

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY GROUP CORPORATION, SONY CORPORATION, SONY
CORPORATION OF AMERICA, AND SONY ELECTRONICS, INC.,
Petitioner,

v.

INMUSIC BRANDS, INC.
Patent Owner.

IPR2023-00294
U.S. Patent 7,567,498

PATENT OWNER'S SUR-REPLY TO PETITIONER'S REPLY

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Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
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Exhibit No.	Description
2001	Order and Opinion Granting Defendant’s Motion to Dismiss, <i>inMusic Brands, Inc. v. Sony Corporation of America</i> , Case 1:22-cv-06602-AKH (S.D.N.Y. Mar. 13, 2023).
2002	Dan Bagatell, <i>Fed. Cir. Patent Decisions in 2022: An Empirical Review</i> , Law360 (Jan. 9, 2023), <i>available at</i> https://www.law360.com/articles/1562614/fed-circ-patent-decisions-in-2022-an-empirical-review (last accessed April 25, 2023).
2003	Docket Report for <i>Skillz Platform Inc. v. AviaGames Inc.</i> , Case No. 5:21-cv-02436-BLF (N.D. Cal.).
2004	Expert Declaration of Ivan Zatkovich
2005	“The Year’s Best Turntable – Audio Note TT1” What HiFi? Magazine (“TT1”), <i>available at</i> https://www.audionote.co.uk/files/ugd/3e7c3b5880b72e4038426d9c70895fb3842b02.pdf (accessed Nov. 3, 2023).
2006	The Complete MIDI 1.0 Detailed Specification (“MIDI Spec”)
2007	Deposition of Dr. Todd K. Moon (“Moon Dep.”)
2008	LinkedIn Profiles of Alan Flum, Mark Demouy, and Darrin Young
2009	Manual for EZ-USB FX2LP USB Microcontroller High-Speed USB Peripheral Controller, <i>available at</i> https://www.infineon.com/dgdl/Infineon-CY7C68013A_CY7C68014A_CY7C68015A_CY7C68016A_EZ-USB_FX2LP_USB_Microcontroller_High-Speed_USB_Peripheral_Controller-DataSheet-v31_00-EN.pdf?fileId=8ac78c8c7d0d8da4017d0ec9f7974252 (accessed Nov. 3, 2023).

2010	Image of CY3689 EZ-USB FX2LP Discovery Kit, <i>available at</i> https://www.infineon.com/export/sites/default/images/product/evaluation-boards/CY3689_0.png_1892450672.png (accessed Nov. 3, 2023).
2011	Excerpts from the U.S. Music Revenue Database, Recording Industry Association of America, <i>available at</i> https://www.riaa.com/u-s-sales-database (accessed Nov. 6, 2023).
2012	J.D. Biersdorfer, <i>Convert Stacks of Wax into Digital Music Files</i> , New York Times (Oct. 7, 2004).
2013	J.D. Biersdorfer, <i>Napster's Descendants; His Beyoncé, Her Beatles: A Primer on Trading</i> , New York Times (Sept. 18, 2003).
2014	Seth Schiesel, <i>File Sharing's New Face</i> , New York Times (Feb. 12, 2004).
2015	Johana Jainchill, <i>Mixing and Scratching, Ruling the Club</i> , New York Times (Nov. 17, 2002).
2016	Harry Newton, Newton's Telecom Dictionary (16th ed. 2000), excerpt for definition of "PCI."

Patent Owner, inMusic Brands, Inc. (“inMusic”), respectfully submits the following sur-reply to the Reply submitted by Petitioners (“Sony”).

I. SONY’S ARGUMENTS MISUNDERSTAND THE STATE OF THE ART AND THE LEVEL OF ORDINARY SKILL.

A. The state of the art includes knowledge of turntables, DJs and turntablism.

Sony criticizes inMusic for providing a background on the state of the art and the ’498 Patent. *See* Paper 21 at 7-9. Such criticisms, however, are misplaced. Sony misunderstands the purpose of inMusic’s background. *See id.* The background was provided to make clear that a person of ordinary skill in the art (“POSITA”) had knowledge regarding turntables, DJs and turntablism. *See* Paper 18 at 3-5 (explaining “it is important to understand the context of the music industry at the time” and describing “turntablists”); *see also* Ex. 1001 at 1:31-34 (’498 Patent describing “scratching” effects in its “Description of the Prior Art”).

Sony appears to misapprehend the differences between DJs and turntablism. The term “DJ” or “disc jockey” is a broad category. A DJ is a person who plays recorded music for an audience. Examples include a radio or wedding DJ. Other DJs, such as club DJs or turntablists, manipulate and mix records (*e.g.*, with “scratching” effects), effectively creating new music. *See* Ex. 2004 at ¶¶ 30-32. The invention of the ’498 Patent, while relevant to DJs, does not disclose specifically a turntablist invention. To the extent Sony read the Response

otherwise, that was unintentional. The purpose of inMusic describing turntablism and other background knowledge is because Dr. Moon demonstrated a lack of this knowledge. *See, e.g.*, Paper 18 at 7, 29; Ex. 2007 at 40:24-41:12. Such knowledge informs the analysis as to a POSITA's motivation to combine or modify the prior art references identified by Sony, and such knowledge, as explained in inMusic's Response, undermines Dr. Moon's proposed combinations.

