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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

SANAS.AI INC.,

Plaintiff,

vs.

KRISP TECHNOLOGIES, INC.,

Defendant.

) Case No.: 3:25-cv-05666-RS (KAW)

)
) **DEFENDANT'S INVALIDITY**
) **CONTENTIONS**

IPR2026-00273

Krisp Technologies, Inc. v. Sanas.AI Inc.
Patent Owner Exhibit 2034

CASE NO. 3:25-CV-05666-RS (KAW)

DEFENDANT'S INVALIDITY CONTENTIONS

Pursuant to the Court’s Case Management Order (Dkt. 92) and Patent L.R. 3-3 and 3-4, Defendant Krisp Technologies, Inc. (“Krisp”) provides its invalidity contentions, as well as the document production accompanying such, to Plaintiff Sanas.ai Inc. (“Sanas”).

I. PRELIMINARY STATEMENT

Krisp provides these contentions and associated production based on an analysis of U.S. Patent Nos. 11,715,457 (the “’457 Patent”), 12,412,561 (the “’561 Patent”), 12,125,496 (the “’496 Patent”), 11,948,550 (the “’550 Patent”), 12,131,745 (the “’745 Patent”), and 12,417,756 (the “’756 Patent”) (collectively, the “Asserted Patents” or “Sanas Asserted Patents”), a diligent search of currently available prior art, and Sanas’ Infringement Contentions served April 9, 2026. Krisp understands that Sanas asserts the following Asserted Claims of the Sanas Asserted Patents:

Asserted Patent	Asserted Claims
’475 Patent	1-20 (all claims)
’561 Patent	1-18 (all claims)
’496 Patent	1-20 (all claims)
’550 Patent	1-4 and 6-22
’745 Patent	1-20 (all claims)
’756 Patent	1-20 (all claims)

Krisp notes that its investigation remains ongoing, including because Sanas’ infringement contentions and associated Patent L.R. 3-1 and 3-2 disclosures do not yet provide sufficient information regarding the asserted infringement theories or the operation of alleged commercial embodiments. Accordingly, Krisp reserves the right to amend and supplement these contentions as additional information becomes available. Krisp reserves the right to supplement and/or amend

1 these contentions and associated production in accordance with the case schedule, as additional
2 information comes to light, or as otherwise permitted by the Court, the Federal Rules, the Patent
3 Local Rules, and/or any other applicable rule. For purposes of these invalidity contentions, Krisp
4 has applied the same claim constructions advanced in its PTAB Petitions where applicable, and
5 nothing herein should be construed as advancing inconsistent claim construction positions between
6 these proceedings. IPR2026-00275 ('457 Patent); PGR2026-00032 ('561 Patent); IPR2026-00273
7 ('496 Patent); IPR2026-00272 ('550 Patent); IPR2026-00274 ('745 Patent); PGR2026-00033
8 ('756 Patent).

10 **II. IPR AND PGR STIPULATIONS**

11 Krisp notes that, in addition to the estoppel provisions of 35 U.S.C. §§ 315(e)(2) and
12 325(e)(2), Krisp has made further stipulations for each Asserted Patent if the PTAB institutes
13 Krisp's IPR/PGR Petitions. Krisp provided these stipulations to Sanas on April 23, 2026 via email
14 and filed these stipulations as exhibits in each IPR/PGR for the Asserted Patents. IPR2026-00275,
15 EX1047 ('457 Patent); PGR2026-00032, EX1039 ('561 Patent); IPR2026-00273, EX1051 ('496
16 Patent); IPR2026-00272, EX1046 ('550 Patent); IPR2026-00274, EX1041 ('745 Patent);
17 PGR2026-00033, EX1037 ('756 Patent). Krisp incorporates these stipulations by reference in full
18 here.
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21 **III. PATENT L.R 3-3: INVALIDITY CONTENTIONS**

22 **A. Patent L.R. 3-3(a): Identification of Prior Art**

23 Subject to the stipulations described in Section II, Krisp identifies the currently known
24 prior art that anticipates and/or renders obvious the Asserted Claims. Krisp makes this
25 identification based on prior art currently known and available to Krisp. Krisp reserves the right
26

1 to supplement and/or amend this identification as the case schedule progresses and as Sanas
2 provides the requisite information regarding its alleged inventions and commercial embodiments.

3 Prior Art Patents and Publications

- 4 • U.S. Patent Application Publication No. 2020/0193971, filed December 13, 2018
5 and published June 18, 202 (“Feinaur”)
- 6 • U.S. Patent Application Publication No. 2023/0223006, filed March 20, 2023 and
7 published July 13, 2023 (“Fan”)
- 8 • U.S. Patent No. 12,106,749, filed September 20, 2021 and issued October 1, 2024
9 (“Prabhavalkar”)
- 10 • Accentron: Foreign Accent Conversion to Arbitrary Non-Native Speakers Using
11 Zero-Shot Learning, Shaojin Ding et al., Department of Computer Science and
12 Engineering, Texas A&M University, September 18, 2021 (“Accentron”)
- 13 • U.S. Patent Application Publication No. 2019/0325861, filed April 18, 2019 and
14 published October 24, 2019 (“Singh”)
- 15 • U.S. Patent Application Publication No. 2008/0219459, filed March 14, 2008 and
16 published September 11, 2008 (“Bongiovi”)
- 17 • U.S. Patent No. 11,164,592, filed May 9, 2019 and issued November 2, 2021
18 (“Wu”)
- 19 • Using Phonetic Posteriorgram Based Frame Pairing for Segmental Accent
20 Conversion, Gualong Zhao et al., Department of Computer Science and
21 Engineering, Texas A&M University, July 1, 2019 (“Osuna”)
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- U.S. Patent Application Publication No. 2023/0335107, filed August 24, 2021 and published October 19, 2023 (“Ding”)
- Foreign Accent Conversion with Neural Network Acoustic Modeling, Guanlong Zhao, Office of Graduate and Professional Studies of Texas A&M University, August 2020 (“Zhao”)
- U.S. Patent Application Publication No. 2022/013107, filed July 9, 2020 and published January 13, 2022 (“Wintrod”)
- Group Sparse Representation with WaveNet Vocoder Adaptation for Spectrum and Prosody Conversion, Berrak Sisman et al., IEEE/ACM Transactions on Audio, Speech, and Language Processing, June 2019 (“Sisman”)
- U.S. Patent Application Publication No. 2020/0294492, filed May 29, 2020 and published September 17, 2020 (“Sypniewski”)
- U.S. Patent Application Publication No. 2021/0272571, filed September 30, 2020 and published September 2, 2021 (“Balasubramaniam”)
- Development of a computationally efficient voice conversion system on mobile phones, Shuhua Gao et al., Cambridge University Press, November 2018 (“Gao”)
- Improving the Speaker Identity of Non-Parallel Many-to-Many Voice Conversion with Adversarial Speaker Recognition, Shaojin Ding et al., Interspeech 2020, October 2020 (“Osuna 2”)
- Personal VAD: Speaker-Conditioned Voice Activity Detection, Shaojin Ding et al., Google Inc., Texas A&M University, April 8, 2020 (“Wang”)

