone plug." *C.f. Osram GmbH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) ("a claim interpretation that would exclude the inventor's device is rarely the correct interpretation") (quoting *Modine Mfg. Co. v. U.S. Int'l Trade Comm'n*, 75 F.3d 1545, 1550 (Fed. Cir. 1996), abrogated on other grounds by *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558 (Fed. Cir. 2000)).

For the foregoing reasons, the term "audio player" is construed as "a device for playing audio that has an analog headphone jack," the term "audio source" is construed as "a device for providing audio that has an analog headphone jack," and the term "transmitter" is construed as "a device that can be connected into an analog headphone jack to wirelessly transmit an audio signal."

b) "receiver" ('047 Patent, Claims 1–6, 8–15; '627 Patent, Claims 1–5, 10, 11)

Plaintiff's Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	"a device that receives and converts signals"

The parties do not present a material dispute for the term "receiver." Defendant does not explain the significance of its proposed construction. *See* Dkt. 66 at 10. Defendant appears to contend that the claimed "receiver" cannot "encompass multiple distinct receiver devices." *See id*. at 11. However, its proposed construction does not necessarily reflect that the claimed "receiver" must be a single device. Nor does either party specifically address this issue. *See id*. at 11; *see also KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1355 (Fed. Cir. 2000) ("This court has repeatedly emphasized that an indefinite article 'a' or 'an' in patent parlance carries the meaning of 'one or more' in open-ended claims containing the transitional phrase 'comprising.'").

For the foregoing reasons, the term "receiver" is not construed and will be given its plain and ordinary meaning.

c) "headphone" ('047 Patent, Claims 6, 15)

Plaintiff's Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	"a device with speaker(s) secured by a band placed over the head"

i. The Positions of the Parties

The parties dispute whether the term "headphone" requires a "band placed over the head."

Defendant contends that the ordinary meaning of the term "headphone" at the time of the claimed invention did not include separate earpieces without a headband. Dkt. 66 at 11. Defendant argues that the term "headphone" suggests that the speaker must be secured to a band over the head of the listener, and Figure 1 depicts a headband connecting the two speakers. *Id*. (citing '391 Patent, at 2:39–45, Fig. 1, Claims 1, 3, 6, 10). Defendant further argues that neither the claims nor the specification discloses headphones without a headband. *Id*. Defendant also cites dictionary definitions from the time of the effective filing date of the Patents-in-Suit that define the term "headphone" as requiring a headband. *See id*. at 11–12 (citing Dkts. 66-8, 66-9, 66-10).

Plaintiff argues that Defendant's construction imports limitations from the specification without support. Dkt. 65 at 11. Plaintiff asserts that the intrinsic evidence neither defines the term "headphone" nor disavows "headphones" without headbands. *Id*. Plaintiff also cites other patents filed at about the same time as the effective filing date of the Patents-in-Suit that disclose headphones without headbands. *Id*. at 12 (citing Dkt. 67-16 at Fig. 1, 2:14–18; Dkt. 67-17 at FIG. 7, 8:6–10). Further, Plaintiff argues that Defendant's own marketing material for the accused products describe the products as "in-ear headphones" despite the lack of headband. *Id*. (citing Dkt. 67-18 at OEW_APPLE-0027227).

Defendant argues that its marketing materials from 2016 describing the accused product do not reflect the meaning of the term "headphone" at the time of the claimed invention. Dkt. 66 at 12. Defendant also argues that third-party patents "are precisely the type of cherry-picked, unreliable, 'marginal,' and non-authoritative 'fluff' that the Federal Circuit warns against." *Id*. at 13 (citing *Phillips*, 415 F.3d at 1318–19). Plaintiff responds that Defendant "never establishes why [the third-party patents] are immaterial, or explains how their 'third-party' nature somehow diminishes their probative value." Dkt. 70 at 5.

ii. Analysis

The intrinsic evidence does not support limiting the claimed "headphone" to "a device with speaker(s) secured by a band placed over the head." Defendant does not argue that the intrinsic evidence defines the term "headphone" or disavows the scope of the term. Instead, Defendant argues that the ordinary meaning of the term "headphone" at the time of the claimed invention requires a headband to secure the speakers to the head of the user. Claims 6 and 15 of the '047 Patent recite, "wherein the headphone unit enables a user to secure [a] speaker on the head of the user," and Claims 7 and 16 of the '047 Patent recite, "wherein the headphone unit comprises a headphone strap that connects the speaker with another speaker for opposite ear." *See* '047 Patent, Claims 6, 7, 15, 16. Defendant's construction would make this language superfluous. *See Clearstream Wastewater Systems, Inc. v. Hydro-Action, Inc.*, 206 F.3d 1440, 1446 (Fed. Cir. 2000) ("Under the doctrine of claim differentiation, it is presumed that different words used in different claims result in a difference in meaning and scope for each of the claims.").[2]

