'258 Accused Products, the undersigned finds that the 258 NIA No. 3 meets limitations 17.5 and 17.6. *See supra* at Section VI.B.2.a.i.

ii) Limitation 17.7

Sonos contends that the 258 NIA No. 3 is [redacted]. CIB at 32. Sonos claims that, similar to the 258 NIA No. 2, the information generated and transmitted by the leader in the 258 NIA No. 3, including the [redacted], meets the construction of "playback timing information." *Id*.

Google argues that the 258 NIA No. 3 [redacted]. RIB at 41. Google asserts that [redacted] *Id*. Google therefore argues that, because [redacted], there is no transmission of "playback timing information associated with the audio content." *Id*. at 41-42. Google contends that "the alleged 'playback timing information' is [redacted] and is further based on [redacted] which—like [redacted]—does not indicate when audio content is to be played back and is not associated with audio content." *Id*. at 42.

Staff asserts that the parties agree that [redacted]. SIB at 27. Therefore, Staff argues that [redacted]

similar to the 258 NIA No. 2 and therefore, Sonos has met its burden to show that the 258 NIA No. 3 infringes the '258 patent. *Id*.

Similar to the 258 NIA No. 2, [redacted]. *See* RX-1470C at Q/A 69. In addition, [redacted]. *See id*. This does not change the determination above, with respect to the 258 NIA No. 2, that [redacted] amount to the "playback timing information." *See supra* at Section VI.B.3.b.ii. Thus, for the same reasons as the 258 NIA No. 2, the undersigned finds that the 258 NIA No. 3 meets this limitation.

iii) Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the 258 NIA No. 3 infringes claim 17 of the '258 patent.

iv) Claims 21, 24, and 26

Google does not dispute that the 258 NIA No. 3 meets the additional limitations of claims 21, 24, and 26. RLUL at 2-3. Nor is there any indication that the 258 NIA No. 3 operates differently from the '258 Accused Products as it relates to the additional limitations of claims 21, 24, and 26. Thus, for the same reasons as the '258 Accused Products, the undersigned finds that the 258 NIA No. 3 infringes claims 21, 24, and 26 of the '258 patent. *See supra* at Sections VI.B.2.b.

C. Technical Prong of the Domestic Industry Requirement

Sonos asserts that the '258 DI Products satisfy the technical prong of the domestic industry requirement for claims 17, 21, 24, and 26 of the '258 patent. CIB at 7, 32.

1. Claim 17

Sonos asserts that the '258 DI Products meet every limitation of claim 17 of the '258 patent. CIB at 32. Google contends that the '258 DI Products do not meet limitations 17.5, 17.6, or 17.7. RLUL at 4. Google does not dispute that the '258 DI Products meet the remaining limitations of claim 17. *Id*. Staff agrees with Sonos that the '258 DI Products practice claim 17. SIB at 29.

a) Limitations 17.5 and 17.6

Sonos argues that it is undisputed that the '258 DI Products meet limitations 17.5 and 17.6. CIB at 33. For example, Sonos claims that each '258 DI Product is capable of receiving control messages from any Sonos-enabled controller connected to a Sonos audio system that direct and cause it to enter into a zone group or bonded zone[25] configured to playback audio in synchrony. *Id*. In this zone group or bonded group, Sonos contends that one '258 DI Product is designated as the group coordinator and every other '258 DI Product is designated as a group member. *Id*. Sonos also asserts that it is undisputed that the control messages (*i.e.*, [redacted]) each constitute a "direction . . . to enter into a synchrony group." *Id*. at 33-34.

Google disputes these limitations "to the extent the 'request' limitation of the '953 patent is found to be satisfied by the DI Products." *See* RLUL at 4. Thus, Google contends that if the '258 DI products satisfy the "request to enter into a synchrony group" limitation in claim 7 of the '953 patent, then they cannot satisfy the "direction . . . to enter into a synchrony group" limitation in claim 17 of the '258 patent. RIB at 44.

[25] In a Sonos system, there are two types of synchrony groups: a zone group and a bonded zone. CX-0011C at Q/A 80. A zone group refers to "a set of two or more Sonos audio players that are to play the same audio program synchronously, where each Sonos audio player in the set is configured to play the same components, such as both the right and left channels, of the audio program." *Id*. A bonded zone refers to "a set of two or more Sonos audio players that are to play the same audio program synchronously, where each Sonos audio player in the set is configured to play back a respective component, such as only the left or right channel or a particular frequency range, of the audio program." *Id*.

Staff contends that the parties agree that the '258 DI Products meet limitations 17.5 and 17.6.[26] SIB at 28. In addition, Staff submits that Google does not dispute that the '258 DI Products meet these limitations. SRB at 6.

The evidence shows that that '258 DI Products are capable of receiving control information from any Sonos-enabled controller connected to a Sonos audio system. *See* CX-0011C at Q/As 80, 112-30; CX-1002 at 10. These messages direct and cause the '258 DI Products to enter into a zone group or bonded zone with one or more other '258 DI Products configured to playback audio in synchrony. *See id*. Thus, the control messages (*i.e.*, [redacted]) each constitute a "direction . . . to enter into a synchrony group." *See id*. Therefore, the undersigned finds that the '258 DI Products meet limitations 17.5 and 17.6.[27]

b) Limitation 17.7

Sonos argues that the future timestamps for the audio frames constitute the claimed "playback timing information."[28] *Id*. In fact, Sonos contends that [redacted]. *Id*. at 36. Sonos disagrees with Google's argument that these timestamps do not meet this limitation because they do not indicate when audio content is to be played back at the member. *Id*. Sonos asserts that the timestamps indicate when audio content is to be played back at the

[26] Staff addresses Google's argument that the messages cannot be both a "direction" as required by claim 17 of the '258 patent and a "request" as required by claim 7 of the '953 patent with respect to the '953 patent. *Id*.

[27] As to whether the control messages in the '258 DI Products can also satisfy the "request" limitation in claim 7 of the '953 patent, that is discussed infra in Section VII.B.1.a.i.