- U.S. Patent Application Publication No. 2020/0066296, filed August 21, 2019 and published February 27, 2020 (“Sargsyna”)
- U.S. Patent Application Publication No. 2012/0116756, filed November 10, 2010 and published May 10, 2012 (“Kalinli”)
- U.S. Patent No. 7,319,959, filed May 14, 2003 and issued January 15, 2008 (“Watts”)
- U.S. Patent No. 12,412,590, filed December 19, 2019 and issued September 9, 2025 (“Dantrey”)
- International Patent Application Publication No. 2020/199990, filed March 24, 2020 and published October 8, 2020 (“Strake”)
- U.S. Patent No. 10,867,616, filed October 10, 2019 and issued December 15, 2020 (“Chen”)
- U.S. Patent Application Publication No. 2021/0241780, filed January 31, 2020 and published August 5, 2021 (“Quillen”)
- A Hierarchical Framework for Spectro-Temporal Feature Extraction, Martin Ernst Heckmann et al., Speech Communication 53, 2011 (“Heckmann”)
- VoiceFixer: A Unified Framework for High-Fidelity Speech Restoration, Haohe Liu et al., Centre for Vision, Speech, and Signal Processing, April 17, 2022 (“Liu”)
- U.S. Patent Application Publication No. 2024/0098218, filed January 30, 2023 and published March 21, 2024 (“Nguyen”)
- International Patent Application Publication No. 2022/203441, filed March 25, 2022 and published September 29, 2022 (“Ramos”)

- U.S. Patent No. 10,561,361, filed October 20, 2014 and issued February 18, 2020 (“Quatieri”)
- L2-ARCTIC: A Non-Native English Speech Corpus, Guanlong Zhao et al., Interspeech 2018, September 2018 (“Sonaat”)
- Automatic conversion between pronunciations of different English accents, Linsen Loots et al., Speech Communication 53, July 25, 2010 (“Loots”)
- U.S. Patent Application Publication No. 2013/0030789, filed July 26, 2012 and published January 31, 2013 (“Dalce”)
- U.S. Patent Application Publication No. 2018/0174595, filed December 21, 2016 and published June 21, 2018 (“Dirac”)
- U.S. Patent Application Publication No. 2018/0012613, filed June 9, 2017 and published January 11, 2018 (“Sun”)
- Accent Conversion Using Phonetic Posteriorgrams, Guanlong Zhao et al., IEEE International Conference on Acoustics, Speech and Signal Processing, 2018 (“Zhao 2”)
- U.S. Patent No. 9,613,620, filed February 25, 2015 and issued April 4, 2017 (“Agiomyrgiannakis”)
- U.S. Patent Application Publication No. 2021/0125603, filed August 31, 2017 and published April 29, 2021 (“Liang”)
- Foreign Accent Conversion by Synthesizing Speech from Phonetic Posteriorgrams, Guanlong Zhao et al., Interspeech 2019, September 2019 (“Zhao 3”)

- International Patent Application Publication No. 2020/171868, filed November 26, 2019 and published August 27, 2020 (“Biadsy”)
- U.S. Patent Application Publication No. 2024/0304200, filed February 8, 2022 and published September 12, 2024 (“Keshet”)
- U.S. Patent Application Publication No. 2014/0148933, filed November 29, 2012 and published May 29, 2014 (“King”)
- Soft-DTW: a Differentiable Loss Function for Time-Series, Marco Cuturi et al., Proceedings of the 34th International Conference on Machine Learning, February 20, 2018 (“Cuturi”)
- U.S. Patent No. 11,450,332, filed February 20, 2019 and issued September 20, 2022 (“Kameoka”)
- U.S. Patent No. 12,217,761, filed October 31, 2021 and issued February 4, 2025 (“Chen 2”)
- U.S. Patent No. 12,400,078, filed March 28, 2022 and issued August 26, 2025 (“Vyas”)
- End-To-End Accent Conversion Without Using Native Utterances, Songxiang Liu et al., 2020 IEEE International Conference on Acoustics, Speech and Signal Processing, 2020 (“Liu 2”)
- Converting Foreign Accent Speech Without a Reference, Guanlong Zhao et al., IEEE/ACM Transactions on Audio, Speech, and Language Processing, 2021 (“Zhao 4”)

- U.S. Patent No. 10,163,451, filed December 21, 2016 and issued December 25, 2018 (“Dirac 2”)
- U.S. Patent Application Publication No. 2022/0417659, filed June 23, 2021 and published December 29, 2022 (“Narayanan”)
- Speaker Identification using MFCC-Domain Support Vector Machine, S.M. Kamruzzaman et al., September 2010 (“Kamruzzaman”)
- U.S. Patent Application Publication No. 2005/0066209, filed June 17, 2004 and published March 24, 2005 (“Kee”)
- U.S. Patent Application Publication No. 2024/0274122, filed March 30, 2023 and published August 15, 2024 (“Wang 2”)

Prior Art Systems¹

- FAC-via-PPG System
- Accentron System
- VoiceFixer System
- PPG2PPG System

Krisp additionally incorporates by reference the prior art provided as exhibits in its IPRs and PGRs. IPR2026-00275 (’457 Patent); PGR2026-00032 (’561 Patent); IPR2026-00273 (’496 Patent); IPR2026-00272 (’550 Patent); IPR2026-00274 (’745 Patent); PGR2026-00033 (’756 Patent).