[2] The cases cited by Defendant to support its position are distinguishable. *See Poly-America*, 839 F.3d at 1137 (claim differentiation cannot broaden claims beyond clear disclaimer of scope in specification); *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1330 (Fed. Cir. 2009) (claim differentiation cannot broaden claims

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Defendant also argues that the only embodiment depicted in the Patents-in-Suit includes a headband. Based on this, Defendant argues that its proposed construction reflects the ordinary meaning of the term "headphone." The Federal Circuit "expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment." *Phillips* at 1323. Thus, the intrinsic evidence does not support limiting the scope of the term "headphone" to speakers connected by a headband.

The extrinsic evidence does not support limiting the term "headphone." Although Defendant's cited dictionary definitions support its construction, the two patents cited by Plaintiff show that, at about the time of the invention, the meaning of the term headphone had started to expand to include headphones without headbands. Thus, although it is possible that the inventor envisioned the use of headphones with headbands, the claims leave open the possibility of using headphones without headbands such as the ones disclosed in the third-party patents. *See* Dkt. 67-16 at Fig. 1, 2:14–18; Dkt. 67-17 at FIG. 7, 8:6–10; *see also Innogenetics, N.V. v. Abbott Lab'ys*, 512 F.3d 1363, 1371–72 (Fed. Cir. 2008) ("[Federal Circuit] case law allows for after-arising technology to be captured within the literal scope of valid claims that are drafted broadly enough."). Defendant has not shown why those patents are unreliable. *See In re Cortright,* 165 F.3d 1353, 1358 (Fed. Cir. 1999) ("Prior art references may be indicative of what all those skilled in the art generally believe a certain term means and can often help to demonstrate how a disputed term is used by those skilled in the art." (internal quotations omitted) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1584 (Fed.Cir.1996)).

For the foregoing reasons, the term "headphone" is not construed and will be given its plain and ordinary meaning.

d) "direct conversion module" ('047 Patent, Claim 1; '627 Patent, Claims 1, 3)

Plaintiff's Proposed Construction	Defendant's Proposed Construction
"module for converting radio frequency to baseband or very near baseband in a single frequency conversion without an intermediate frequency"	This term is a means-plus-function term governed by 35 U.S.C. § 112(6). **Function**: (1) "direct conversion" and (2) "receive wireless spread spectrum signal transmissions . . ." (e.g., '627 Patent, Claim 1) (*see* Dkt. 83 at 1–2 for full list of functions) **Structure**: "direct conversion receiver or module 56"

beyond lexicographical definition in specification); *Intell. Ventures I LLC v. Motorola Mobility LLC*, 870 F.3d 1320, 1326 (Fed. Cir. 2017) (claim differentiation cannot broaden claims beyond clear disclaimer of scope in specification).

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	"direct conversion" means "conversion from radio frequency to baseband in a single frequency conversion without an intermediate frequency"

i. The Positions of the Parties

The parties have two disputes as to the term "direct conversion module": (i) whether the term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6; and (ii) whether the phrase "direct conversion" includes converting radio frequency to very near baseband frequency.

Defendant argues the word "module" is a "nonce" word and the claims recite that the term "direct conversion module" has two functions: (i) "direct conversion"; and (ii) the recited function after the term "direct conversion module" in each of the claims. *See* Dkt. 66 at 19. Defendant, contends that, although "direct conversion module[s]" would have been well-known to a POSITA at the time of the invention, "direct conversion module[s]" that also performed the other recited functions in the claims would not have been. *See id*. at 19. Thus, Defendant argues that the term "direct conversion module" must be governed by § 112, ¶ 6 and "the corresponding structure is 'direct conversion receiver or module **56**.'" *Id*. (citing Dkt. 66-1 ¶ 50; '391 Patent at 2:64–3:13).