B. The Level of Ordinary Skill in the Art.

While inMusic explained a POSITA would have had "technical knowledge (whether through a college degree or otherwise)" (Paper 18 at 11), Sony demands a degree in "electrical engineering or a related field" (Paper 2 at 32). Sony does not argue the educational level affects the outcome of this proceeding. *See* Paper 21 at 8. It, therefore, is unnecessary to decide what is a "related field," exactly how much "technical knowledge" is required, and if a college degree is strictly necessary. Regardless, a POSITA would have had knowledge of the state of the art, including turntables, DJs, turntablism, and consumer audio products.

II. CLAIM CONSTRUCTION

Claim terms are generally given their "ordinary meaning in the context of the claim and the whole patent document." *World Class Tech. Corp. v. Ormco Corp.*, 769 F.3d 1120, 1123 (Fed. Cir. 2014). Claims are not construed in accordance with the broadest dictionary definition. *See Free Motion Fitness, Inc. v.*

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Cybex Int'l, Inc., 423 F.3d 1343, 1348-49 (Fed. Cir. 2005) (explaining a term does not “presumptively receive its broadest dictionary definition or the aggregate of multiple dictionary definitions”).

A. “turntable”

As inMusic argued, “turntable” does not need to be construed because the claim itself defines a “structurally complete” turntable invention. *See* Paper 18 at 12 (citing *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)). Sony agrees, calling this term a “non-issue” and noting that the “parties agree that the claimed device comprises the elements recited in the claims.” Paper 21 at 9-10. Because neither party has raised a dispute on the definition of “turntable” affecting claim scope, the Board need not construe this term.

B. “controller”

Sony argues for the broadest reasonable definition of the term “controller” within computing technology based on a dictionary definition and past cases with different disclosures. *See* Reply at 10-11. Specifically, Sony argues “controller” should be construed as “a device for controlling another device and/or circuit.” *Id.* This proposed construction should be rejected.

Claim 1 of the '498 Patent recites “a controller responsive to said analog to digital converter [ADC] for generating an output digital audio signal,” and that “output digital audio signal” further “is output from said turntable.” Ex. 1001. The

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recited controller does not simply control a device or circuit, but must generate an output digital audio signal that is output from the turntable. This is consistent with the '498 Patent's specification in which the controller is disclosed as a "USB controller" or "firewire controller." Ex. 1001 at 2:19-25, 2:40-48. As Mr. Zatkovich explained, these types of controllers "receive[] a digital data stream, render[] it into a specific data format, and manage[] the output of that formatted stream on a specific hardware interface." Ex. 2004 ¶ 123.

Mr. Zatkovich's definition is consistent with the dictionary to which Sony cites. Newton's Telecom Dictionary, while providing a very broad definition that Sony relies on, explains that a controller "[i]n its more common data communications sense, [is] a device between host and terminals that relays information between them," and "administers their communication." Ex. 1031 at 3. In the context of the '498 Patent, "controller" is not used in the very broadest possible sense, but in connection with a controller (such as USB or firewire) that generates an "output digital audio signal" (*i.e.*, in the communication sense).

Sony's citations to cases construing the term "controller" within the context of different technologies and different patent specifications are not relevant. In *Karl Storz Endoscopy-America, Inc. v. Stryker Corp.*, the patent-at-issue was directed to "the central control of medical devices in a surgical operating theater." No. 14-CV-00876-RS, 2016 WL 3597426, at *6 (N.D. Cal. Jul. 5, 2016). The

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claims there disclosed “a first controller,” and “at least one medical device having safety-related functions *controlled by said first controller.*” *Id.* at *8 (emphasis in original). Given the *controller* in this case did not generate an output digital signal, it has little relevance here.

Similarly, *Intellectual Ventures I LLC v. Altera*, involved technology relating to “clock management.” No. CV 10-1065-LPS, 2013 WL 3913646, at *1 (D. Del. Jul. 26, 2013). There, the claim recited “a controller ... wherein the controller is configured to independently vary a clock frequency of each whole processor unit.” *Id.* at *8. Based on the context of that claim language and specification, the district court explained the phrase meant “the hardware or software that controls a circuit or system is configured to independently vary a clock frequency of each whole processor unit.” *Id.* at *9. Again, this controller was not used for communication purposes and did not generate an output digital signal.

In any event, the Board need not fully construe “controller” to resolve the disputes here. In its Cortellesi grounds for invalidity, Sony points to a central processing unit (CPU) for the claimed controller. *See* Paper 2 at 42 (asserting the “CPU EC” as the controller for Cortellesi). While this CPU might be a “controller” in a very broad, general sense, it is not the type of controller that performs the recited claim language (*i.e.*, that generates an output digital signal). In the Spencer-Cohen ground, Sony similarly points to a microprocessor. *Id.* at 68. Sony’s

arguments for this controller similarly fails to explain how it meets the “generating an output digital audio signal” limitation or why that would have been obvious.

