**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

THE NIELSEN COMPANY (US), LLC,   )
)
 Plaintiff,   )
)   C.A. No. _____
 v.   )
)   **JURY TRIAL DEMANDED**
 TVISION INSIGHTS, INC.,   )
)
 Defendant.)	

COMPLAINT FOR PATENT INFRINGEMENT

The Nielsen Company (US), LLC ("Nielsen" or "Plaintiff"), for its Complaint against

Defendant TVision Insights, Inc. ("TVision" or "Defendant"), alleges as follows:

NATURE OF THE ACTION

1.   This is an action for patent infringement brought against Defendant for

infringement of United States Patent No. 7,783,889 ("the '889 Patent").

PARTIES

2.   Plaintiff The Nielsen Company (US), LLC is organized and existing under the

laws of the State of Delaware, with a principal place of business at 85 Broad Street, New York,

New York 10004.

3.   According to public records, Defendant TVision Insights, Inc. is organized and

existing under the laws of the State of Delaware.

JURISDICTION AND VENUE

4.   This is an action for patent infringement arising under the Patent Act, 35 U.S.C.

§§ 1 *et seq.* This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C.

§§ 1331 and 1338(a).

5.   This Court has personal jurisdiction over Defendant because Defendant is a Delaware corporation, and on information and belief, regularly transacts business in Delaware. Defendant has a registered agent in Delaware: The Corporation Trust Company, 1209 Orange Street, Wilmington, DE 19801.

6.   Venue is proper pursuant to 28 U.S.C. § 1400(b) because Defendant resides in this District.

FACTUAL BACKGROUND

7.   Founded in 1923 by Arthur C. Nielsen, Nielsen is the media industry's leading data and analytics company. Nielsen fuels the industry with an accurate understanding of what people watch and listen to.

8.   Measuring across all channels and platforms – from traditional linear television to streaming TV to social media and on-line video/audio platforms – Nielsen helps its clients and partners optimize the value of their marketing investments and growth strategies. Nielsen offers measurement and analytics services in nearly 60 countries.

9.   Nielsen is a leading innovator in the field of audio automatic content recognition ("ACR") and has been awarded numerous patents for its inventions in the field, including the '889 Patent. Nielsen's audio ACR innovations have been a key to enabling its industry-leading measurement and analytics products and services.   Nielsen has invested millions of dollars in its audio ACR inventions.

THE ASSERTED PATENT

10.   The '889 Patent, entitled "Methods and Apparatus for Generating Signatures," was duly and legally issued on August 24, 2010. A true and correct copy of the '889 Patent is attached hereto as Exhibit A.

11.   Nielsen is the assignee and owner of all right, title, and interest in the '889 Patent. The '889 Patent is valid and enforceable.

12.   The '889 Patent is directed to, among other things, methods and apparatuses for generating signatures relating to audio content streams. (*See, e.g.*, '889 Patent, Ex. A, Claims 1, 8, 14.) Such signatures are matched to reference signatures to identify content being consumed by an audience. (*See* '889 Patent, Ex. A, 3:30-46.) This content identification, in turn, may be part of broader audience measurement systems or methods (*e.g.*, systems and methods that determine the number of individuals watching particular content). ('889 Patent, Ex. A, 1:22-25.)

13.   More specifically, the '889 Patent relates to, among other things, methods and apparatuses for generating signatures by: (i) performing a spectral transform operation on a first frame of media samples to identify first and second frequency components having first and second spectral power values; (ii) determining a first descriptor of the first frame of media samples based on a comparison of the first and second spectral power values; (iii) identifying third and fourth spectral power values in a second frame of media samples that is consecutive to, and overlapping with, the first frame of media samples; (iv) determining a second descriptor of the second frame of media samples based on a comparison of the third and fourth spectral power values; and (v) generating first and second signatures based on the first and second descriptors. (*See, e.g.*, '889 Patent, Ex. A, Claim 8.)

14.   The declaration of Pierre Moulin ("Moulin Decl."), attached hereto as Exhibit B, is hereby incorporated by reference into this Complaint.