[28] Sonos contends that with respect to the '953 patent, Google dropped its argument that the timestamps sent from the Sonos coordinator to a Sonos member are not the claimed "playback timing information." CRB at 24. Sonos argues that this concession is dispositive as to the '258 patent because the term "playback timing information" in the '258 and '953 patents has the same construction and the same timestamps are accused of being the "playback timing information" for both patents. *Id*.

coordinator and each member is configured to playback audio at the same time as the coordinator based on the timestamps. *Id*. In addition, Sonos argues that Google's "improper importation of limitations" into the construction of "playback timing information" are contrary to the claim language, which only requires that synchronous playback be "based at least in part on" the "playback timing information." *Id*. at 36-37. Lastly, Sonos contends that [redacted] is "merely part of the internal processing that the member performs in order to prepare itself to playback the audio frames *at the times indicated by the timestamps* received from the coordinator, so that the member is able to playback audio 'in synchrony' with the coordinator." *Id*. at 37 (emphasis in original).

Google argues that the '258 DI Products fail to meet this limitation because the timestamp sent by the coordinator does not represent when the audio frame associated with the timestamp is to be played at the member. RIB at 42-43. Instead, Google contends that the [redacted]. *Id*. at 43. Google asserts that once it [redacted]. *Id*. Similar to its non-infringement position, Google disputes Sonos' contention that nothing in the construction of "playback timing information" requires it to be represented according to the local clock of the member device. *Id*.

Staff asserts that there is no dispute that the "coordinator" in the '258 DI Products generates "timestamps" that are transmitted to the "member" of a "zone group" or "bonded zone." SIB at 28. Staff contends that Google's argument is flawed in the same way as its non-infringement argument, and that based on a proper interpretation of the claims, the evidence shows that the '258 DI Products practice limitation 17.7. *Id*. at 28-29; SRB at 6-7.

Similar to infringement, the central dispute is whether the future timestamps for the audio frames constitute the claimed "playback timing information." The evidence shows that in the '258 DI Products, the leader generates timestamps that are transmitted to the follower. *See* CX-0011C at Q/As 131-144. The timestamps indicate when audio content is to be played back at the leader and each follower is configured to playback audio at the same time as the leader based on the timestamps. *See id*. at Q/As 141-42. Google's argument that the timestamps cannot be the claimed "playback timing information" because each [redacted] was previously rejected. *See supra* at Section VI.B.2.a.ii. Thus, in the '258 DI Products, the timestamps sent from the leader are the claimed "playback timing information." Although the follower [redacted] is still "at least based on" the timestamp from the leader. *See* CX-0011C at Q/As 131-144. Thus, the '258 DI Products play back audio in synchrony "based at least in part on" the playback timing information. Therefore, the undersigned finds that the '258 DI Products meet this limitation.[29]

c) Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the '258 DI Products satisfy the technical prong of the domestic industry requirement for claim 17 of the '258 patent.

2. Claims 21, 24, and 26

Sonos asserts that the additional limitations of claims 21, 24, and 26 are met. CIB at 37-39. Staff agrees. SIB at 29. Google does not dispute that the additional limitations of these dependent claims are met. RLUL at 5-6. In addition, the evidence shows that the '258 DI Products

[29] As Sonos notes, Google does not dispute that these timestamps are the "playback timing information" for the '953 patent, which has the same construction as the '258 patent. *See* RLUL at 8.

meet the additional limitations of claim 21, 24, and 26. *See* CX-0011C at Q/As 162-63, 170-207; JX-0337C at 1; JX-0290C.

Accordingly, the undersigned finds that the '258 DI products practice claims 17, 21, and 26.

D. Validity[30]

Google argues that the asserted claims are rendered obvious by: (1) U.S. Patent No. 7,391,791 ("Balassanian"); and (2) Balassanian in combination with U.S. Patent Application Publication No. 2007/0142944A1 ("Goldberg"). RIB at 44-45.

1. Balassanian

a) Claim 17

Google argues that the asserted claims of the '258 patent are obvious in view of Balassanian. RIB at 44-45. For purposes of obviousness, Sonos does not dispute Limitations 17.0-17.4 as to Balassanian. CLUL at 3. Staff contends that Google failed to present clear and convincing evidence that any asserted claim of the '258 patent is rendered obvious. SIB at 30.

i) Limitations 17.5 and 17.6

Google claims that Balassanian discloses a synchronization system that designates rendering devices as either a master or slave in a synchrony group that are nodes on a network, which use communication links such as the local area network. *Id*. at 50. According to Google, when a device receives a designation to start operating as a slave, it meets these claim limitations. *Id*. Google asserts that Mr. Millington, the sole inventor of the '258 patent, describes designating devices to be either a master or slave as precisely how a zone group is formed according to his

[30] The parties agree that the asserted claims of the '258 patent are entitled to a priority date of April 1, 2004. *See* CIB at 39 n.14; SIB at 30; JX-0001 at 35. The parties also agree that Google's invalidity references quality as prior art. *See* SIB at 30.

invention. *Id*.; RRB at 25. Google also contends that Balassanian discloses that the claimed "control information" is received from the user interface, which operates as the claimed "controller." RIB at 50. Although Balassanian does not disclose a plurality of user interfaces, Google claims that it would have been trivial for a person of ordinary skill in the art to utilize Balassanian's system so that the user interface is installed on other computers connected to the same network. *Id*. at 50-51.

Google argues that Balassanian's disclosures are not limited to a user interface integrated with a rendering device, but rather, Balassanian's user interface is on a personal computer connected via LAN to video and audio rendering devices, which themselves are standalone computer devices with their own processors, and are physically separate and distinct from the rendering devices. *Id*. at 52. Google submits that Sonos' position is undermined by Dr. Almeroth's admission that the controller could be software. *Id*. Google also argues that the '258 patent specification does not require the controller to be in any particular physical form. *Id*. at 52-53. In fact, Google asserts that "the patent specifically teaches that the claimed zone player may include a user interface, and that a user interface is a controller." RRB at 23-24.