¹ Evidence regarding the functionality of each prior art system and dates of availability can be found in the associated claim charts mapping each system.

B. Patent L.R. 3-3(b): Anticipation and Obviousness

Subject to the stipulations describe in Section II, Krisp contends that the identified prior art, individually and/or in combination as reflected in the accompanying claim charts and petitions, anticipates and/or renders obvious one or more Asserted Claims, including based on the prior art item alone, based on the understanding or one skilled in the art, and/or in combination with other prior art items. Exemplary rationales and explanations for why the prior art renders the Asserted Claims obvious, including specific motivations to combine and reasonable expectations of success, are described in the claim charts provided with these contentions as well as in the Petitions and Expert Declarations for Krisp's IPR and PGRs, which are incorporated here by reference. IPR2026-00275 ('457 Patent); PGR2026-00032 ('561 Patent); IPR2026-00273 ('496 Patent); IPR2026-00272 ('550 Patent); IPR2026-00274 ('745 Patent); PGR2026-00033 ('756 Patent).

C. Patent L.R. 3-3(c): Claim Charts

Subject to the stipulations described in Section II, Krisp provides the below charts which identify specifically where and how the prior art teaches each limitation of the Asserted Claims. Krisp contends that these charts, which are attached and provided concurrently with these invalidity contentions, establish exemplary disclosures and combinations of invalidating prior art under 35 U.S.C. §§ 102 and 103. The references in the below charts may be combined with one or more references in the same chart, another chart, or another piece of prior art identified in these contentions, for at least the same exemplary reasons provided in the motivation to combine sections of the charts and Krisp's IPR and PGR Petitions, which are incorporated by reference. IPR2026-00275 ('457 Patent); PGR2026-00032 ('561 Patent); IPR2026-00273 ('496 Patent); IPR2026-00272 ('550 Patent); IPR2026-00274 ('745 Patent); PGR2026-00033 ('756 Patent).

1 Krisp specifically contends that the grounds presented in its IPR and PGR Petitions render each
2 Asserted Claim obvious. *Id.* Krisp has complied with Patent L.R. 3-3(c) by charting such IPR and
3 PGR grounds in these contentions and expressly provides notice to Sanas that such charts further
4 include the reasoning and specific mapping for each Asserted Claim. Further, Krisp contends that,
5 subject to its IPR and PGR stipulations described in Section II, each piece of prior art charted as a
6 patent or printed publication also evidences invalidity systems to the extent applicable.

- 7 • Ex. A-1: Invalidity of the '457 Patent in view of Feinaur, Fan, Prabhavalkar,
8 Accentron, Singh, Bongiovi, Wu, and/or Osuna.
- 9 • Ex. A-2: Invalidity of the '457 Patent in view of Ding, Zhao, Wintrode, Sisman,
10 Sypniewski, Feinaur, Balasubramaniam, Bongiovi, and/or Singh.
- 11 • Ex. A-3: Invalidity of the '457 Patent in view of the FAC-via-PPG System, Gao,
12 Wintrode, Feinaur, Balasubramaniam, Ding, and/or Bongiovi.
- 13 • Ex. A-4: Invalidity of the '457 Patent in view of the Accentron System, Osuna 2,
14 Wang, Sisman, Balasubramaniam, Feinaur, and/or Bongiovi.
- 15 • Ex. B-1: Invalidity of the '561 Patent in view of Feinaur, Fan, Prabhavalkar,
16 Sargsyna, Kalinli, and/or Watts.
- 17 • Ex. B-2: Invalidity of the '561 Patent in view of Ding, Wintrode, Sisman,
18 Sypniewski, Watts, and/or Feinaur.
- 19 • Ex. B-3: Invalidity of the '561 Patent in view of the FAC-via-PPG System, Wang,
20 Wintrode, Ding, Feinaur, and/or Watts.
- 21 • Ex. B-4: Invalidity of the '561 Patent in view of the Accentron System,
22 Balasubramaniam, Feinaur, and/or Watts.
- 23 • Ex. B-4: Invalidity of the '561 Patent in view of the Accentron System,
24 Balasubramaniam, Feinaur, and/or Watts.
- 25 • Ex. B-4: Invalidity of the '561 Patent in view of the Accentron System,
26 Balasubramaniam, Feinaur, and/or Watts.

- Ex. C-1: Invalidity of the '496 Patent in view of Dantrey, Strake, Chen, Quillen, Heckmann, and/or Liu.
- Ex. C-2: Invalidity of the '496 Patent in view of Strake, Heckmann, Nguyen, and/or Ramos.
- Ex. C-3: Invalidity of the '496 Patent in view of the VoiceFixer System, Dantrey, Strake, Chen, Heckmann, Quillen, and/or Quatieri.
- Ex. D-1: Invalidity of the '550 Patent in view of Fan, Sonaat, Loots, Feinauer, Osuna, and/or Dalce.
- Ex. D-2: Invalidity of the '550 Patent in view of the FAC-via-PPG System, Dirac, and/or Feinauer.
- Ex. D-3: Invalidity of the '550 Patent in view of Sun, Zhao 2, Dirac 2, and/or Feinauer.
- Ex. D-4: Invalidity of the '550 Patent in view of Agiomyrgiannakis, Liang, Zhao 3, Dirac 2, Biadsy, and/or Feinaur.
- Ex. E-1: Invalidity of the '745 Patent in view of Keshet, King, Cuturi, Kameoka, Fan, Chen 2, and/or Vyas.
- Ex. E-2: Invalidity of the '745 Patent in view of Liu 2, Keshet, King, Cuturi, Kameoka, Chen 2, and Vyas.
- Ex. E-3: Invalidity of the '745 Patent in view of the PPG2PPG System, Keshet, King, Cuturi, Kameoka, Chen 2, and/or Vyas.
- Ex. E-4: Invalidity of the '745 Patent in view of Zhao 4, Keshet, King, Cuturi, Kameoka, Chen 2, and/or Vyas.