Accordingly, the Board should reject Sony’s arguments and confirm the patentability of the challenged claims regardless of claim construction.

C. “representative”

Sony’s construction of “representative” is not based on the context of the claims and specification. As described in the ’998 Patent and recited in Claim 1, a “phono cartridge ... generat[es] an analog audio signal representative of an audio recording.” Ex. 1001 at Claim 1; *see also id.* at 2:16-18 (“The phono cartridge generates a conventional analog electrical signal, representative of the audio recording on the LP record.”). The analog signal is then received by an “analog-to-digital converter” (ADC). *Id.* at Claim 1; *id.* at 2:18-19. That ADC outputs a digital signal that is “representative of said analog audio signal.” *Id.* at Claim 1; *see id.* at 2:19-20. The “controller” then generates an “output digital audio signal” of “music or speech representative of an audio recording” from the ADC’s output. *Id.* at Claim 1; *see also id.* at 2:20-25.

A POSITA would interpret this claim in light of how turntables operate—that the analog audio signal is the signal or waveform stored within the grooves of an LP record (*i.e.*, the audio recording). This is then digitized by the ADC, and outputted by the controller in a “digital output audio signal.” The result is a

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digitized version of the analog music, which is what inMusic intended by “reproducibly indistinguishable.” The “output digital audio signal” is a digital version of the audio music stored on the LP record.

Generally speaking, claim terms are to be construed consistently throughout the claim. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc). So the digital signal that is “representative of said analog signal” should be construed commensurate with “analog audio signal representative of an audio recording.” The Board need not construe the entire contours of the term “representative,” and inMusic does not intend to graft any particular fidelity or quality requirements onto the claim. But if the LP record has the song “Let it Be” by The Beatles stored on it, the digital version must also be this song by The Beatles and substantially similar to the analog version. The claim would not be satisfied by an “output digital audio signal” that was simply “Beep Bop” or some other noise that is not the recording on the LP record, just as one would not regard an analog “Beep Bop” to be representative of “Let it Be.” To the extent Sony’s definition of “a first object that stands in the place of or corresponds to a second object” can be read that way, it should be rejected.

III. SONY HAS FAILED TO SHOW THAT ANY CLAIMS WERE OBVIOUS OVER CORTELLESI.

A. Sony, not InMusic, mischaracterizes Cortellesi's teachings.

Sony argues that, despite the plain disclosures of Cortellesi, all of the components disclosed in Figures 1 and 2 are present within a single, all-in-one apparatus of Figure 4. *See* Paper 21 at 14-15. Sony makes this assertion even though such components are not shown in Figure 4, supposedly because Figure 4 is only a top plan view. *See id.* Sony's argument strains credulity for a number of reasons.

First, Figures 1 and 2 are different embodiments of the invention. As Sony notes, Figure 2 is described as "a block diagram of a storing, playing apparatus further provided with a virtual disk." Ex. 1004 at 1:57-58; *see also* Paper 21 at 14. Figure 2 is not described as "the storing, playing apparatus of Figure 1 further provided with a virtual disk." Figures 1 and 2 are two different "preferred embodiments of the invention" that are disclosed by Cortellesi. *See* Ex. 1004 at 1:47-51 (describing the "drawings which show some preferred embodiments of the invention"). Cortellesi's use of the plural "embodiments" indicates that Figures 1 and 2 are not merely a single embodiment.

Second, although not shown in Figure 1, Cortellesi contemplates using the virtual disk VD with that embodiment. In describing Figure 1, Cortellesi explains that the "digital/analogue converter CA/D" is "for receiving signals from a virtual

disk, if any.” Ex. 1004 at 2:33-36. Accordingly, there must be differences between Figures 1 and 2 beyond just use of the “virtual disk.” Otherwise, Figures 1 and 2 would be describing the same embodiment of the invention. And indeed, there are differences beyond the virtual disk in the figures themselves (including the lack of USB and the addition of MP3 in Figure 2) as seen below:

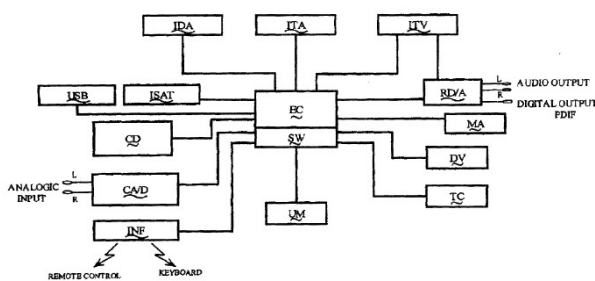


FIG. 1

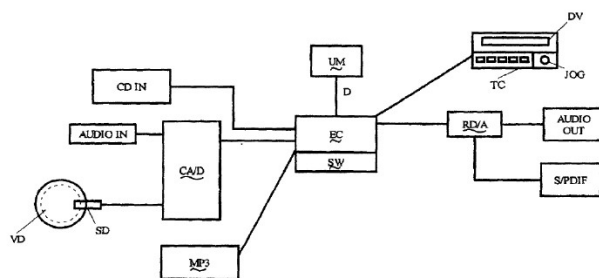


FIG. 2

Third, that the virtual disk VD can be used with the embodiment of Figure 1 demonstrates there is not an all-in-one apparatus. Figure 1’s “digital/analogue converter CA/D ... receiv[es] signals from a virtual disk, if any.” Ex. 1004 at 2:33-36. The “virtual disk” is optional (*i.e.*, “if any”) because it is external. In Figure 1, the only way for the CA/D to accept signals is via the “analogic input L/R.” That is, the virtual disk VD and sensor of magnetic flux SD must be external of the apparatus shown in Figure 1, and their signals received via analogic inputs. In this way, the record player is externally connected to the apparatus of Figure 1.

Fourth, Figure 2 confirms that the record player with virtual disk VD and sensor SD is a separate component. Figure 2 depicts a number of different boxes that are parts of the larger apparatus. The components of Figure 2 are not all

located within a single all-in-one box. Figure 2 explicitly shows one box with the display DV, knob JOG, and keyboard TC. The sensor SD is then located separate and apart from this box in Figure 2. The sensor SD (and hence the record player with which it is used) is not part of the same box. Presumably, at least some of the other components, such as the analogue-to-digital converter CA/D, processor EC, and playing unit RD/A, are located within the box of the display DV. As another example, Cortellesi discloses that the storage unit UM can be an external unit. *See* Ex. 1004 at 2:47-49.

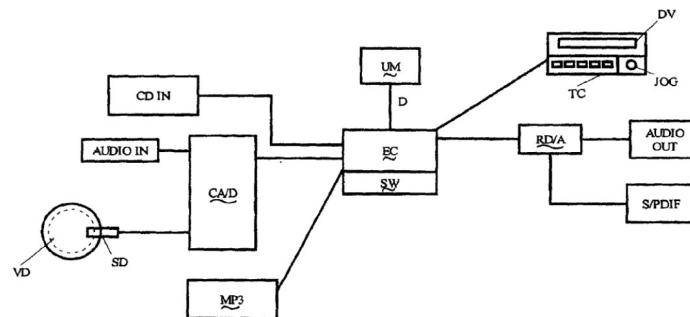


FIG. 2

Fifth, Sony's argument that all of the components are in Figure 4, but just not visible, should be rejected. No knob JOG or display DV is shown in Figure 4. It would make no sense to place these components on the bottom of the record player (which would typically be in contact with a table). And to the extent the knob is

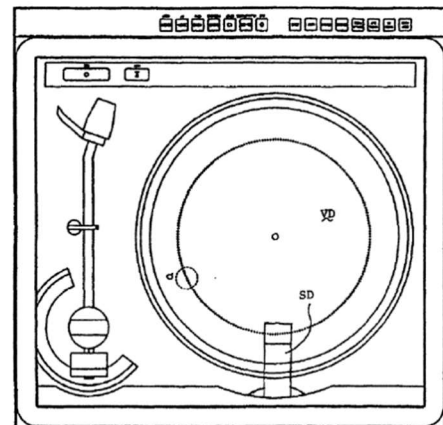


FIG. 4

on a side of the record player, it would necessarily stick out and thus be visible in Figure 4.

Sixth, Cortellesi describes a “common record player.” Ex. 1004 at 4:25, 4:40-41. An all-in-one turntable that includes the many different components shown in Figures 1 and 2 would not be a “common record player.” Cortellesi instead discloses a common record player on which an SD sensor and virtual disk VD are added. This is the first embodiment “provided with a record player carrying the virtual disk provided with a reading sensor,” as described in Cortellesi. Ex. 1004 at 2:8-10. This record player with the SD and VD can be used to control music playing from a separate box, as shown either in Figures 1 or 2, using analogic inputs. Nowhere does Cortellesi state that Figure 4’s turntable includes all of the components of Figures 1 or 2.

Sony is incorrect that the various components disclosed in Figures 1 or 2 are contained within the turntable shown in Figure 4. Accordingly, Sony has failed to establish that the analog to digital converter CA/D, central processing unit EC, or USB are within the turntable on which the virtual disk VD is placed.

B. It would not have been obvious to combine Figures 1, 2 and 4 into a single, all-in-one apparatus.

The Board should also reject Sony’s alternative argument that it would have been obvious to combine all of the components of Figures 1 and 2 within the turntable of Figure 4, creating a single, all-in-one apparatus. *See* Paper 21 at 17-20.