Sonos argues that there is no receipt of control information from a controller because Balassanian has no controller. CIB at 56. Sonos contends that, at most, Balassanian teaches the fundamentally different approach of a rendering device that might have an integrated user interface that can accept certain inputs. *Id*. According to Sonos, the only reference in Balassanian to a user interface is a single rendering device with an integrated user interface "that can accept certain inputs, none of which controls any other rendering device." CRB at 26. Sonos also argues that Balassanian does not disclose a "direction . . . to enter into a synchrony group" because its rendering devices are pre-programmed to synchronize with one another. CIB at 56. Sonos contends

that Google's assertion regarding designating devices as master or slave of a group is irrelevant because assigning roles within a formed synchrony group is distinct from zone players entering into a synchrony group. CRB at 28-29. Moreover, Sonos argues that the instructions Google points to are referring to the software stored in the memory of a rendering device and has nothing to do with a rendering device receiving an instruction over a LAN to perform some action. *Id*. at 29.

According to Staff, the parties agree that Balassanian discloses that the synchronization system designates a master rendering device and designates all other rendering devices as slave rendering devices. SIB at 39. Staff, however, argues that a person of ordinary skill would not have understood that to disclose the claimed "direction . . . to enter into a synchrony group." *Id*. at 40. In addition, Staff asserts that Google failed to present clear and convincing evidence that one of ordinary skill would have been motivated to make the proposed modifications to Balassanian's user interface. *Id*. Staff submits that Google's argument - that the rendering devices in Balassanian must receive instructions via a user interface in the synchronization system - is unsupported and does not rise to the level of clear and convincing evidence. SRB at 9.

The undersigned finds that Balassanian does not disclose that the claimed "control information" is received from the user interface, which operates as the claimed "controller." Even if the user interface in Balassanian amounted to the claimed "any one of a plurality of controllers," Balassanian does not disclose that a rendering device (which Google alleges reads on the claimed "zone player") receives control information from the user interface that "comprises a direction . . . to enter into a synchrony group." *See* CX-0014C at Q/As 464-66. Balassanian only generally teaches that the "synchronization system" designates the rendering devices as a master or slave rendering device. *See* JX-0448 at Abstract ("The synchronization system designates one of the rendering devices as a master rendering device and designates all other rendering devices as slave

rendering devices."), 2:28-32 ("To help ensure synchronization of rendering devices, the synchronization system designates one of the rendering devices as a master rendering device and designates all other rendering devices as slave rendering devices."). In addition, Balassanian does not teach that the user interface sends control information that "comprises a direction . . . to enter into a synchrony group." Rather, Balassanian teaches that the user interface is for a user to "indicate the difference in the rendering times." *See id*. at 3:12-18.

Google's expert also claims that "a POSITA would have readily modified Balassanian's user interface to enable a user to provide the master/slave designation and thereby provide a direction for a rendering device to enter into a synchrony group as a slave." *See* RX-1479C at Q/As 458-59. Specifically, Google's expert states:

> Balassanian expressly teaches that the rendering devices are connected via communications links including a LAN and that a user interface is displayed on a "personal computer." Balassanian at 3:12-26. And, as Sonos admits, "precisely *how* one device sends information to another device over a LAN via a network interface was within the general knowledge of one of ordinary skill in the art at the time of the invention." RX-0665C (Sonos's Fourth Supp. Response To Google's First Set of Interrogatories at 154). Thus, it would have been trivial for a POSITA to allow a user to transmit control information to certain rendering devices to designate them as master and slaves over a LAN via a network interface, such as by using a web application from any plurality of computers that controls Balassanian's rendering devices.

Id. at Q/A 459. This, however, is not supported by Balassanian's disclosure, given that Balassanian only teaches that the user interface is for a user to "indicate the difference in the rendering times." *See* JX-0448 at 3:12-18. Moreover, Google does not point to any evidence in Balassanian or elsewhere demonstrating that a person of ordinary skill in the art would have a reason to modify Balassanian in that way. *See* CX-0014C at Q/As 470-72. Thus, the undersigned finds that Google has not met its burden to prove that Balassanian renders these limitations obvious.

ii) Limitation 17.7[31]

Google argues that Balassanian discloses a master device that sends the slave devices a message containing the master rendering time, which indicates when the master device renders content. RIB at 53. Google claims that this master rendering time is sent on a periodic basis, and upon receiving the master's rendering time, each slave device determines whether a time domain differential exists between the rendering times and adjusts the rendering of the content in proportion to the time domain differential so that the content can be rendered at the same time. *Id*. Google argues that the "master rendering time" in Balassanian is an indication of when the master device renders content, and is not limited to a point in the past, present, or future. *Id*. at 53-54; RRB at 25-26. In addition, Google contends that Balassanian discloses delaying the rendering of content into the future or buffering the audio. RIB at 54. Google submits that its expert, Dr. Schonfeld, explained that buffering delays playback into the future. *Id*. Lastly, Google argues that "Balassanian discloses that, after receiving the master rendering time, the slave devices may skip frames to 'speed up' to the master device, in which case the master rendering time must indicate a future time to which a slave device advances its playback." *Id*.

Sonos argues that Balassanian does not disclose "playback timing information" because the "master rendering time" in Balassanian is the time represented by the amount of content that has been rendered by the master rendering device. CIB at 57; CRB at 30. Sonos claims that this is "backward-looking" because "a measure of how much content has *already been rendered* by the master rendering device is information about that device's *prior* playback, rather than a *forward-looking* indication of 'when audio content is *to be played back*' in the future." CIB at 57 (emphasis in original); CRB at 31. Sonos argues that Balassanian "refers uniformly to information about *prior*

[31] Staff does not discuss whether Balassanian renders limitation 17.7 obvious. *See* SIB at 39-41.

playback." CIB at 57-58 (emphasis in original). Sonos also argues that the "indication" in Balassanian that Google points to is not the master rendering time, but rather a separate indication that corresponds to the master rendering time. CRB at 31. Sonos claims that a person of ordinary skill in the art would understand this claimed "indication" to refer to the device time of the master. *Id*. In addition, Sonos argues that "Balassanian's mere disclosure of a rendering device buffering content neither erases the unequivocal definition and explanation of rendering time nor suddenly transforms the master rendering time into the claimed 'playback timing information.'" *Id*. at 32. According to Sonos, many devices buffer content before playback without use of "playback timing information." *Id*. In addition, Sonos argues that in Balassanian, re-aligning the rendering of the master and slave devices is different than prospectively scheduling future playback so that the zone players do not get out of synchronization. *Id*. at 33.