- Ex. F-1: Invalidity of the '756 Patent in view of Nguyen, Dirac 2, Narayanan, Kamruzzaman, Kee, and/or Wang 2.
- Ex. F-2: Invalidity of the '756 Patent in view of Wang 2 and/or Dirac 2.
- Ex. F-3: Invalidity of the '756 Patent in view of the Accentron System and Wang 2.
- Ex. F-4: Invalidity of the '756 Patent in view of Zhao 2 and/or Nguyen.

D. Patent L.R. 3-3(d): 35 U.S.C. §§ 101 and 112

1. 35 U.S.C. § 101

Subject to the stipulations described in Section II, Krisp contends each Asserted Claim of each Sanas Asserted Patent is invalid under 35 U.S.C. § 101. Krisp incorporates by reference its previously filed briefing regarding Section 101 here. Dkts. 64, 67, 69.

“Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014). To determine patent eligibility under Section 101, courts apply a two-part framework: (1) courts determine “whether the claims at issue are directed to [a] patent-ineligible concept[;]” and (2) if so, courts determine whether there is an “inventive concept . . . that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Id.* at 217–18. For software claims, the step one “inquiry often turns on whether the claims focus on the specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an abstract idea for which computers are invoked merely as a tool.” *Customedia Techs., LLC v. Dish Network Corp.*, 951 F.3d 1359, 1365 (Fed. Cir. 2020) (internal citations and quotations omitted). And under step two, the claims “must include additional features” that “must be more than well-understood,

1 routine, conventional activity.” *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir.
2 2014) (internal citations and quotation marks omitted).

3 Each Asserted Claim of each Sanas Asserted Patent is directed to an abstract idea, is
4 implemented on generic computer components, lacks an inventive concept, and does not amount
5 to significantly more than the abstract idea itself, thus rendering each claim invalid under 35 U.S.C.
6 § 101.
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8 The claims of the ’550, ’496, and ’756 Patents are invalid under the two-step analysis set
9 forth in *Alice*. First, each Asserted Claim of each of the ’550, ’496, and ’756 Patents is directed at
10 least to the abstract idea of translation without claiming any improvement or specific
11 implementation of the relevant technology—e.g., converting audio data from one form to another
12 or converting speech from one accent to another using generic machine learning algorithms and
13 neural networks. Each Asserted Claim of the ’550 and ’756 Patents is also directed to the abstract
14 idea of mimicking, impersonating, adjusting, correcting, and/or changing an accent. Each Asserted
15 Claim of the ’496 Patent is also directed to at least the abstract idea of noise removal. None of the
16 Asserted Claims of any of the ’550, ’496, and ’756 Patents is directed to a specific technological
17 or computer improvement. Instead, the claims are wholly directed to abstract process of translation
18 and conversion, mimicking, impersonating, adjusting, correcting, and/or changing an accent,
19 and/or noise removal. Second, there is no inventive concept that would ensure the claims result in
20 significantly more than such abstract idea(s), whether considering any particular limitation, any
21 combination of limitations, the claims as a whole, or any combination of claims. The claims do
22 not improve the functioning of any computer, machine learning architecture, neural network, or
23 audio processing system. Instead, they simply use such tools to implement an abstract idea.
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1 The claims of the '457 and '561 Patents are invalid under the two-step analysis set forth in
2 *Alice*. First, each Asserted Claim of each of the '457 and '561 Patents is directed to at least the
3 abstract idea of gathering data, analyzing it, and displaying results. Each Asserted Claim of
4 the '457 and '561 Patents is also directed to the abstract idea of mimicking, impersonating,
5 adjusting, correcting, and/or changing an accent. None of the Asserted Claims of either the '457
6 or '561 Patent is directed to a specific technological or computer improvement. Instead, the claims
7 are wholly directed to the abstract process of gathering data, analyzing it, and displaying results,
8 and/or mimicking, impersonating, adjusting, correcting, and/or changing an accent. Second, there
9 is no inventive concept that would ensure the claims result in significantly more than such abstract
10 idea(s), whether considering any particular limitation, any combination of limitations, the claims
11 as a whole, or any combination of claims. The claims do not improve the functioning of any
12 computer, machine learning architecture, neural network, or audio processing system. Instead, they
13 simply use such tools to implement an abstract idea.
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16 The claims of the '745 Patent is invalid under the two-step analysis set forth in *Alice*. First,
17 each Asserted Claim of the '745 Patent is directed to at least the abstract idea of mimicking,
18 impersonating, adjusting, correcting, and/or changing an accent. Each Asserted Claim of the '745
19 Patent is also directed to the abstract idea of gathering data, analyzing it, and displaying results.
20 None of the Asserted Claims of the '745 Patent is directed to a specific technological or computer
21 improvement. Instead, the claims are wholly directed to abstract process of gathering data,
22 analyzing it, and displaying results, and/or mimicking, impersonating, adjusting, correcting, and/or
23 changing an accent. Second, there is no inventive concept that would ensure the claims result in
24 significantly more than such abstract idea(s), whether considering any particular limitation, any
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1 combination of limitations, the claims as a whole, or any combination of claims. The claims do
2 not improve the functioning of any computer, machine learning architecture, neural network, or
3 audio processing system. Instead, they simply use such tools to implement an abstract idea.

4 **2. 35 U.S.C. § 112**

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6 Subject to the stipulations described in Section II, Krisp contends that the Asserted Claims
7 are invalid under 35 U.S.C. § 112 as lacking written description, not enabled, and/or not enabled
8 or described to the full scope that Sanas contends in its infringement contentions.