Sony agrees with Mr. Zatkovich that with respect to Cortellesi's Figure 4, "it would not be desirable to 'put on and take off' the virtual disk frequently." Paper 21 at 18 (quoting Ex. 1029 at 56:2-10). Mr. Zatkovich explained the sensor SD is positioned only 2 millimeters (less than 0.08 inches) above the surface of the virtual disk VD. Ex. 1029 at 56:7-10; *see also* Ex. 1004 at 4:43-46 (explaining the sensor SD is "positioned over the disk ... at about 2 mm therefrom"). Given these tolerances, sensor SD would need to be disconnected from the turntable (making it no longer "integral") for the virtual disk to be removed without "damage" to it or the sensor SD. *Id.*; Ex. 1029 at 56:2-10 (explaining one "might damage the SD" given the 2 mm clearance). Cortellesi never contemplates its turntable being used for both the virtual disk and traditional LPs. While Dr. Moon stated this would "have been obvious" (Ex. 1002 ¶ 56), he did so in a conclusory fashion without any analysis.

Cortellesi describes modifying a "common record player" by connecting a sensor SD to it and then using that sensor instead of the traditional "pick up arm." Ex. 1004 at 4:40-46. If Figures 1, 2 and 4 were combined and a "common record player" were not used, there would be no reason to include traditional turntable components (such as the stylus, cartridge, etc). They are not needed for controlling digital music through a turntable interface as disclosed by Cortellesi's virtual disk VD and sensor SD. And the entire purpose of Cortellesi is so DJs can play music

“without the need of having original music supports or records.” *Id.* at 1:17-23. As such, Sony has failed to establish that its proposed combination would have been obvious. *See also* Paper 18 at 28-33 (further explaining Sony’s failure).

C. Sony has not shown how its alleged “controller,” Cortellesi’s processing unit EC, “generates an output digital audio signal” using a “standard computer protocol.”

Sony’s Petition relies on Cortellesi’s “CPU EC” as the claimed “controller.” *See, e.g.*, Paper 2 at 45-47. Sony does not rely on the “playing unit RD/A.” It does not argue that the playing unit RD/A works with Cortellesi’s USB nor has it argued that modifying the RD/A to do so would have been obvious. Its argument instead hinges upon the “CPU EC.” Unlike with the Spencer-Cohen combination described below, Sony also does not attempt to argue that a POSITA would have somehow found it obvious to create a USB host controller with Cortellesi’s CPU EC. Regardless, as explained below, any such argument should be rejected. *See* Section IV.B (regarding Sony’s “host controller” argument).

Sony never explains, with respect to its USB allegations, how Cortellesi’s CPU EC “generate[s] an output digital audio signal of music or speech representative of an audio recording” or how that signal uses a “standard computer protocol,” as recited in Claim 1. Sony’s Petition simply states that the CPU EC is responsible for “processing and delivering data,” and then points to Cortellesi’s teachings of USB. *See* Paper 2 at 42, 47-48.

Now, Sony creates entirely new arguments on Reply. It asserts that the CPU generates an “output digital audio signal,” which is sent to the “playing unit, RD/A”—not relying at all on USB. *See* Paper 21 at 22. Besides being a new theory that should be rejected as untimely, any such signal is not “output from said turntable,” as required by the claims. Instead, a different signal, generated by the RD/A, would be output (*i.e.*, the analog audio or S/PDIF signal). Sony alternatively argues that the CPU EC generates an “output digital audio signal” to send to the storage UM. *See* Paper 21 at 22-23. Again, this is a new, untimely argument, first raised on Reply, that does not rely on Cortellesi’s disclosure of USB. Sony’s argument also fails to explain how or why a general CPU would generate the output signal. And at a minimum, these new theories are irrelevant to Claims 2 and 3, which explicitly require “USB” and “firewire.” Sony’s arguments, therefore, should be rejected.

IV. SONY HAS FAILED TO SHOW THAT SPENCER AND COHEN RENDER OBVIOUS ANY OF THE CLAIMS OF THE ’498 PATENT.

A. Spencer does not transmit digital audio signals that are representative of an analog audio signal representative of an audio recording.

A single sentence in one paragraph of Spencer states that a “controller unit 100” (*i.e.*, turntable) communicates “digitized audio signals ... useful in determining an intratrack needle position” to a “data processor unit 200.” Ex. 1005 ¶ 30. This disclosure is never discussed or described again throughout Spencer. But

importantly, this paragraph does not provide that these “digitized audio signals” are representative of analog audio signals, which are representative of an audio recording, as required by Claim 1. Instead, these “digitized audio signals” are specifically disclosed as being used to determine the “needle position” and are therefore not representative of an audio recording. *Id.*

For Spencer’s audio signals that are representative of an audio recording, Spencer only discloses these signals being transmitted from the turntable in *analog* form. That is, these signals are not an “output digital audio signal” nor are they transmitted via a “standard computer protocol,” such as USB or Firewire, as required by the claims. Sony’s arguments to the contrary should be rejected because they: (1) ignore the plain teachings of Spencer that disclose the turntable outputting analog audio signals, (2) incorrectly assert that digital computers cannot receive or output analog signals, and (3) misinterpret Spencer’s teachings of “sampling” and redefine the “analog waveform” to be digital.