15.   In general, there are certain desirable technical characteristics for signatures such as the ones to which the '889 Patent relates. (Moulin Decl., Ex. B, ¶ 26.) One such characteristic is that they should be "robust," which means that a slight modification (distortion)

of the sample media does not result in a large modification of the signature. (*Id*.) Another such

characteristic is that they should be "discriminative," which means that unrelated media are

unlikely to produce similar signatures. (*Id.*) And a third such characteristic is that they should

be computationally efficient in order to reduce computer processing requirements, especially for

large-scale systems featuring large media libraries. (*Id.*)

16.   Examples of "robust" signatures extracted from spatiotemporal signal

representations are those whose bits are signs of descriptor components (positive or negative), as

a distortion might somewhat change the descriptor values but is less likely to change the signs.

(*Id.*, ¶ 27.) One variation of such a robust sign-based approach is the performance of a

comparison operation. (*Id*.) For example, a descriptor or signature that is based on whether the

power level of one frequency component is greater or less than the power level of another

frequency component is robust because distortion is unlikely to change the determination of

which power level is greater (it is likely to change only the *extent* to which the greater

component is greater, and not change *which* component is greater). (*Id*.)

17.   Examples of "discriminative" signatures extracted from spatiotemporal audio

representations are those that for each time segment describe a few key frequencies associated

with audio tones. (*Id.*, ¶ 28.)

18.   Examples of computationally efficient signatures are those that are not computed

from a large number of frames and frequency components. (*Id.*, ¶ 29.)

19.   The priority date of the '889 Patent is at least as early as August 18, 2004, which

is the filing date of the provisional application upon which the '889 Patent is based. (*See* '889

Patent, Ex. A.) As of that date, it was not well-understood, routine, or conventional among those

of skill in the art to generate digital spectral signatures using operations based on a small number

of frequency components computed from individual frames of media samples, as claimed in all claims of the '889 Patent. (Moulin Decl., Ex. B, ¶ 30; *see* '889 Patent, Claims 1, 8, and 14.)

20.   Before the priority date of the '889 Patent, people of skill in the art generated digital spectral signatures of audio or video content using operations based on complex spatiotemporal signatures. (Moulin Decl., Ex. B, ¶ 31.) These methods rely heavily on interframe processing (i.e., processing of data from multiple frames), which adds a layer of computation and implementation complexity relative to the intraframe methods (i.e., processing of data from within an individual frame) disclosed and claimed in the '889 Patent. (*Id*.)

21.   All of the claims of the '889 Patent recite the use of a particular way to extract digital signatures from audio or video content. (*Id.*, ¶ 32.) The claims do not preempt all ways of extracting signatures, nor do they preempt all ways of extracting signatures using intraframe methods. (*Id.*) Specifically, each of the claims recites identifying two frequency components within a single frame of media samples, comparing the power levels of the two frequency components, determining a descriptor of the frame of media samples based on the comparison of the two power levels, and generating a signature based on the descriptor ("the claimed approach"). (*Id.*)

22.   As of the priority date of the '889 Patent, the claimed approach was not well-understood, routine, or conventional among those of skill in the art. (*Id.*)

23.   There are several technical advantages to using the claimed approach. (*Id.*, ¶ 33.) First, the claimed approach is more computationally efficient than the prior art (i.e., the signatures are simpler and easier to compute), as the processing does not require combining multiple frames. (*Id.*) In addition, only a small number of frequency components need to be processed. (*Id.*) This increased efficiency allows for a reduction (as compared to the prior art) in

computational resources needed for signature generation. (*Id.*) This is particularly important in solving a prior art technical problem for large-scale systems – namely, the problem that a very large number of signatures must be generated and a very large amount of computational resources is needed. (*Id.*)

24.   Related to the above-discussed advantage of computational efficiency, the claimed approach also provides the technical advantage that it is easier than the prior art in terms of implementation. (*Id.*, ¶ 34.)