9 A more detailed analysis for Krisp's 35 U.S.C. § 112 invalidity defenses regarding the
10 Asserted Claims may be set forth in Krisp's summary judgment motions and/or expert report(s)
11 on invalidity, to be provided in accordance with the Court's deadlines in this case. Krisp reserves
12 the right to amend and/or supplement these disclosures as this case progresses, including based on
13 disclosures or statements (or amended/supplemented disclosures or statements) made by Sanas,
14 fact discovery, and/or expert discovery. Krisp's investigation is ongoing, and Krisp reserves the
15 right to amend and/or supplement these disclosures based on further investigation and in a manner
16 consistent with the Federal Rules of Civil Procedure, or otherwise in accordance with any order,
17 deadline, direction of the Court, or agreement of the parties. Krisp specifically reserves the right
18 to amend and supplement these disclosures regarding full scope enablement and/or full scope
19 written description as Sanas further articulates its currently deficient infringement contentions in
20 this litigation.
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1 Krisp provides the following grounds of invalidity for the Asserted Claims based on lack
2 of enablement, lack of full scope enablement, lack of written description, and/or lack of full scope
3 written description under 35 U.S.C. § 112:²

- 4 • '457 Patent
 - 5 ○ “divid[ing/e] [the/a] speech audio signal [including an accent] into a stream of input
 - 6 chunks, an input chunk from the stream of input chunks including a pre-defined
 - 7 number of frames of the speech audio signal” (Claims 1, 14, 20)
 - 8
 - 9 ▪ Lacks enablement, full scope enablement, written description, and/or full
 - 10 scope written description
 - 11 ○ “extract[ing], by an acoustic features extraction module from the input chunk and
 - 12 a context associated with the input chunk, acoustic features” (Claims 1, 14, 20)
 - 13
 - 14 ▪ Lacks enablement, full scope enablement, written description, and/or full
 - 15 scope written description
 - 16 ○ “extract[ing], by a linguistic features extraction module from the input chunk and
 - 17 the context, linguistic features with a reduced accent” (Claims 1, 6, 14, 19, 20)
 - 18
 - 19 ▪ Lacks enablement, full scope enablement, written description, and/or full
 - 20 scope written description
 - 21 ○ “receiv[ing/e] a speaker embedding for a human speaker” (Claims 1, 14, 20)

24
25 ² Krisp identifies certain exemplary claim limitations but also contends that the larger claim
26 limitations (e.g., surrounding context), as well as the same/similar/associated limitations found in
27 the same claim and other claims, also fail the requirements of 35 U.S.C. § 112 for enablement, full
scope enablement, written description, and/or full scope written description.

- 1 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 2 scope written description
- 3 ○ “generat[ing/e] an output chunk of an output audio signal based on the speaker
- 4 embedding, the acoustic features, and the linguistic features” (Claims 1, 14, 20)
- 5 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 6 scope written description
- 7 ○ “wherein the speaker embedding is generated based on the speech audio signal”
- 8 (Claims 3, 16)
- 9 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 10 scope written description
- 11 ○ “wherein the speaker embedding is pretrained based on audio data including a
- 12 recorded speech of a target speaker having a further accent” (Claims 4, 17)
- 13 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 14 scope written description
- 15 ○ “providing the speaker embedding, the acoustic features, and the linguistic features
- 16 to a synthesis module to generate a melspectrogram with the reduced accent”
- 17 (Claim 9)
- 18 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 19 scope written description
- 20 ○ “combining the hidden features, the acoustic features, and the speaker embeddings
- 21 to generate further features” (Claim 10)
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- 1 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 2 scope written description
- 3 ○ “the speech audio signal is recorded from a voice of a user by the computing device
- 4 via an acoustic sensor” (Claims 2, 15)
- 5 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 6 scope written description
- 7 ○ “wherein the linguistic features extraction module includes a neural network trained
- 8 based on audio data to output the linguistic features with the reduced accent, the
- 9 neural network being trained using a loss function to reduce, in the linguistic
- 10 features, contributions due to a further accent present in the audio data” (Claims 6,
- 11 19)
- 12 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 13 scope written description
- 14 ○ “one of the following: phonetic posteriorgrams with a standardized phonetic
- 15 dictionary and phonetic posteriorgrams with a data-driven phonetic library”
- 16 (Claims 5, 18)
- 17 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 18 scope written description
- 19 ○ “the acoustic features include a pitch of the speech audio signal, an energy of the
- 20 speech audio signal, and a value of a voice activity detector, the voice activity
- 21 detector indicating absence of a human voice in the speech audio signal or presence
- 22 of the human voice in the speech audio signal” (Claims 7, 18)
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- 1 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 2 scope written description
- 3 ○ “the synthesis module includes an encoder, a decoder, and a post-net module
- 4 designed to improve an output of the decoder” (Claim 10)
- 5 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 6 scope written description
- 7 ○ “an acoustic features chunk of the stream of acoustic features chunks and acoustic
- 8 features context including the pre-determined number of acoustic features frames
- 9 belonging to acoustic features chunks preceding the acoustic features chunk in the
- 10 stream of acoustic features chunks” (Claim 11)
- 11 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 12 scope written description
- 13 ○ “a linguistic features chunk of the stream of melspectrogram chunks and linguistic
- 14 features context including the pre-determined number of linguistic features frames
- 15 belonging to linguistic features chunks preceding the linguistic features chunk in
- 16 the stream of acoustic features chunks” (Claim 11)
- 17 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 18 scope written description
- 19 ○ “digital signal processing module” / “digital signal processing module to adjust one
- 20 or more characteristics of the speech audio signal to improve extraction of the
- 21 linguistic features and the acoustic features” / “digital signal processing module to
- 22 adjust a loudness of the speech audio signal from a first level to a second level” /
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“after generating the output chunk of the output audio signal, processing the output chunk by the digital signal processing module, to adjust the loudness of the output audio signal to the first level” (Claims 12, 13)

- Lacks enablement, full scope enablement, written description, and/or full scope written description

- ’561 Patent

- “extract[ing], from [a chunk of a stream of chunks of an input audio signal/from the input chunk and a context associated with the input chunk] [obtained via the input device], acoustic features and linguistic features, wherein the linguistic features have a reduced accent” (Claims 1, 6, 11, 16, 17, 18)

- Lacks enablement, full scope enablement, written description, and/or full scope written description

- “synthesiz[ing/e] a spectrum representation based on the acoustic features, the linguistic features, and a speaker embedding for a human speaker” (Claims 1, 6, 11)

- Lacks enablement, full scope enablement, written description, and/or full scope written description

- “generat[ing/e], [by a/via the] vocoder and based on the spectrum representation, an output chunk of an output audio signal” / “generat[ing/e] an output chunk of an output audio signal based on the speaker embedding, the acoustic features, and the linguistic features” (Claims 1, 6, 11, 16, 17, 18)