1. Spencer discloses the turntable transmitting analog audio signals to the data processor unit.

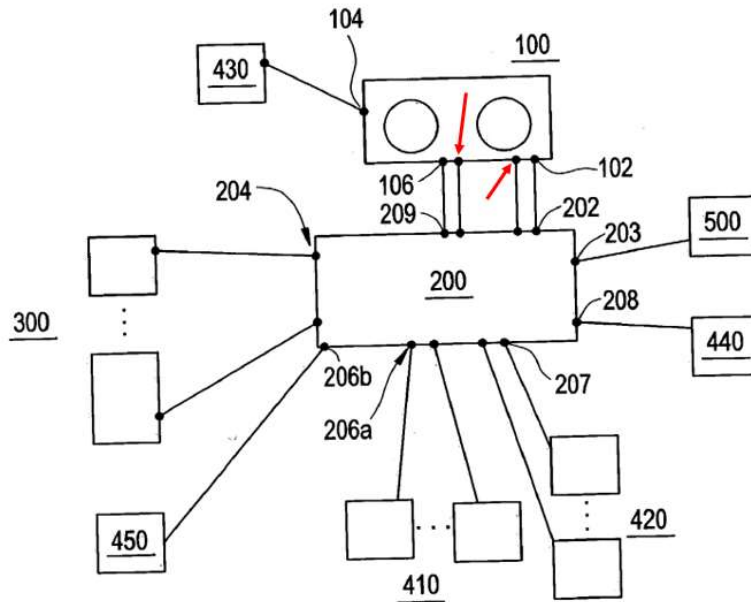
First, Sony argues that *digital* audio signals must be communicated from the turntable to the data processor unit because “Spencer describes no method for receiving analog input from Spencer’s controller (the turntable).” Paper 21 at 25. But this argument is contrary to Spencer’s teachings. Specifically, Spencer explains that the turntable has a tone arm assembly with a “cartridge 122” that

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includes a “transducer for converting mechanical vibrations sensed by [its] stylus 123 into ***analog*** electrical signals.” Ex. 1005 ¶ 36 (emphasis added). Spencer further explains that “cartridge 122 communicates those ***analog*** electrical signals to the data processor unit 200 for sampling....” *Id.* (emphasis added). That is, Spencer definitively discloses its turntable communicating ***analog*** audio signals to the data processor unit, contrary to Sony’s assertions.

Spencer does not describe the specific analog ports used to communicate the analog audio signals between the turntable 100 and data processor unit 200.

Spencer discloses two unlabeled ports in Figure 1—identified below by the red arrow—either of which potentially could be used to transmit analog audio. *See* Ex. 1029 at 62:5-15 (Mr. Zatkovich explaining that there are “at least two unmarked interfaces which, I assume, would carry the analog signals from the – record on the turntable from the cartridge to the data processor....”).



Spencer admittedly discloses ports 102 and 106 in the plural. *See* Ex. 1005 ¶ 30 (“output ports 102” and “output ports 106”). Spencer, however, only discloses a single “corresponding SCSI, USB, or other suitable type port 202 on the data processor unit 200” (*id.*), so it is unclear why there would be two ports 102 coupled to a single port 202. Nonetheless, there must be an analog port somewhere, given that Spencer teaches the turntable transmitting “*analog* electrical signals to the data processor unit 200.” *Id.* ¶ 36.

Spencer also discloses an “analog audio output port 104.” Ex. 1005 ¶ 30; *see also id.* at Fig. 1. This port is disclosed as being connected to an “external output device 430 such as a speaker.” *Id.* The purpose is for the speaker “to output audio signals synchronized with an audio signal corresponding to a location on a record.” *Id.* Spencer further teaches “digital audio output port 207 on the data processor unit

200” as being “coupled to corresponding ports on external output device 420 such as a speaker to output audio signals synchronized with an audio signal corresponding to a location on a record.” *Id.* That is, Spencer teaches synchronously playing music from both the turntable and data processor.

The analog and digital audio output ports 104 and 207 need to be connected to a speaker only while playing music (at the “playing step”). In the “pre-production step” described in Spencer in which analog music is transmitted to the data processor unit 200 for sampling and waveform mapping (*see id.* ¶ 65), the speakers are unnecessary. At this step, “analog audio output port 104” could be used to transmit analog audio signals from the turntable to the data processor unit.

Regardless of exactly how analog signals are transmitted, Spencer is clear that the turntable’s “cartridge 122 communicates [] ***analog*** electrical signals to the data processor unit 200.” Ex. 1005 ¶ 36 (emphasis added).

2. Digital computers are able to receive and output analog signals.

Sony also argues that because data processor unit 200 is a “digital computer,” it cannot receive analog signals. *See* Paper 21 at 25. But computers commonly take analog signals and convert them to digital signals (and vice versa). That is exactly what Sony’s 2004 New York Times article describes. *See* Ex. 1007 (explaining one can connect “two male RCA plugs at one end that attach to your

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preamp and a one-eighth-inch phono jack at the other that connects with your computer”).