25.   Another technical advantage of the claimed approach over the prior art is that it provides robustness. (*Id.*, ¶ 34.) Specifically, the claimed approach provides robustness because it is a variation of a sign-based approach based on comparisons of power levels. (*Id.*)

26.   Yet another technical advantage of the claimed approach over the prior art is that it provides discriminativeness. (*Id.*) Specifically, signatures are derived from descriptors based on a few key frequencies. (*Id.*)

THE INFRINGING APPARATUS AND METHOD

27.   Defendant is a data and analytics company that measures how people watch TV. Defendant "started out by measuring attention on linear TV" (*see* Allison Schiff, *TVision Insights: 'Ratings Only Tell Part of the Story'*, https://www.adexchanger.com /tv-and-video/tvision-insights-ratings-only-tell-part-of-the-story/ ("AdExchanger Article"), attached hereto as Exhibit C), but has since become the "go-to-choice" for Nielsen's measurement rivals, as reported by AdAge, by providing panel measurement data to them to compete directly with Nielsen's products and service offerings (*see TVision is the go-to-choice for Several Nielsen Rivals*, https://www.tvisioninsights.com/resources/adage-mrc-panel-data ("AdAge Article"), attached hereto as Exhibit D). Defendant collects data from a panel of TV

viewers that opt-in to be part of the panel. (*See* Join the TVision Panel,

https://www.mytvpanel.com/video (at 00:50-03:16).) Defendant's President and COO, Luke

McGuinness, has stated that "[w]e are like Nielsen in that we use a panel methodology." (*See*

AdExchanger Article, Ex. C.)

   28. Defendant's panel includes at least 5,000 homes (approximately 15,000 persons)

in the United States. (*Id.*; Alison Weissbrot, *4 Challenges the Industry will Face as it Breaks*

Away from Nielsen, https://www.campaignlive.com/article/4-challenges-industry-will-face-

breaks-away-nielsen/1726140?DCMP=EMC-CONTheCampaignFix&bulletin=the-campaign-fix

("CampaignLive Article"), attached hereto as Exhibit E.) According to TVision CEO Yan Liu

and various press accounts, Defendant's panelists are located in and around Boston, Chicago,

Dallas, New York, Philadelphia, Atlanta, Seattle, and Los Angeles.

(https://www.youtube.com/watch?v=RCtw7NxjalQ (at 00:41); *see also* Sapna Maheshwari, *For*

Marketers, TV Sets are an Invaluable Pair of Eyes,

https://www.nytimes.com/2017/02/25/business/media/tv-viewers-tracking-tools.html, attached

hereto as Exhibit F; *see also* Adam Jacobson, *For TV's Ad Future, All Eyes are on Attention*

Metrics, https://www.rbr.com/tvision-0926/ ("RBR"), attached hereto as Exhibit G.)

   29. Defendant has taken a "copy Nielsen" approach to its products and services. For

example, Defendant's marketing materials imitate Nielsen's sales literature. It is necessary to

look no further than Defendant's website for evidence of this approach. (*See* Defendant's web

pages, attached hereto as Exhibit H (excerpt) and Exhibit I (excerpt).) In particular, Defendant's

website contains multiple photographs that are the same in concept and design as (or even exact

copies of) photographs contained in Nielsen's standard sales slide decks. A comparison of the

photographs on Defendant's website with photographs in Nielsen's slide decks is as follows:

DEFENDANT'S PHOTOGRAPH	NIELSEN'S PHOTOGRAPH

30.   Defendant uses an apparatus ("the Infringing Apparatus") and employs a method

("the Infringing Method") as components of its audience measurement products and services.

31.   The Infringing Apparatus includes a device that Defendant places in each of its

panelists' homes ("the Device"). The Infringing Method includes the steps of collecting data

using at least the Device and analyzing the collected data using the Device and other computer

systems and apparatuses.