- 1 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 2 scope written description
- 3 ○ “the spectrum representation includes a melspectrogram with the reduced accent”
- 4 (Claims 2, 7, 12)
- 5 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 6 scope written description
- 7 ○ “the acoustic features include one or more of a pitch of the input audio signal, a
- 8 standard deviation of the pitch of the input audio signal, a mean of the pitch of the
- 9 input audio signal, an energy of the input audio signal, a noise floor of the input
- 10 audio signal, Linear Prediction Cepstral Coefficients (LPCC) of the input audio
- 11 signal, Mel Frequency Cepstral Coefficients (MFCC) of the input audio signal, or
- 12 Bark Frequency Cepstral coefficients (BFCC) of the input audio signal” (Claims 2,
- 13 7, 12)
- 14 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 15 scope written description
- 16 ○ “generat[ing/e] the output chunk using respective modules of a computational
- 17 graph, wherein each of the respective modules is associated with input data and
- 18 output data” (Claims 5, 10, 15)
- 19 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 20 scope written description
- 21 ○ “provid[ing/e], as an input to at least one of the [respective] modules, a time-shift
- 22 parameter indicating a difference in timestamps of the chunk of the stream of
- 23 parameter indicating a difference in timestamps of the chunk of the stream of
- 24 parameter indicating a difference in timestamps of the chunk of the stream of
- 25 parameter indicating a difference in timestamps of the chunk of the stream of
- 26 parameter indicating a difference in timestamps of the chunk of the stream of
- 27 parameter indicating a difference in timestamps of the chunk of the stream of

1 chunks of the input audio signal and one of the input data or the output data of the
2 at least one of the respective modules, wherein the acoustic features are assigned a
3 lower time-shift parameter than the linguistic features” (Claim 5, 10, 15)

4 ▪ Lacks enablement, full scope enablement, written description, and/or full
5 scope written description
6

7 ○ “provide the output audio signal for output via an auditory channel of an output
8 device” (Claim 11)

9 ▪ Lacks enablement, full scope enablement, written description, and/or full
10 scope written description
11

12 • ‘496 Patent

13 ○ “[applying the trained first neural network to] convert [the] input speech frames
14 [fragmented from input audio data] to low-dimensional representations of the input
15 speech frames” (Claims 1, 11, 16)

16 ▪ Lacks enablement, full scope enablement, written description, and/or full
17 scope written description
18

19 ○ “wherein one or more of the fragmentation or the conversion is based on an
20 application of a first neural network to the input audio data” (Claims 1, 16)

21 ▪ Lacks enablement, full scope enablement, written description, and/or full
22 scope written description
23

24 ○ “apply[ing] [a/the] [trained] second neural network to the low-dimensional
25 representations of the input speech frames to generate target speech frames”
26 (Claims 1, 11, 16)
27

- 1 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 2 scope written description
- 3 ○ “combin[e/ing] the target speech frames to generate output audio data” (Claims 1,
- 4 11, 16)
- 5 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 6 scope written description
- 7
- 8 ○ “wherein the one or more processors are further configured to execute the
- 9 instructions to train the first neural network using input audio training data, one or
- 10 more augmentations, and one or more transcripts, wherein the first neural network
- 11 is trained to learn a mapping between input training speech frames fragmented from
- 12 the input audio training data and low-dimensional representation of input audio
- 13 training data speech frames” (Claim 4)
- 14 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 15 scope written description
- 16
- 17 ○ “wherein the one or more processors are further configured to execute the
- 18 instructions to train the second neural network using a target speech sample and the
- 19 low-dimensional representation of input audio training data speech frames” (Claim
- 20 6)
- 21 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 22 scope written description
- 23
- 24 ○ “wherein the second neural network is trained to use dynamic conversion to learn
- 25 a mapping between each of the low-dimensional representation of input audio
- 26
- 27

1 training data speech frames and a corresponding one of a plurality of target training
2 speech frames” (Claims 6, 19)

3 ▪ Lacks enablement, full scope enablement, written description, and/or full
4 scope written description

5 ○ “wherein the second neural network comprises one or more of a diffusion
6 probabilistic model, a flow-based model, or a generative adversarial network-based
7 model” (Claims 7, 20)

8 ▪ Lacks enablement, full scope enablement, written description, and/or full
9 scope written description

10 ○ “pre-process[ing] the input audio data by applying one or more of a noise reduction
11 algorithm to remove background noise from the input audio data or a filtering
12 technique to remove high-frequency noise or pops from the input audio data”
13 (Claims 8, 14)

14 ▪ Lacks enablement, full scope enablement, written description, and/or full
15 scope written description

16 ○ “encod[e/ing] the extracted features into one or more of the low-dimensional
17 representations of the input speech frames using a dimensionality reduction
18 technique” (Claims 9, 15)

19 ▪ Lacks enablement, full scope enablement, written description, and/or full
20 scope written description

21 ○ “extract the features using a hierarchical feature extraction network comprises a
22 plurality of levels, wherein each of the levels is configured to capture a different
23

one or more of the features and the captured different one or more of the features are compressed at each of the levels” (Claim 10)

- Lacks enablement, full scope enablement, written description, and/or full scope written description

- “training a first neural network using input audio training data, one or more augmentations, and one or more transcripts and a second neural network using a target speech sample and a plurality of low-dimensional representation of input audio training data speech frames” (Claim 11)

- Lacks enablement, full scope enablement, written description, and/or full scope written description

- “wherein the trained first neural network is trained to learn a mapping between input training speech frames fragmented from the input audio training data and the low-dimensional representation of input audio training data speech frames” (Claim 12)

- Lacks enablement, full scope enablement, written description, and/or full scope written description

- “wherein the instructions, when executed by the at least one processor further causes the at least one processor to train the first neural network using input audio training data, one or more augmentations, and one or more transcripts, wherein the first neural network is trained to learn a mapping between input training speech frames fragmented from the input audio training data and low-dimensional representation of input audio training data speech frames” (Claim 18)

- Lacks enablement, full scope enablement, written description, and/or full scope written description
- “wherein the instructions, when executed by the at least one processor further causes the at least one processor to train the second neural network using a target speech sample and the low-dimensional representation of input audio training data speech frames, wherein the second neural network is trained to use dynamic conversion to learn a mapping between each of the low-dimensional representation of input audio training data speech frames and a corresponding one of a plurality of target training speech frames” (Claim 19)