Spencer also discloses that data processor unit 200 has “video output ports” 206a and 206b for video output to monitors. *See* Ex. 1005 ¶ 30. While Spencer does not disclose whether those ports are analog or digital, computers regularly outputted analog video via VGA (video graphics array) in 2004 and still do today. *See Samsung Elecs. Co. v. Va. Innovation Scis., Inc.*, No. IPR2015-00054, 2015 WL 1967801, at *2 (PTAB Apr. 18, 2015) (explaining “VGA” is “analog”). Computers, of course, have long had ADCs and DACs (digital-to-analog converters). Indeed, personal computers typically have a 3.5mm audio jack for outputting analog music and receiving analog speech from a microphone.

3. Sony’s arguments on “sampling” and the “analog waveform” are incorrect.

Spencer teaches, at paragraph 36, that the turntable’s “cartridge 122 communicates th[e] *analog* electrical signals to the data processor unit 200 for sampling, as will be discussed in greater detail below.” Ex. 1005 ¶ 36 (emphasis added). Starting at paragraph 65, and going through paragraph 80, Spencer describes how the data processor unit 200 generates “a waveform map of the analog record in a sampling process.” *Id.* ¶ 65. Spencer explains that “data processor 200 samples the *analog* audio waveform communicated from the controller unit 100 (e.g., the *analog* waveform) and correlates portions of the

sampled analog waveform with corresponding values of the tone arm assembly signals....” *Id.* ¶ 66 (emphases added). Spencer, therefore, is clear that the analog audio received from the turntable is sampled at data processor unit 200.

Despite the teachings of Spencer, Sony would have the Board believe the “analog waveform” in paragraph 66 is actually digital (*i.e.*, a digital representation of an analog waveform), and that Spencer’s teachings of “sampling” are not really sampling. *See* Paper 21 at 26-28. Sony’s arguments are incorrect. As explained above, paragraph 36 discloses the turntable communicating analog signals, and paragraph 66 describes what is communicated from the turntable (*i.e.*, the “analog waveform” communicated in the form of “analog electric signals”).

Spencer’s “analog waveform” is analog—as the name implies. It is not a digital waveform. Of course, it is put into a digital form by data processor unit 200, *i.e.*, “sampled,” as Spencer describes. And after this step has been completed, Spencer repeatedly refers to the output as the “***sampled*** analog waveform,” “***sampled*** audio waveform” or “***sampled*** analog audio waveform.” *See, e.g.*, Ex. 1005 ¶¶ 29, 66, 67, 70, 73, 96 (emphasis added); *see also id.* at Claims 1, 3, 23, 29, 34. That is, the “sampled analog waveform” is a digital form of the original analog waveform. The “sampled analog waveform” is then used to create the “waveform map.” *See id.* ¶ 66.

Sony argues the “analog waveform” is already digital and the “sampling” discussed in Spencer is not the digitization of analog signals. Paper 21 at 25-26. According to Sony, the data processor unit 200 “samples” the digital analog waveform, and that sampling is similar to how “one artist may ‘sample’ another’s composition by using portions of song in a new song.” *Id.* But this theory is inconsistent with Spencer. The specification discloses data processor unit 200 “sampling an analog audio waveform generated by the interaction of the stylus 123 with the groove sidewalls” in the LP record. Ex. 1005 ¶ 66. The audio waveform generated by a turntable’s stylus interacting with the grooves in a record is, of course, analog. *See id.* ¶ 67 (similarly describing that the data processor unit “may sample the audio waveform generated by the interaction of the style 123 and groove sidewalls”).

Spencer’s patent claims further confirm Sony is wrong. Independent claim 1 of Spencer recites “an analog signal source assembly for generating an analog audio waveform.” *Id.* at claim 1. Claims 2 and 3 confirm this analog signal source assembly refers to the turntable, reciting the assembly has a stylus, transducer, spindle and platter. *Id.* at claims 2, 3. Thus, the “analog audio waveform” is analog. Independent claim 9 of Spencer recites “a stylus for sensing a topography on a surface” and “an analog signal source for generating an analog electric signal representative of the sensed topography”—describing a turntable. Claim 9 then

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further recites “a signal processing unit for sampling the analog electrical signal.”

Ex. 1005 at claim 9; *see also id.* ¶ 13 (describing the “signal processing unit,” which is also referred to as a “data processor unit,” “data processor,” or “data processing unit” throughout Spencer). Thus, it is “data processor unit 200” that samples the “analog electrical signal” or “analog waveform” for digitization.

Sony states that “sampling” in Spencer “clearly means taking samples of music to put into a waveform map,” but it is not clear what Sony even means by this. Paper 21 at 26. Spencer’s waveform map is used to create a “synchronization map,” in which “synchronization points” from the analog waveform (that has been sampled and digitized) in the waveform map are matched with “corresponding portions of an output from an external digital source (i.e., a digital waveform).” Ex. 1005 ¶¶ 73-75; *see also id.* at Claim 34 (“wherein the data processing unit correlates the portions of the sampled analog waveform with portions of a digital waveform”). The point of Spencer is to synchronize a record LP playing from a turntable with digital music output from the digital processor unit.