Defendant also argues that "direct conversion" does not include conversion to "very near baseband." Defendant asserts that "direct conversion" means a single-step conversion of a signal from a high radio frequency ("RF") to a lower baseband frequency, i.e., "the original frequency range of a transmission signal before it is modulated for transmission," without first converting to an "intermediate" frequency ("IF"). *Id*. at 20 (citing Dkt. 66-1 ¶¶ 32–45; Dkt. 66-18 ("Dobkin") at 112; Dkt. 66-19 ("Mashhour"); Dkt. 66-20 ("Gilb") at 5; Dkt. 66-21 ("Razavi") at 129; Dkt. 66-22 ("Sullivan") at 1; Dkt. 66-23 ("Abidi") at 1401).

Defendant relies on the testimony of its expert, Dr. Hansen, and three technical references, and argues that a POSITA would have understood that "direct conversion" is different from "very near baseband" or "near-zero IF" conversion as Plaintiff's construction proposes, and the intrinsic evidence does not disclose "near-baseband" conversion. *See id*. at 20–21 (citing Dkt. 66-1 ¶¶ 33–49; Dkt. 66-18 at 112; Dkt. 66-19 at 4; Dkt. 66-20 at 4–5). Defendant also argues that Plaintiff's "self-serving statements" to the PTO broadening the scope of the claims should be ignored. *Id*. at 21–22 (citing *Clare v. Chrysler Grp. LLC*, 819 F.3d 1323, 1324–32 (Fed. Cir. 2016); *Telcordia Technologies, Inc. v. Cisco Systems, Inc.*, 612 F.3d 1365, 1375 (Fed. Cir. 2010); Dkt. 66-24 at 6–7).

Defendant also contends that the phrase "very near baseband" is indefinite because it is a term of degree and "the specification says nothing about how 'near' to baseband might qualify as 'very near baseband—no 'specific examples,' no 'points of comparison,' nothing." *Id*. at 23–24 (citing *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1363-64 (Fed. Cir. 2018); Dkt. 66-1 ¶¶ 50, 51).

Plaintiff argues that the International Trade Commission ('ITC') already adopted its construction, which "properly reflects the term's ordinary meaning to a POSITA in view of the intrinsic evidence." Dkt. 65 at 17 (citing Dkt. 67-9 at 43). Plaintiff asserts that Defendant even "requested that the PTAB adopt the ITC's construction" in its IPR petitions challenging the asserted patents. *Id*. at 18 (citing *Apple Inc. v. One-E-Way, Inc.*, IPR2020-00283, Paper 2 at 7-8 (PTAB Dec. 4, 2020)).

Plaintiff also argues that the construction by the ITC "is derived from intrinsic evidence and confirmed by extrinsic evidence." *Id*. Specifically, it contends that, "[t]he specification refers to the claimed 'direct conversion module' as 'a 2.4 GHz direct conversion receiver or module.'" *Id*. (citing '391 Patent at 2:64–66). Plaintiff asserts that "a POSITA would understand that a 'direct conversion' receiver includes near-zero intermediate frequency (NZIF) receivers that convert to very near baseband in a single frequency conversion without an intermediate frequency." *Id*. (citing Dkt. 68 ¶ 31). Plaintiff also argues that it confirmed that "direct conversion" includes converting the frequency of a signal from the higher RF to the lower, "very near baseband" frequency throughout the prosecution history of the Patents-in-Suit and related patent applications, which the ITC relied on to support its construction. *See id*. at 18–19 (citing Dkt. 67-5 ("'258 Parent Patent File History") at OEWAPPLE-0001777–784, 1832–839; Dkt. 67-6 ("'391 Patent File History") at OEW_APPLE0002325–326, 2404–405; Dkt. 67-7 ("'294 Parent Patent File History"); Dkt. 67-9 at 42)., Plaintiff cites three third-party patents and a technical reference to support its construction that "direct conversion" includes conversion to very near baseband. *See id*. at 19–20 (citing Dkt. 67-11 at 109–112, Figs. 4-1, 4-4; Dkt. 67-21 (U.S. Patent No. 7,024,172) at 6:62–64; Dkt. 67-22 (U.S. Patent No. 6,230,000) at 1:10–13; Ex. 23 (U.S. Patent No. 7,447,286) at 1:31–37).