- Lacks enablement, full scope enablement, written description, and/or full scope written description

- '550 Patent

- “train[ing] a first machine-learning algorithm with first audio data comprising speech content captured from a plurality of different speakers having a first accent” (Claims 1, 11, 19)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “wherein the training comprises aligning and classifying each of a first plurality of frames of the captured speech content corresponding to respective ones of the plurality of different speakers” (Claims 1, 11, 19)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description

- “apply[ing] the first machine-learning algorithm to speech content received via at least one microphone, and comprising a set of phonemes associated with a first pronunciation of the received speech content, to derive a non-text linguistic representation of the set of phonemes associated with the first pronunciation of the received speech content” (Claims 1, 11, 19)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “synthesiz[e/ing], using a second machine-learning-algorithm trained with (i) second audio data comprising the first accent and (ii) third audio data comprising a second accent, fourth audio data representative of the received speech content having the second accent” (Claims 1, 11, 19)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “wherein synthesizing the fourth audio data comprises mapping at least a first non-text linguistic representation of a first phoneme of the set of phonemes associated with the first pronunciation of the received speech content to a second non-text linguistic representation of a second phoneme of an updated set of phonemes associated with a second pronunciation of the received speech content that is different from the first pronunciation of the received speech content, wherein the first and second phonemes are different phonemes” (Claims 1, 11, 19)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description

- “wherein the first machine-learning algorithm comprises a non-text learned linguistic representation for the first accent” (Claims 7, 16, 22)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “convert[ing] the synthesized fourth audio data into a synthesized version of the received speech content having the second accent” (Claims 1, 11, 19)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “align[ing] and classify[ing] each of the first plurality of frames according to monophone and triphone sounds of the captured speech content to train the first machine-learning algorithm” (Claims 7, 16, 22)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “map[ping] each frame in the non-text linguistic representation of the set of phonemes associated with the first pronunciation of the received speech content to a corresponding frame in the non-text linguistic representation of the updated set of phonemes associated with the second pronunciation of the received speech content in order to map the non-text linguistic representation of the set of phonemes associated with the first pronunciation of the received speech content to the non-text linguistic representation of the updated set of phonemes associated with the second pronunciation of the received speech content” (Claims 3, 13, 21)

- 1 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 2 scope written description
- 3 ○ “determin[e/ing], for each of a second plurality of frames in the received speech
- 4 content, a respective (i) monophone and (ii) triphone sound detected in the frame”
- 5 (Claims 7, 16, 22)
- 6 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 7 scope written description
- 8 ○ “continuously convert the synthesized fourth audio data” (Claims 9, 18, 20)
- 9 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 10 scope written description
- 11 ○ “wherein the received speech content having the first accent further comprises a set
- 12 of prosodic features, the program instructions are executable by the at least one
- 13 processor to further cause the system to synthesize the fourth audio data
- 14 representative of the received speech content having the second accent and the set
- 15 of prosodic features, and the synthesized version of the received speech content
- 16 having the second accent has the set of prosodic features” (Claim 10)
- 17 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 18 scope written description
- 19 • ’745 Patent
- 20 ○ “apply[ing] a trained [accent conversion neural network/machine learning model]
- 21 to the [first/set of] phonetic embedding vectors to generate [second/a set of
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transformed] phonetic embedding vectors corresponding to first phonetic characteristics of speech data in a target accent” (Claims 1, 8)

- Lacks enablement, full scope enablement, written description, and/or full scope written description
- “apply a trained neural network to the first phonetic embedding vectors to generate second phonetic embedding vectors corresponding to phonetic characteristics of speech data in a target accent” (Claim 15)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “determin[e/ing] [a/an] [differentiable] alignment by [jointly] maximizing a cosine distance between the first phonetic embedding vectors and the second phonetic embedding vectors” (Claims 1, 8, 15)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “align[ing] the speech data to the phonetic content based on the [differentiable/determined] alignment” (Claims 1, 8, 15)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “wherein the first phonetic embedding vectors represent second phonetic characteristics of input speech in the input audio data in a numerical format and encode one or more of phonetic features, patterns, phonemes, pronunciation,

1 intonation, speech sounds, or phonetic units present in the input speech” (Claims 2,
2 9, 16)

- 3 ▪ Lacks enablement, full scope enablement, written description, and/or full
4 scope written description

- 5 ○ “wherein the [accent conversion neural network/machine learning model]: is
6 trained to learn a mapping between the first phonetic embedding vectors and the
7 second phonetic embedding vectors using a labeled dataset comprising paired
8 samples of course accent phonetic embedding vectors and corresponding target
9 accent phonetic embedding vectors” (Claims 3, 10)

- 11 ▪ Lacks enablement, full scope enablement, written description, and/or full
12 scope written description

- 13 ○ “wherein the [accent conversion neural network/machine learning model]: . . .
14 comprises an encoder layer configured to encode the first phonetic embedding
15 vectors into a latent representation and a decoder layer configured to decode the
16 latent representation to generate the second phonetic embedding vectors” (Claims
17 3, 10)

- 19 ▪ Lacks enablement, full scope enablement, written description, and/or full
20 scope written description

- 21 ○ “normalize the first and second phonetic embedding vectors by scaling the first and
22 second phonetic embedding vectors to have a magnitude of one and preserving a
23 relative direction of the first and second phonetic embedding vectors” (Claims 4,
24 17)

- 1 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 2 scope written description
- 3 ○ “one or more of align first frames of the speech data with corresponding second
- 4 frames of the phonetic content, apply one or more of prosody modeling, intonation
- 5 adjustment, or accent-specific acoustic modeling techniques, or adjust a speech rate,
- 6 pitch, or gender, wherein the output audio data preserves linguistic content of the
- 7 input audio data” (Claims 5, 12, 18)
- 8 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 9 scope written description
- 10 ○ “apply[ing] a gradient-based optimization algorithm to optimize the joint
- 11 maximization of the cosine distance” (Claims 6, 13, 19)
- 12 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 13 scope written description
- 14 ○ “apply[ing] one or more dimensionality reduction techniques to preprocess the first
- 15 and second phonetic embedding vectors [and the set of transformed phonetic
- 16 embedding vectors]” (Claims 7, 14, 20)
- 17 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 18 scope written description
- 19 ○ “normalizing the set of phonetic embedding vectors and the set of transformed
- 20 phonetic embedding vectors by scaling the set of phonetic embedding vectors and
- 21 the set of transformed phonetic embedding vectors to have a same magnitude and
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1 preserving a relative direction of the set of phonetic embedding vectors and the set
2 of transformed phonetic embedding vectors” (Claim 11)