Sony attempts to buttress its incorrect interpretation by pointing to paragraph 68 of Spencer. Sony argues that because this paragraph states “the data processor unit 200 generates the analog waveform,” the analog waveform must actually be digital. Paper 21 at 26. But looking at the entire context of the paragraph, the word “generates” likely should have been “samples.” The paragraph speaks as to the

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“sampling rate” being determined based on the “needle location” and “base sampling rate.” Ex. 1005 ¶ 68. And Sony’s read does not help even Sony. The “data processor unit” is not generating analog signals, as Sony points out. But under Sony’s theory, it is also not generating digital signals. Sony, under its incorrect theory, argues the turntable generates the digital signals (*i.e.*, Sony’s digital “analog waveform”).

In summary, Spencer discloses analog audio (or analog electrical) signals representative of the audio recording on the LP being transmitted from the turntable to the data processor unit. Spencer does not disclose the turntable digitizing analog audio representative of an audio recording, and transmitting that to the data processor unit. Sony, therefore, has not established obviousness.

B. Sony failed to establish that its Spencer-Cohen combination meets the ’498 Patent’s “controller” limitation.

For the recited “controller,” Dr. Moon states that it would have been obvious to “use known solutions such as Cohen’s” with Spencer because “the use of ... microprocessors (controllers) was well-known in connection with turntables.” Ex. 1002 ¶ 121. He then argues because a “USB interface required a host controller to operate” (citing Ex. 1020), it “would have been obvious to implement a host controller in the microprocessor of Cohen, or as a separate host controller.” Ex. 1002 ¶ 121. The Petition parrots this language. *See* Paper 2 at 57-58.

Dr. Moon did not explain why it would have been obvious to implement a USB host controller as described in U.S. Patent No. 6,801,971 (the “’971 Patent,” Ex. 1020) into Cohen’s microprocessor, or how that would have been accomplished. The ’971 Patent does not describe a “USB host controller” in a computer’s microprocessor. It discloses a “USB Host Controller” off the “PCI Bus.” Ex. 1020 at Fig. 2. “Peripheral Component Interconnect” (or “PCI”) is a “local bus” that “can transfer data between” the “main microprocessor (its CPU) and peripherals (hard disks, video adapters, etc.).” Ex. 2016. The ’971 Patent also nowhere provides that the host controller can be “implemented in software as part of a general-purpose or dedicated processor,” as Dr. Moon asserts. *See* Ex. 1002 ¶ 121 (citing Ex. 1020 at 1:55-61). Instead, the portion of the ’971 Patent to which Dr. Moon cites simply states “[o]ne of the types of devices that may be connected to the PCI bus is a Universal Serial Bus (USB) host controller.” Ex. 1020 at 1:55-57.

In addition, Dr. Moon and Sony do not explain why the turntable would have a “host controller.” The ’971 Patent explains that the “USB host controller provides access to the USB devices in the system.” Ex. 1020 at 1:62-63. As Mr. Zatkovich explained, there is a “host controller usually on a computer and then there’s a device controller usually on the device.” Ex. 1029 at 30:7-9. In the proposed combination, Spencer’s “data processor unit 200” (the “digital computer”

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according to Sony, *see* Paper 21 at 25) would be the “host,” not the turntable (*i.e.*, “controller unit 100”). Simply put, Sony has failed to adequately explain why or how its proposed combination would operate with respect to the “controller” limitation, and thus it has failed to meet its burden.

V. CONCLUSION

Sony has failed to demonstrate that any of the alleged grounds of invalidity render the claims obvious. The Board, therefore, should confirm the patentability of all challenged claims.

Respectfully submitted,

THOMPSON COBURN LLP

By /Anthony F. Blum/
Anthony F. Blum, Reg. No. 64,703
Alan H. Norman, Reg. No. 32,285
David B. Jenkins, Reg. No. 46,805
One US Bank Plaza
St. Louis, Missouri 63101
314-552-6000
FAX 314-552-7000
ablum@thompsoncoburn.com
anorman@thompsoncoburn.com

*Attorneys for Patent Owner in Music Brands,
Inc.*

CERTIFICATE OF SERVICE

Under 37 C.F.R. §§ 42.6(e), the undersigned certifies that, on March 15, 2024, a complete and entire copy of this Response was served via e-mail at:

Matthew A. Smith
Smith Baluch LLP
1100 Alma St., Ste. 109
Menlo Park, CA 94025
smith@smithbaluch.com

Andrew S. Baluch
Smith Baluch LLP
700 Pennsylvania Ave. SE, 2nd Floor
Washington, DC 20003
baluch@smithbaluch.com

/Anthony F. Blum/
Anthony F. Blum (Reg. No. 64,703)

CERTIFICATE OF COMPLIANCE
WITH TYPE-VOLUME LIMITATION

Pursuant to 37 C.F.R. §§ 42.24 *et seq.*, the undersigned certifies that this Sur-Reply complies with the 5,600-word type-volume limitation. According to the word count in Microsoft Word for Microsoft 365, after excluding the parts of the Sur-Reply exempted, the Sur-Reply contains 5,595 words.

/Anthony F. Blum/
Anthony F. Blum (Reg. No. 64,703)