Plaintiff next argues that Defendant's proposed constructions are incorrect. Plaintiff asserts that the specification equates the claimed 'direct conversion module" with "a 2.4 GHz direct conversion ***receiver*** or module," meaning that the term is structural and § 112, ¶ 6 does not apply. *See id*. (citing '391 Patent at 2:64–66). According to Plaintiff, the claimed transmitter and other claimed components perform the "additional functions" cited by Defendant, not the "direct conversion module." Dkt. 70 at 8 (citing '391 Patent, Claims 1, 3–6, 10). Plaintiff also asserts that the intrinsic evidence does not clearly disclaim -- and the prosecution history expressly discloses -- converting signals to very near baseband frequency, as the ITC found. *See* Dkt. 65 at 22. Moreover, Plaintiff argues that Defendant's cited extrinsic evidence only shows that "while some [direct conversion receivers ('DCRs') were known to convert only to baseband, the literature more broadly confirms that DCRs were also known to convert to very near baseband." *Id*. (citing Dkt. 67-11 at 109–112). Finally, Plaintiff contends that the term "very near baseband" is not indefinite, arguing that Defendant incorrectly focuses the scope of the term on the closeness of the frequency. *See* Dkt. 70 at 9 (citing Dkt. 67-11 at OEW_APPLE-0027064).

Defendant responds that Plaintiff's citations to the specification do not provide the necessary structure in the claim language for the functions recited after each "module." Dkt. 71 at 8. Defendant also argues that all of the statements made during the prosecution history were self-serving, and that the ITC never addressed the case law on this issue. *See id*. at 8–9. Defendant further argues that the technical reference cited by Plaintiff distinguishes between "direct conversion and near-zero IF (NZIF)" conversion,

and that the third-party patents are "not reliably probative." *Id*. at 9 (citing Dkt. 66-18 at 112, Fig. 4-4). Finally, Defendant argues that Plaintiff "fails to show any objective boundary in the specification that would save the claims from indefiniteness if construed to encompass 'baseband or very near baseband.'" *Id*.

ii. Analysis

The term "direct conversion module" is not governed by § 112, ¶ 6. The specification discloses that a "direct conversion module" is the same as a "direct conversion receiver." *See* '627 Patent at 3:7–9. Defendant effectively concedes that "direct conversion receivers" were well-known at the relevant time, and could be "generic 'off the shelf'" components. Dkt. 66 at 19. Thus, there is no dispute that the term "direct conversion module" as used in the Patents-in-Suit is structural. Defendant argues that the term does not provide the structure to perform the functions recited after the term "direct conversion module." However, it has been determined that the term is structural, and Defendant does not provide any evidence that the "direct conversion module" could not perform the recited functions to rebut the presumption that § 112, ¶ 6 does not apply. Defendant's proposed structure for its construction of the term "direct conversion module" is "direct conversion receiver or module **56**," and Defendant has not explained how the "direct conversion receiver or module **56**" would differ from a generic "direct conversion receiver." Thus, Defendant has not shown that § 112, ¶ 6 applies to the term "direct conversion module."

The intrinsic evidence also supports Plaintiff's construction. The specification of the '196 Publication discloses that the direct conversion module only "provide[s] a method for down converting the received signal," and does not provide any further details regarding the down conversion process. Dkt. 67-1 ¶ 15. The specification of the Patents-in-Suit provides even less detail, and discloses that even after the down conversion from "direct conversion receiver or module **56**," the receiver **50** "may process the digital signal to return the signal to analog *or base band* format for use in powering speaker(s) **75**." '627 Patent at 4:28–30 (emphasis added). Further, as the ITC found, the prosecution history shows that Plaintiff distinguished the prior art Alstatt and Li combination on the ground that neither reference teaches a "direct conversion receiver," which "performs direct down conversion from radio frequency (RF) to baseband (or very near baseband)." *See* Dkt. 67-5 at OEWAPPLE-0001837; Dkt. 67-6 at OEW_APPLE0002405; Dkt. 67-9 at 42.

As noted, Defendant argues that Plaintiff cannot rely on its own self-serving statements in the prosecution history to broaden the scope of the term "direct conversion module." However, in the cases on which Defendant relies for this position, the statements made by the patentee contradicted clear statements in the specification limiting the scope of the disputed term. *See Clare*, 819 F.3d at 1332 (statements in prosecution history that "hinges or latches" could be visible were contradicted by specification's explicit disclosures that they could not be); *Telcordia*, 612 F.3d at 1374 (statement in prosecution history that "suggests that 'it may be possible for a payload field' to contain multiple data packets" contradicted by "specification [that] clearly limits the disclosed mechanism to one packet per frame"); *see also Honeywell Int'l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1319 (Fed. Cir. 2006) ("Where, as here, *the written description clearly identifies what his invention is*, an expression by a patentee during prosecution that he intends

his claims to cover more than what his specification discloses is entitled to little weight."(emphasis added)). By contrast, the specification of the Patents-in-Suit provides limited detail regarding the scope of the term "direct conversion module." Defendant's cited extrinsic evidence is also insufficient to overcome Plaintiff's clear statements in the prosecution history.