The undersigned finds that the master rendering time in Balassanian cannot be the claimed "playback timing information," which was construed as "information indicating when the audio information [content] is to be played back." Order No. 20 at 15. As opposed to indicating when audio is to be played back, either at the master or the slave, the master rendering time in Balassanian is the time represented by the amount of content that has already been rendered by the master. *See* JX-0448 at 2:18-22 ("The rendering time is the time represented by the amount of content that has been rendered by that rendering device. For example, if a rendering device is displaying 30 frames of video per second, then the rendering time will be 15 seconds after 450 frames are displayed."). As Sonos' expert points out, the master rendering time does not indicate when the audio content was played back by the master rendering device, but rather, indicates how much content the master rendering device has played back. *See id*.; CX-0014C at Q/A 484.

In addition, Google argues that the master rendering time is not limited to a point in the past, present, or future by pointing to Balassanian's disclosure of delaying the rendering of content into the future, buffering the audio, or skipping frames. *See* RIB at 53-54. The portions of Balassanian cited by Google, however, do not teach that the master rendering time indicates a future time to render content. *See* CX-0014C at Q/A 499. Instead, Balassanian discloses that the slave rendering device adjusts the rendering of its content to compensate for the difference between the slave rendering time and the master rendering time. *See* JX-0448 at 3:60-4:45 ("For example, if the video rendering device was one second behind the master audio rendering device, then it might skip the display of every other frame for the next two seconds to "speed up" to the master audio rendering device."). Thus, the undersigned finds that Google has not met its burden to prove that Balassanian renders this limitation obvious.

iii) Limitation 17.8

Google contends that Balassanian discloses displaying a dial or slider on a user interface that the user can adjust to indicate the difference in rendering times. RIB at 54. According to Google, the difference in rendering times constitutes the claimed "status information" because it informs the user of the status of the synchrony group. *Id*. In addition, Google asserts that because the rendering devices operate in a network utilizing communication links such as the LAN, then the status information is transmitted to the user interface over the LAN. *Id*.; RRB at 27. To the extent the dial or slider is found not to represent "status information" transmitted from a rendering device over the LAN, Google argues that a person of ordinary skill in the art would have found it obvious to modify Balassanian's user interface to receive status information, such as the identify and/or timing information of rendering devices engaged in the synchronization system. RIB at 55. Google contends that such a modification would have benefited Balassanian's system by providing

a means for a user to monitor the status of the synchronization system. *Id.* In addition, Google claims that it would have been a trivial modification because Balassanian's system already includes a user interface and communication links. *Id.*

Google reiterates that there is no requirement for a standalone controller and that the '258 patent specifically teaches that the claimed zone player may include a user interface that is a controller. RRB at 27. In addition, Google argues that "[t]o display the current 'difference in the rendering times' (*i.e.*, the claimed 'status information') in a form of a 'dial' or 'slider' that the user can adjust, the user interface must receive an indication from the rendering devices of the current status of the 'difference in the rendering times.'" *Id.*

Sonos again asserts that Balassanian does not have a controller. CIB at 58. Sonos argues that having a rendering device that may have an integrated user interface is "a fundamentally different type of system." *Id.* In addition, Sonos contends that Google fails to identify the required "status information" as it only points to "a disclosure that describes the *user manually inputting* a value into one of the rendering device's user interface," which is not transmitted over the LAN via the network interface. *Id.* (emphasis in original). Sonos argues that in Balassanian, a user provides, via a dial or slider, an input to indicate the difference in the rendering times. CRB at 33-34. Moreover, Sonos argues that Google's argument regarding a motivation to modify Balassanian is "purely conclusory." *Id.* at 34.

Staff asserts that the evidence shows that the difference in rendering times is not transmitted from one rendering device over the network to the user interface of another rendering device. SIB at 41. In addition, Staff argues that Google failed to present clear and convincing evidence that a person of ordinary skill would have been motivated to make the proposed modifications to Balassanian's user interface. *Id.* Staff contends that "Google provides only

unsupported attorney argument in an attempt to overcome the lack of disclosure in Balassanian." SRB at 10.

The undersigned finds that Balassanian does not teach this limitation. Google claims that the difference in rendering times constitutes the claimed "status information" and that because the rendering devices operate in a network utilizing communication links, then the status information is transmitted to the user interface (which Google alleges is the claimed "at least one of the plurality of controllers") over the LAN. *See* RIB at 54. However, even if the user interface in Balassanian amounted to the claimed "at least one of the plurality of controllers," Balassanian does not support this understanding. Balassanian discloses a synchronization system where a user manually accounts for variation. *See* JX-0448 at 3:12-14. Balassanian states:

> For example, if the video and audio are rendered via a personal computer, the synchronization system may display a dial or a slider on a user interface that the user can adjust to indicate the difference in the rendering times. If the video is rendered five seconds after the corresponding audio, then the user can indicate via the user interface that the offset is five seconds.

Id. at 3:14-20. Thus, instead of a rendering device (or zone player) transmitting the difference in rendering times to the user interface, Balassanian discloses that the user indicates the difference in rendering times on the user interface. *See id*. at 3:14-20; CX-0014C at Q/A 519.