32.   The data Defendant collects and analyzes from its panel can provide second-by-

second, person-level insights into how people watch TV, including insights into TV attribution,

co-viewing, reach, frequency, and cross-platform management. (*See* Yan Liu, *The Future of*

Media Measurement: The Role of Panels in Big Data,

https://www.tvisioninsights.com/resources/the-role-of-panels-in-big-data, attached hereto as

Exhibit J); *see also Advanced Audience Projections, Powers Person Level Ad Measurement*,

https://f.hubspotusercontent00.net/hubfs/3023204/TVision%20Advanced%20Audience%20Proje

ctions%20(1).pdf, attached hereto as Exhibit K.)

33.   Defendant's CRO and Co-Founder Dan Schiffman has stated that Defendant has

filed patent applications on the apparatuses, systems and methods it uses. (*see* Ingrid Lunden,

TVision Raises $6.8M to Take on Nielsen With Thermal eye and Emotion Tracking Tech,

https://techcrunch.com/2016/10/26/tvision-raises-6-8m-to-take-on-nielsen-with-thermal-eye-and-

emotion-tracking-tech/ ("TechCrunch Article," attached hereto as Exhibit L) ("Schiffman [who

co-founded the company with CEO Yan Liu] told me that TVision already has applications in for

two utility patents, one for its computer vision algorithm and another around its analytics.") One

such patent application is U.S. Patent Application Publication 2018/0007431 ("the '431

Publication") (attached hereto as Exhibit M). Defendant has implemented concepts disclosed in

the '431 Publication in the Infringing Apparatuses and the Infringing Method. (*See* TechCrunch

Article, Ex. L; '431 Publication, Ex. M, Abstract and Par. 0029, 31, 42-45, 54, 61, 101, 160-162,

169, 170-172.)

34.   According to TVision CEO Yan Liu, "TVision panelists set up [the Device] near

their television [and that the Device] is capable of picking up audio and visual signals. . . .

TVision then uses ACR to match television content with the viewing data on a second-by-second

basis." (Simran Sabherwal, *'Attention Metrics Identify Higher-value Inventory, Improve*

Campaign Effectiveness', (https://www.exchange4media.com/marketing-news/attention-metrics-

identify-higher-value-ad-inventory-improve-campaign-effectiveness-111681.html

("Exchange4Media Article," attached hereto as Exhibit N).)

35.   According to the '431 Publication, "[t]he local processor [of the Device] uses the

audio samples recorded by the microphone 140 to identify the video being played on the display

(222). For example, the processor 150 can create a fingerprint of the audio data and use the

fingerprint to query a third-party application programming interface (API), which responds to the

query with an identification of the video associated with the audio data." ('431 Publication, Ex.

M, Par. 0050, 0066.)

36.   TVision uses ACRCloud software to perform ACR. *See* ACRCloud, Live

Channel Detection, https://www.acrcloud.com/live-channel-detection/; ACRCloud, Advertising

& Big Data, https://www.acrcloud.com/advertising-big-data/ ("ACR Websites," attached hereto

as Exhibit O).

37.   The FAQ page for ACRCloud's reference documentation

(https://docs.acrcloud.com/faq/definition-of-terms#terminology), ("ACR FAQs," attached hereto

as Exhibit P), refers to a paper titled Quad-Based Audio Fingerprinting Robust to Time and

Frequency Scaling ("Audio Fingerprinting Paper," attached hereto as Exhibit Q) that describes the ACRCloud software that TVision uses to perform audio ACR, allowing it to recognize the content its panelists are viewing.

38.   According to the Audio Fingerprinting Paper, "audio files are . . . processed with a sampling rate of 16 kHz. We compute the STFT [frequency domain transform] magnitude spectrogram [indicating the power levels of the various frequency components] using a Hann-window [i.e., frame] of size 1024 samples (64 ms) and a hopsize [i.e., frame overlap] of 128 samples (8 ms), discarding the phases." (Audio Fingerprinting Paper, Ex. Q.) Moreover, "[s]pectral [power] peaks are local maxima [determined by comparing the power levels of the frequency components] in an STFT magnitude spectrogram." (*Id.*) In other words, power levels of frequency components within a single frame are compared to identify a particular spectral peak. Defendant performs this power level comparison on consecutive overlapping frames.