Finally, Defendant's argument that the term "direct conversion module" is indefinite is not persuasive. As Plaintiff has argued persuasively, "a POSITA would understand that the pertinent scope of direct conversion to-or-near baseband is not demarcated by precisely how 'near' a single-step down conversion comes to baseband, but rather by omission of expensive, power-consuming IF down conversion components and the entire avoidance of another down conversion step." Dkt. 70 at 9 (citing Dkt. 67-11 at OEW_APPLE-0027064). Thus, Defendant has not shown by clear and convincing evidence that the phrase "very near baseband" is indefinite.

For the foregoing reasons, the term "direct conversion module" is construed as "module for converting radio frequency to baseband or very near baseband in a single frequency conversion without an intermediate frequency."

e) "high quality audio signal representation" ('627 Patent, Claims 1, 3)

Plaintiff's Proposed Construction	**Defendant's Proposed Construction**
Plain and ordinary meaning	"an uncompressed audio signal representation" Alternatively: indefinite

i. The Positions of the Parties

The dispute on this issue arises from the phrase "high quality" and what a POSITA would understand this phrase to mean in the context of audio signal representations.

Defendant argues that the phrase "high quality" is "a subjective term of degree that is indefinite unless it is confined to the only 'objective boundaries disclosed by the intrinsic evidence, which is that the audio signal representation is not compressed." Dkt. 66 at 24 (citing *Berkheimer*, 881 F.3d at 1363–64; *Interval Licensing*, 766 F.3d at 1370–73). Defendant also contends that audio signal quality depends on objective factors, including "sampling rate, frequency range, and any compression algorithm," and subjective factors, such as an individual's hearing range and person preferences for audio content. *Id*. (citing Dkt. 66-1 ¶¶ 59–61, 68). Defendant then argues that the claims and the specification disclose that "high quality" audio signals are more than "low distortion" audio signals and signals within "a frequency range of 20 Hz to 20 kHz." *Id*. at 25 (citing Dkt. 66-1 ¶¶ 62–66; '391 Patent at 4:19–28; '627 Patent, Claims 1, 3, 5). Based on this premise, Defendant argues that the only objective metric to constrain the term "high quality" is to limit the audio signals to uncompressed signals. *Id*. (citing Dkt. 66-1 ¶ 70).

Plaintiff responds that the intrinsic evidence equates "high quality audio signal" with "a signal having a frequency range [of] 20 Hz to 20 kHz, which is the standard frequency range of human hearing." *See* Dkt. 65 at 23–24 (citing Dkt. 67-1 ¶ 18; Dkt. 67-16 at OEW_APPLE-0027247; Dkt. 67-24 (U.S. Patent No. 4,336,861) at 1:43–56, 5:47–49; Dkt. 68 ¶¶ 35, 36; '627 Patent at Claims 1, 3). Plaintiff also argues that "high quality audio" "was well-known to those of skill in the art." *Id*. at 24 (citing Dkt. 67-10 at 1; Dkt. 68 ¶ 37). Based on these positions, Plaintiff argues that the term is not indefinite and should be given its plain and ordinary meaning. *See id*. at 23–25.

Plaintiff also argues that Dr. Hansen "admits that '[o]ne factor in the perceived quality of an audio signal is its frequency range," such as the frequency range of human hearing between 20 Hz and 20 kHz. Dkt. 70 at 10 (citing Dkt. 66-1 ¶ 66). Plaintiff then contends that the remaining objective factors cited by Defendant for audio quality relate to "noise and interference reduction [and] are addressed by the several other limitations in the asserted claims, leaving the 'high quality audio' term to relate appropriately to the 20Hz to 20kHz signal frequency requirement." *Id*. (citing Dkt. 66-1 ¶ 68).