In addition, Google alleges that a person of ordinary skill in the art would have modified Balassanian's user interface to receive status information, such as the identity and/or timing information of rendering devices engaged in the synchronization system. *See* RIB at 55. Google claims that this modification "would have beneficially supplemented Balassanian's system by providing a means for a user to monitor the status of the synchronization system." *See id*. However, Google makes this claim without providing any evidence that a person of ordinary skill in the art at the time of the invention would have a reason to modify Balassanian in that way. *See* CX-0014C

at Q/A 525. Thus, the undersigned finds that Google has not met its burden to prove that Balassanian renders this limitation obvious.

iv) Conclusion

The undersigned found that Google has not met its burden to prove that Balassanian renders limitations 17.5-17.8 obvious. Accordingly, the undersigned finds that Google has failed to establish, by clear and convincing evidence, that claim 17 of the ’258 patent is rendered obvious by Balassanian.

b) Claims 21, 24, and 26

Claims 21, 24, and 26 depend from claim 17. Because claim 17 is not rendered obvious by Balassanian, then claims 21, 24, and 26 are also not rendered obvious by Balassanian.

2. Balassanian with Goldberg

a) Claim 17

Google argues that the asserted claims of the ’258 patent are obvious in view of Balassanian in combination with Goldberg. RIB at 44-45. Specifically, Google states that to the extent that “Balassanian alone does not disclose or render obvious claim limitation 17.8 and claims 21 and 24, they are rendered obvious by Balassanian in view of Goldberg.” *Id*. at 60. Because the undersigned found above that Balassanian did not render limitations 17.5-17.8 obvious, Goldberg cannot cure the deficiencies of Balassanian. Accordingly, the undersigned finds that Google has failed to establish, by clear and convincing evidence, that claim 17 of the ’258 patent is rendered obvious by Balassanian in combination with Goldberg.

b) Claims 21 and 24

Claims 21 and 24 depend from claim 17. Because claim 17 is not rendered obvious by Balassanian in combination with Goldberg, then claims 21 and 24 are also not rendered obvious by Balassanian in combination with Goldberg.

3. Conclusion

For the reasons set forth above, the undersigned finds that Google has failed to establish, by clear and convincing evidence, that any asserted claim is rendered obvious.

4. Secondary Considerations

Google contends that Sonos has not met its burden and is barred from arguing that so-called copying supports secondary considerations of nonobviousness. RIB at 66. Secondary considerations of nonobviousness may rebut a *prima facie* case of obviousness. Here, where Google has not made out a *prima facie* case of obviousness, there is no showing to rebut. Accordingly, the undersigned need not consider any secondary considerations of nonobviousness.

VII. U.S. PATENT 10,209,953

A. Overview

The ’953 patent, entitled “Playback Device,” issued on February 19, 2019 to Nicholas A. J. Millington. The ’953 patent is assigned to Sonos. *See* Compl. Ex. 4. The ’953 patent generally relates to “the field of digital data processing devices, and more particularly to systems and method for synchronizing operations among a plurality of independently-clocked digital data processing devices.” JX-0002 at 1:30-34.

1. Asserted Claims

Sonos is asserting claims 7, 14, and 22-24 of the ’953 patent against Google. CIB at 2. These claims read as follows:

7. [7.0] A first zone player comprising:

[7.1] a network interface that is configured to provide an interconnection with at least one data network;

[7.2] a clock that is configured to provide a clock time of the first zone player;

[7.3] at least one processor;

[7.4] a tangible, non-transitory computer-readable medium; and program instructions stored on the tangible, non-transitory computer-readable medium that are executable by the at least one processor to cause the first zone player to perform functions comprising:

[7.5] receiving a request to enter into a synchrony group with at least a second zone player that is communicatively coupled with the first zone player over a local area network (LAN);

[7.6] in response to receiving the request to enter into the synchrony group, entering into the synchrony group with the second zone player, wherein the first zone player is selected to begin operating as a slave of the synchrony group and the second zone player is selected to begin operating as a master of the synchrony group, and wherein the clock time of the first zone player differs from a clock time of the second zone player;

after beginning to operate as the slave of the synchrony group:

[7.7] receiving, from the second zone player over the LAN, clock timing information that comprises at least one reading of the clock time of the second zone player;

[7.8] based on the received clock timing information, determining a differential between the clock time of the first zone player and the clock time of the second zone player;

[7.9] receiving, from the second zone player over the LAN, (a) audio information for at least a first audio track and (b) playback timing information associated with the audio information for the first audio track that comprises an indicator of a first future time, relative to the clock time of the second zone player, at which the first and second zone players are to initiate synchronous playback of the audio information for the first audio track;

[7.10] updating the first future time to account for the determined differential between the clock time of the first zone player and the clock time of the second zone player; and

[7.11] when the clock time of the first zone player reaches the updated first future time, initiating synchronous playback of the received audio information with the second zone player.

14. The first zone player of claim 13, wherein the playback timing information further comprises, for each subsequent frame in the series of frames:

an indicator of a respective future time, relative to the clock time of the second zone player, at which the frame is to be synchronously played back by the first and second zone players.

22. The first zone player of claim 7, further comprising program instructions stored on the tangible, non-transitory computer-readable medium that are executable by the at least one processor to cause the first zone player to perform the following functions while operating as the slave of the synchrony group:

[22.1] receiving, from the second zone player over the LAN, a command to adjust an individual volume of the first zone player; and
[22.2] in response to receiving the command, adjusting the individual volume of the first zone player.

23. The first zone player of claim 7, further comprising program instructions stored on the tangible, non-transitory computer-readable medium that are executable by the at least one processor to cause the first zone player to perform the following functions:

[23.1] while operating as the slave of the synchrony group, receiving, from the second zone player over the LAN, control information that enables the first zone player to begin operating as the master of the synchrony group; and

[23.2] in response to receiving the control information, transitioning from operating as the slave of the synchrony group to operating as the master of the synchrony group.

24. The first zone player of claim 7, further comprising program instructions stored on the tangible, non-transitory computer-readable medium that are executable by the at least one processor to cause the first zone player to perform the following functions:

[24.1] while operating as the slave of the synchrony group, receiving a request to disengage from the synchrony group;

[24.2] in response to receiving the request to disengage from the synchrony group, disengaging from the synchrony group and transitioning from operating as the slave of the synchrony group to operating as a standalone zone player.