- 3 ▪ Lacks enablement, full scope enablement, written description, and/or full
4 scope written description

5
6 • ’756 Patent

- 7 ○ “apply[ing] one or more trained machine learning models to first input audio data . . .
8 to extract accent features” (Claims 1, 7, 14)

- 9 ▪ Lacks enablement, full scope enablement, written description, and/or full
10 scope written description

- 11 ○ “analyz[e/ing] obtained second input audio data associated with second input
12 speech associated with a second accent of a second user to generate characteristics
13 specific to a natural voice of the second user” (Claims 1, 7, 14)

- 14 ▪ Lacks enablement, full scope enablement, written description, and/or full
15 scope written description

- 16 ○ “wherein the generated characteristics correspond to vocal traits that are distinct to
17 the second user and comprise one or more of a voice quality or one or more phonetic
18 patterns, prosodic features, articulation styles, or intonation patterns” (Claim 1)

- 19 ▪ Lacks enablement, full scope enablement, written description, and/or full
20 scope written description

- 21 ○ “synthesiz[e/ing] a modified version of the second input speech by modifying the
22 obtained second input audio data based on the generated characteristics and the
23 extracted accent features” (Claims 1, 7, 14)

- 1 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 2 scope written description
- 3 ○ “wherein the modified version of the second input speech preserves aspects of the
- 4 natural voice of the second user and mimics the first accent” (Claims 1, 8, 15)
- 5 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 6 scope written description
- 7 ○ “extract[ing] from the first input audio data one or more prosodic features, linguistic
- 8 features, or global speaker characteristics” (Claims 2, 9, 16)
- 9 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 10 scope written description
- 11 ○ “wherein the accent features comprise one or more pitch contours, other intonation
- 12 patterns, or phoneme pronunciations and the pitch contours comprise variations in
- 13 pitch throughout the first input speech, the [other] intonation patterns comprise the
- 14 rise and fall of pitch at the ends of phrases or sentences, or the phoneme
- 15 pronunciations comprise a unique production of phonemes in the first accent”
- 16 (Claims 3, 10, 17)
- 17 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 18 scope written description
- 19 ○ “apply[ing] a mel frequency cepstral coefficient (MFCC) analysis to extract [a/the]
- 20 unique fingerprint of the voice of the second user” (Claims 4, 11, 18)
- 21 ▪ Lacks enablement, full scope enablement, written description, and/or full
- 22 scope written description
- 23 scope written description
- 24 scope written description
- 25 scope written description
- 26 scope written description
- 27 scope written description

- “wherein the generated characteristics comprise [the/a] unique fingerprint” (Claims 4, 7, 18)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “a speaker identity encoding technique to encode [the] speaker-specific voice characteristics” (Claims 5, 12, 19)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “wherein the generated characteristics comprise [the] speaker-specific voice characteristics” (Claims 5, 12, 14)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description
- “receiv[e/ing] the second input audio data via one or more communication networks” (Claims 6, 13, 20)
 - Lacks enablement, full scope enablement, written description, and/or full scope written description

IV. PATENT L.R. 3-4: DOCUMENT PRODUCTION ACCOMPANYING INVALIDITY CONTENTIONS

Concurrently with these invalidity contentions, Krisp produces the below categories of documents and makes the pertinent source code available for inspection. Krisp identifies by production number which documents correspond to each category.

A. Patent L.R. 3-4(a): Source code, specifications, schematics, flow charts, artwork, formulas, or other documentation sufficient to show the operation of any aspects or elements of an Accused Instrumentality identified by the patent claimant in its Patent L.R. 3-1(c) chart;

Source code is available for inspection at the offices Erise IP, P.A. in Overland Park, KS.

Additionally, responsive documents are produced at KRISP_0031184-31898, KRISP_0031899-31992, and KRISP_0056046-56072.

B. Patent L.R. 3-4(b): A copy or sample of the prior art identified pursuant to Patent L.R. 3-3(a) which does not appear in the file history of the patent(s) at issue. To the extent any such item is not in English, an English translation of the portion(s) relied upon shall be produced;

Responsive documents are produced at KRISP_0037364-55956.

C. Patent L.R. 3-4(c): All agreements that may be related to the accused instrumentality or may be comparable to a license that would result from a hypothetical reasonable royalty negotiation;

Responsive documents are produced at KRISP 55957-56045 and KRISP 56073-57859.

D. Patent L.R. 3-4(d): Documents sufficient to show the sales, revenue, cost, and profits for accused instrumentalities identified pursuant to Patent L.R. 3-1(b) for any period of alleged infringement;

Responsive documents are produced at KRISP_0007153, KRISP_0009266-31183, and KRISP 56073-57859.

E. Patent L.R. 3-4(e): All agreements that may be used to support the party denying infringement's damages case;

Responsive documents are produced at KRISP_0000001-2, KRISP_55957-56045 and KRISP 56073-57859.

May 26, 2026

Respectfully Submitted,

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1
2 **CERTIFICATE OF SERVICE**

3 I, Ann Marie Hamm, declare:

4 I am over 18 years of age, employed in Johnson County, State of Kansas, and not a party
5 to the above-entitled cause. My business address is 7015 College, Suite 700, Overland Park,
6 KS 66210.
7

8 On May 26, 2026, I served a true and correct copy of:

9 **DEFENDANT'S INVALIDITY CONTENTIONS**

10 **VIA ELECTRONIC SERVICE.** I caused the aforementioned document(s) to be electronically
11 served on the person(s) indicated below in the manner as provided in Fed. R. Civ. P. 5(b) by
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25 I declare under penalty of perjury under the laws of the United States that the foregoing is
26 true and correct.

27 Executed on May 26, 2026

Ann Marie Hamm

Ann Marie Hamm