39.   According to the Audio Fingerprinting Paper, the spectral peak identified through the comparison of spectral power levels within a particular frame (described above) is used as a descriptor. (Audio Fingerprinting Paper, Ex. Q.) This descriptor, in turn, is used to generate a signature. (*See id.*)

40.   Defendant licenses and offers to license data that Defendant collects and analyzes from its panel (this data includes information about the content being viewed as determined by audio ACR). Defendant has been and is licensing its data to several Nielsen competitors. (*See* CampaignLive Article, Ex. E.) The press has made known that Defendant has licensed its data to VideoAmp, iSpot, Xandr, and 605. (*See* AdAge Article, Ex. D.) AdAge reported that Defendant is "the go-to-choice for several Nielsen rivals." (*Id.*)

41.   By making, using, offering to sell, and selling the Infringing Apparatus and performing the Infringing Method, Defendant is infringing the '889 Patent as further described below, including in the claim charts attached hereto as Exhibit R, which are hereby incorporated by reference into this Complaint.

42.   By this lawsuit, Nielsen seeks to enjoin Defendant from any further unauthorized use of Nielsen's patented technology, and it seeks to recover damages, including lost profits, increased damages, reasonable attorneys' fees, and other such relief as the Court deems just and proper for Defendant's violation of federal law.

COUNT I
INFRINGEMENT OF THE '889 PATENT

43.   Nielsen repeats and re-alleges paragraphs 1-42 as if fully set forth herein.

44.   Defendant has infringed and continues to infringe, literally or under the doctrine of equivalents, at least Claims 1, 2, 4, 5, 6, 8, 9, and 11-17 of the '889 Patent ("the Asserted Claims") under 35 U.S.C. § 271(a) by making, using, selling and/or offering to sell in the United States, and/or importing into the United States, the Infringing Apparatus and by performing the Infringing Method in the United States. Defendant's activities are without license or permission from Nielsen.

45.   The Infringing Apparatus and the Infringing Method include all elements of the Asserted Claims, either literally or equivalently, as shown in the claim charts incorporated by reference in this Complaint and attached hereto as Exhibit R.

46.   Defendant has knowledge of the '889 Patent as of the service date of the Complaint, and Defendant is willfully and deliberately infringing the '889 Patent at least as of the service date of this Complaint.

12

47.   Through the conduct alleged above, Defendant has caused and will in the absence

of an injunction continue to cause Nielsen to suffer damages, which in no event are less than a

reasonable royalty, and which include, but are not limited to, lost sales and sales opportunities.

48.   Defendant has also irreparably harmed Nielsen. Unless and until Defendant is

enjoined by this Court from further infringement of the '889 Patent, Nielsen will continue to

suffer irreparable injury for which it has no adequate remedy at law.

PRAYER FOR RELIEF

WHEREFORE, Nielsen prays for judgment against Defendant as follows:

A.   A judgment that Defendant has infringed the '889 Patent;

B.   A judgment that Defendant's infringement of the '889 Patent is willful;

C.   An order permanently enjoining Defendant and its officers, directors, agents,

servants, employees, affiliates, and all others acting in privity or in concert with them, and their

parents, subsidiaries, divisions, successors, and assigns, from further acts of infringement of the

'889 Patent;

D.   An award of damages adequate to compensate Nielsen for Defendant's

infringement of the '889 Patent, including increased damages up to three times the amount found

or assessed, together with pre-judgment and post-judgment interest and costs, under 35 U.S.C. §§

154(d) and 284.

E.   A judgment that this case is exceptional and an award of Nielsen's reasonable

attorneys' fees, costs, and expenses under 35 U.S.C. § 285; and

F.   An award of such other and further relief as this Court may deem just and proper.

DEMAND FOR JURY TRIAL

Plaintiff hereby demands a trial by jury as to all issues so triable.

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Dated: January 14, 2022
7557197/52358

Respectfully submitted,

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14