2. Claim Construction

The undersigned construed the following terms from the asserted claims as follows:

TERM	CLAIM(S)	CLAIM CONSTRUCTION
"zone player"	7, 14, 22-24	"data network device configured to process and output audio"
"network interface"	7	"physical component of a device that provides an interconnection with a data network"
"playback timing information"	7, 14	"information indicating when the audio information [content] is to be played back"
"clock timing information"	7	"information representing a time value indicated by a device's clock"
"a synchrony group"	7, 22-24	"a set of two or more zone players that are to play the same audio program synchronously"
"local area network"	7, 22, 23	"a data communications network spanning a limited geographical area, such as an office, an entire building or industrial park"

Order No. 20 at 15-20.

B. Infringement

Google argues that the '953 Accused Products do not infringe because they are imported as standalone devices. RIB at 75. As previously discussed with respect to the '258 patent, the undersigned rejects this argument. *See supra* at Section VI.B.1.

1. The '953 Accused Products

Sonos asserts that claims 7, 14, and 22-24 of the '953 patent are infringed by the '953 Accused Products. CIB at 7.

a) Claim 7

Sonos asserts that the '953 Accused Products meet every limitation of claim 7 of the '953 patent. CIB at 71. Google contends that the '953 Accused Products do meet limitations 7.5, 7.6,

7.8, 7.10, or 7.11. RLUL at 7-8. Google does not dispute that the '953 Accused Products meet the remaining limitations of claim 7. *Id.* Staff agrees with Sonos that the '953 Accused Products infringe the asserted claims of the '953 patent. SIB at 51.

i) Limitations 7.5 and 7.6

Claim 7 includes the limitations "receiving a request to enter into a synchrony group with at least a second zone player that is communicatively coupled with the first zone player over a local area network (LAN)" and "in response to receiving the request to enter into the synchrony group, entering into the synchrony group with the second zone player, wherein the first zone player is selected to begin operating as a slave of the synchrony group and the second zone player is selected to begin operating as a master of the synchrony group, and wherein the clock time of the first zone player differs from a clock time of the second zone player." JX-0002, cl. 7.

Sonos contends that the "request" limitation is the only part of limitations 7.5 and 7.6 that is in dispute. CIB at 72. Sonos argues that the following messages in the '953 Accused Products amount to the claimed "request": [redacted]. *Id.* at 72-73. Sonos claims that [redacted] and a person of ordinary skill in the art would commonly refer to analogous messages as "requests." *Id.* at 73; CRB at 43-44. Sonos disputes Google's assertion that a request requires mutual agreement between two devices. CIB at 73. Instead, Sonos argues that a person of ordinary skill in the art "would understand 'request' to be a broader term that covers both non-obligatory messages and also obligatory messages that direct a recipient to take an action." *Id.* at 73-74; CRB at 41. According to Sonos, this is confirmed

by several dictionary definitions as well as usage of that term in the industry. CIB at 74. In addition, Sonos claims that dictionaries cited by Google confirm that "request" and "direction' have overlapping meanings. CRB at 42. Sonos also argues that Google does not point to anything in the '953 patent that limits "request" to requiring mutual agreement between two devices. *Id*. at 42.

Google argues that [redacted] requests, but rather, are directions or commands. RIB at 80. According to Google, a person of ordinary skill in the art would understand that the plain meaning of the term "request" requires mutual agreement between two devices, but that the plain meaning of "direction" or "command" does not. *Id*. Google claims that numerous dictionary definitions support this understanding of the terms. *Id*. at 81. Google therefore argues that [redacted], they are "directions," not "requests." *Id*. Moreover, Google contends that [redacted]. *Id* at 82-83.

Staff submits that if the undersigned determines that "request" can include a command or direction, then Google does not dispute that [redacted] meet these limitations. SIB at 53. Staff contends that one of ordinary skill in the art would not understand the plain and ordinary meaning of "request" to be limited to mutual acceptance. *Id*. Staff argues that [redacted] Sonos' [redacted] engineers commonly use the term "request" to refer to messages that direct a recipient to take action. *Id*. Staff further argues that at least one industry standard uses the term "request" in that same way. *Id*. Staff also asserts that several computer-related dictionary definitions equate the term "request" to a command or instruction. *Id*. at 53-54.

None of the parties sought to construe the term "request" during the claim construction phase of the investigation. *See generally* Order No. 20. Nevertheless, the parties' dispute rests on whether the plain and ordinary meaning of "request" requires mutual agreement between two devices. In the context of the '953 patent, the term "request" is recited in the claims whereby a zone player receives "a request to enter into a synchrony group" and then "in response to receiving the request to enter into the synchrony group," the zone player "[enters] into the synchrony group." *See, e.g.*, JX-0002, cl. 7. The language of the claims does not recite that the zone player can deny or accept the "request," but rather, recites that, in response to the "request," the zone player enters into the synchrony group. *See id*. Thus, the '953 claims do not suggest that the plain meaning of "request" requires mutual agreement. Moreover, Google has not cited to any evidence from the specification indicating that the zone player has the option to deny or accept that request.

Extrinsic evidence also demonstrates that the plain and ordinary meaning of "request" need not require mutual agreement. For example, engineers from [redacted] Sonos [redacted] use the term "request" to refer to messages that direct or command a recipient to take action. *See* Millington, Tr. at 65:25-68:6; CX-0415C; CX-0007C at Q/As 43-44; JX-0466C at 152:1-154:3; JX-0473C at 90:18-91:19, 94:23-95:23, 96:2-11; JX-0467C at 128:13-23; JX-0017C at 14-16; CX-0254C at 19-21; CX-0011C at Q/A 443. While not dispositive on its own, the undersigned finds that this is evidence of how that term is used in the industry. Moreover, several computer-related dictionary definitions equate the term "request" to a command or instruction. *See* JX-0381; JX-0380. While Google cites to dictionary definitions that allegedly define "request" as asking for something, those definitions are not provided in the computer context, and thus carry less weight. *See* RX-1792; RX-1793; RX-1789. In fact, in the computer context, one of the dictionaries cited by Google equates "request" to "instruction." *See* RX-1791 (defining "request" as "an instruction to a

computer to provide information or perform another function."). The undersigned therefore finds that the plain and ordinary meaning of "request" in the '953 patent does not require mutual agreement between devices. *See* CX-0011C at Q/As 443, 574, 577.