Defendant replies that Plaintiff's interpretation equating "high quality" audio with a signal within the range of 20 Hz to 20 kHz renders the language "with a frequency range of 20 Hz to 20 kHz" in Claims 1 and 3 of the '627 Patent superfluous. Dkt. 71 at 10. Defendant also argues that, "[t]he specification does not equate 'high quality' with frequency range either." *Id*. (citing Dkt. 71-1 ("Hansen Reply Decl.") ¶¶ 29, 30). Defendant then cites the testimony of Alexander, who is the expert designated by Plaintiff, "to the ITC that the 'quality' of an audio data 'representation' depends on data size and compression, with no mention of frequency range[.]" *Id*. (citing Dkt. 71-5 ¶ 6).

ii. Analysis

The intrinsic evidence shows that the term "high quality" in Claims 1 and 3 of the '627 Patent means "high fidelity" or "low distortion." Claims 1 and 3 recite, "a high quality signal representation with a frequency range of 20 Hz to 20 kHz," while Claim 5 of the '627 Patent recites "a representation of an audio signal with a frequency range of 20 Hz to 20 Khz." '627 Patent, Claims 1, 3, 5. Plaintiff's interpretation that equates "high quality" audio signals with signals within the frequency range of 20 Hz to 20 kHz would make the phrase "high quality" in Claims 1 and 3 superfluous. *See Clearstream Wastewater*, 206 F.3d at 1446. Nevertheless, the specification discloses that the receiver **50** provides "high quality, low distortion audio music" or "high fidelity audio music" after the audio signal passes through an "analog low pass filter **72**," which filters out frequencies not within the 20 Hz to 20 kHz frequency range, and a "power amplifier **74,**" which is "optimized for powering headphone speakers **75** to provide a high quality, low distortion audio music for audible enjoyment by a user wearing headphones **55**." '627 Patent at 3:42–46; 4:28–39. Thus, the specification equates "high quality" with "high fidelity," or "low distortion." *See* Dkt. 66-1 ¶ 59 (acknowledging that "distortion or signal loss that may be introduced when transmitting a signal over a wireless channel" affects signal quality); *see also* Dkt. 67-5 at OEWAPPLE-0001780–781 (stating that avoiding interference results in "the high-fidelity, low-distortion system of the present invention").

The language of the claims confirm this interpretation. Claims 1 and 3 of the '627 Patent recite a receiver

that receives a representation of a high quality audio signal, generates an audio output from the representation using a "digital-to-analog converter (DAC)," and reproduces the generated audio output with a "speaker," "wherein said reproduction does not include audible audio content originating from any transmitted audio signals in the wireless digital audio spread spectrum transmitter spectrum that do not originate from said digital audio spread spectrum transmitter." *See* '627 Patent, Claims 1 (also reciting that the receiver processes the high quality audio signal), 3; *see also* '391 Patent, Claims 1, 5 (reciting, "a module adapted to reproduce said generated audio output, said audio having been wirelessly transmitted from said portable audio player and reproduced virtually free from interference from device transmitted signals operating in the wireless digital audio system spectrum"). Thus, Claims 1 and 3 confirm that "high quality" refers to the state of the audio signal prior to any distortion or interference from transmission affecting the digital representation of the audio signal. Further, Claim 5 of the '627 Patent need not specify that the "representation" represents a "high quality audio signal" because unlike Claims 1 and 3, Claim 5 is directed to the transmitter and the representation has yet to receive any distortion or interference during transmission. *See* '627 Patent, Claim 5.

For the foregoing reasons, the term "high quality audio signal representation" is construed as "high fidelity, low distortion audio signal representation."[3]

IV. Conclusion

For the reasons stated in this Order, the disputed terms at issue are construed as follows:

Term	Construction
"audio player" ('627 Patent, Claim 5)	"a device for playing audio that has an analog headphone jack"
"audio source" ('047 Patent, Claims 1, 8, 17; '627 Patent, Claims 1, 2)	"a device for providing audio that has an analog headphone jack"
"transmitter" ('047 Patent, Claims 1, 8, 12,17–20; '627 Patent, Claims 1, 3, 5, 6, 12)	"a device that can be connected into an analog headphone jack to wirelessly transmit an audio signal"
"receiver" ('047 Patent, Claims 1–6, 8–15; '627 Patent, Claims 1–5, 10, 11)	Plain and ordinary meaning
"headphone" ('047 Patent, Claims 6, 15)	Plain and ordinary meaning
"direct conversion module" ('047 Patent, Claim 1; '627 Patent, Claims 1, 3)	"module for converting radio frequency to baseband or very near baseband in a single frequency conversion without an intermediate frequency"
"high quality audio signal representation" ('627 Patent, Claims 1, 3)	"high fidelity, low distortion audio signal representation"

[3] Defendant also has not shown that the terms "high fidelity" or "low distortion" are indefinite by clear and convincing evidence.

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IT IS SO ORDERED.

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Initials of Preparer TJ