Similar to the '258 patent, the evidence shows that [redacted]. CX-0011C at Q/As 568-574, 577. These messages are a request or direction for the '953 Accused Products to enter into a synchrony group with a second zone player. *Id*. In addition, the parties agree that [redacted] constitute a "direction," under the plain meaning of the term. *See* CIB at 11; RIB at 27; SIB at 15. The undersigned therefore finds that the '953 Accused Products meet limitations 7.5 and 7.6

ii) Limitation 7.8

Claim 7 includes the limitation "based on the received clock timing information, determining a differential between the clock time of the first zone player and the clock time of the second zone player." JX-0002, cl. 7.

Sonos argues that [redacted]. CIB at 75. Sonos contends that [redacted]. *Id*. According to Sonos, [redacted]. *Id*. Sonos argues that the reference to $\Delta T=T_S-T_C$ in the '953 patent does not define a specific equation for determining the time differential, but rather, "is merely intended to conceptually describe what a 'time differential' between two devices is." *Id*. at 76. In addition, Sonos asserts that the claims are not limited to any particular formula for

determining the differential. *Id*. at 76-77. Sonos also contends that "the specification expressly contemplates that the 'differential' can be determined based on multiple samples over time." *Id*. at 77.

Google argues that [redacted] is not a "differential." RIB at 75. Google contends that a person of ordinary skill in the art would understand, from the claims and specification of the '953 patent, that "differential" refers to the difference between the local clock of the first zone player and the local clock of the second zone player. *Id*. Accordingly, Google argues that [redacted] in the '953 Accused Products cannot be the claimed "differential" because "[redacted]." *Id*. at 76; RRB at 33. Google also argues that each [redacted] is not the claimed "differential" because the '953 Accused Products do not update the accused "first future time" to account for any [redacted]. RRB at 34.

Staff contends that the parties agree that when the '953 Accused Products [redacted]. SIB at 54. Staff, however, argues that Google is improperly attempting to import a limitation into the claims by limiting the claimed "differential" to $\Delta T=T_S-T_C$. *Id*. Thus, Staff asserts that under a proper interpretation of the claims, the evidence shows that [redacted] in the '953 Accused Products meets this limitation. *Id*. at 54-55.

None of the parties sought to construe the term "differential" during the claim construction phase of the investigation. *See generally* Order No. 20. Nevertheless, the parties' dispute rests on

whether the term "differential" is limited to any particular formula for determining the differential. Google argues that the meaning of "differential" is limited to the embodiment where $\Delta T=T_S-T_C$. However, it "is improper to read limitations from a preferred embodiment described in the specification – even if it is the only embodiment – into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *GE Lighting Sols., Inc. v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004)). Google has not cited to evidence in the intrinsic record to support limiting the claim, and without such a clear indication, the undersigned declines to limit "differential" in the manner proposed by Google.[32] This is particularly true where the specification mentions SNTP with respect to obtaining clock time information and determining the time differential. *See* JX-0002 at 11:48-12:16, 24:50-25:16. In addition, the specification discloses that members periodically obtain current time values and periodically update the time stamps. *See id.* at 33:46-57. Thus, the term "differential" is not limited to a particular formula for determining the differential, and does not exclude that the differential can be determined based on multiple samples over time.

The parties agree that in the '953 Accused Products, [redacted]. *See* RX-1522C at Q/A 134; CX-0011C at Q/As 593-94. Furthermore, the evidence shows that [redacted] *See* CX-0011C at Q/As 593-94. [redacted],

[32] In addition, to the extent that Google is arguing that the patentee was acting as his own lexicographer in defining the term "differential," *see* RX-1522C at Q/A 133, the undersigned also finds this unpersuasive. "To act as its own lexicographer, a patentee must 'clearly set forth a definition of the disputed claim term,' and 'clearly express an intent to define the term.'" *GE Lighting Sols.*, 750 F.3d at 1309 (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)). Google has not cited to evidence in the intrinsic record that supports a finding that the patentee was acting as his own lexicographer.

[redacted]. *See* CX-0011C at Q/As 587-89, 593-94; RX-1522C at Q/As 130-148; JX-0019C at 6-8; JX-0466C at 154:9-169:18; Schonfeld, Tr. at 1034:12-1037:6. Accordingly, the undersigned finds that this [redacted] amounts to the claimed "differential" and that the '953 Accused Products meet limitation 7.8.

iii) Limitation 7.10

Claim 7 includes the limitation "updating the first future time to account for the determined differential between the clock time of the first zone player and the clock time of the second zone player." JX-0002, cl. 7.

Sonos argues that it is undisputed that [redacted]. CIB at 78. In addition, Sonos claims it is undisputed that [redacted] constitutes an indicator of the "first future time." *Id*. at 78-79; CRB at 44. Sonos also contends that when the follower [redacted], the follower also accounts for [redacted] that are the "determined differential." CIB at 79. Sonos argues that contrary to Google's position, the claim only requires the follower to account for the differential, not adjust the future time by the differential. *Id*. at 79-80; CRB at 45.

Google argues that the alleged first future time is [redacted]. RIB at 77-78. According to Google, "[redacted]" *Id*. at 78. In addition, Google argues that "[redacted]" refers to the original determined differential and therefore Sonos

cannot read "a differential" on the [redacted] while reading "the determined differential" on the [redacted] *Id*.

Staff contends that for the same reasons as limitation 7.8, the evidence shows that the '953 Accused Products determine the claimed "differential." SIB at 55. Thus, Staff argues that the '953 Accused Products meet this limitation. *Id*.

As discussed above, the undersigned determined that the [redacted] amounts to the claimed "differential." In addition, it is undisputed that [redacted] is the claimed "first future time."[33] *See* CX-0011C at Q/As 601-03. Thus, the evidence shows that the first future time is adjusted by [redacted]. *See* CX-0011C at Q/As 607-08; RX-1522C at Q/As 150-55. Accordingly, the undersigned finds that the '953 Accused Products meet limitation 7.10.

iv) Limitation 7.11

Claim 7 includes the limitation "when the clock time of the first zone player reaches the updated first future time, initiating synchronous playback of the received audio information with the second zone player." JX-0002, cl. 7.

Sonos claims that it is undisputed that [redacted]. CIB at 80. In addition, Sonos contends that [redacted]. *Id*. at 81. Sonos argues that Google's arguments as to this limitation fail for the same reasons as its arguments in connection with "playback timing information" in the '258 patent. CRB at 45.

[33] Google does not dispute that the '953 Accused Products meet limitation 7.9. RLUL at 8.

Google argues that even if [redacted] is the claimed "determined differential," this limitation is still not infringed because [redacted]. RIB at 78-79. Google contends that under the correct interpretation of "initiating synchronous playback," the followers do not meet the limitation because [redacted]. *Id*. at 79. For example, Google asserts that [redacted]. *Id*.; RRB at 36.

Staff contends that for the same reasons as limitation 7.8, the evidence shows that the '953 Accused Products determine the claimed "differential." SIB at 55. Thus, Staff argues that the '953 Accused Products meet this limitation. *Id*.

As discussed above with respect to limitation 7.10, the follower adjusts the first future time (*i.e.*, [redacted]) by [redacted]. *See supra* at Section VII.B.1.a.iii. The follower is also configured to initiate synchronous playback of audio frames from an audio track with the leader. *See* JX-0019C at 5-8; JX-0025C at 1; CX-0868C at 1; JX-0179C at 1; CX-0842C at 1-3; CX-0011C at Q/As 615-616. The follower does this when the local clock time of the follower reaches the updated first future time. *See* CX-0011C at Q/As 615-616; JX-0466C at 210:11-235:4; JX-0473C at 198:5-200:10. In addition, Google's argument that there is no infringement because [redacted] is not persuasive. Even if [redacted], the evidence shows that [redacted]

[redacted]. *See* CX-0011C at Q/As 266, 269-70, 615-18; *see also* Almeroth, Tr. at 242:21-245:23. Thus, the undersigned finds that the '953 Accused Products meet this limitation.[34]

v) Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the '953 Accused Products infringe claim 7 of the '953 patent.

b) Claims 14 and 22

Sonos asserts that the additional limitations of claims 14 and 22 are met. CIB at 81. Staff agrees. SIB at 57. Google does not dispute that the additional limitations of these dependent claims are met. RLUL at 8-9. Additionally, the evidence shows that the additional limitations of claims 14 and 22 are met. *See* CX-0011C at Q/As 263, 265, 601-602, 622-23, 628-29, 634-35, 640-46; JX-0019C at 6-10; CX-0258C; JX-0025C; CX-0980; CX-0747; JX-0019C at 84. Accordingly, the undersigned finds that the '953 Accused Products infringe claims 14 and 22.

c) Claim 23

Sonos asserts that the '953 Accused Products infringe claim 23. CIB at 81. Google contends that the '953 Accused Products do not meet any of the limitations of claim 23. RLUL at 9. Staff agrees with Sonos that the '953 Accused Products infringe claim 23. SIB at 58-59.

i) Limitation 23.1

Claim 23 includes the limitation "while operating as the slave of the synchrony group, receiving, from the second zone player over the LAN, control information that enables the first zone player to begin operating as the master of the synchrony group." JX-0002, cl. 23.

[34] As previously noted with respect to the '258 patent, Google argues that "initiating synchronous playback" refers to the time at which content of an audio buffer is released into the audio output pipeline, not the time when the sound is emitted from the speaker. *See* RIB at 79. Again, the undersigned rejects Google's unsupported proposed construction, and instead, "initiating synchronous playback" will be construed according to its plain and ordinary meaning. *See supra* at Section VI.B.2.a.ii.

Sonos contends that the '953 Accused Products [redacted]. CIB at 81. Sonos claims that [redacted], which is the claimed "control information." *Id.* at 81-82. According to Sonos, [redacted] *Id.* at 82. Sonos argues that [redacted]." *Id.*

Google argues that "[redacted]." RIB at 83-84. According to Google, [redacted]. *Id.* at 84. Google asserts that [redacted]. *Id.* Google contends that [redacted] *Id.* Google argues that [redacted]. *Id.* In addition, Google argues that [redacted] *Id.*

Staff contends that [redacted] contains the [redacted]. SIB at 58. Staff argues that [redacted]

[redacted]. *Id*. According to Staff, this enables the follower to being operating at the leader. *Id*.

The parties' dispute rests on whether the [redacted] that the follower receives from the current leader amounts to the claimed "control information." The evidence shows that each '953 Accused Product [redacted] *See* CX-0011 at Q/As 653-54, 658; JX-0019C at 3-5; JX-0467 at 175:4-176:4, 200:6-205:25. These [redacted] contain [redacted], which the follower can receive from the current leader. *See id*. The follower [redacted]. *See id*. If so, then [redacted]. *See id*. Thus, the undersigned finds that [redacted] is "control information that enables the first zone player to begin operating as the master of the synchrony group." *See id*. Accordingly, the undersigned finds that the '953 Accused Products meet this limitation.

ii) Conclusion

Google's briefing only addresses limitation 23.1. *See* RIB at 83-84. However, because Google stated that limitations 23.0 and 23.2 were disputed (*see* RLUL at 9), Google was "expected to substantively address the issue in its brief and not rely on conclusory statements." *See* G.R. 13.3. In addition, the evidence shows that the '953 Accused Products meet the "in response to receiving the control information, transitioning from operating as the slave of the synchrony group to operating as the master of the synchrony group" limitation. *See* CX-0011 at Q/As 653-54, 658;

JX-0019C at 3-5; JX-0467 at 175:4-176:4, 200:6-205:25. Accordingly, the undersigned finds that the '953 Accused Products infringe claim 23 of the '953 patent.

d) Claim 24

Sonos asserts that the '953 Accused Products infringe claim 24. CIB at 82. Google contends that the '953 Accused Products do not meet any of the limitations of claim 24. RLUL at 9. Staff agrees with Sonos that the '953 Accused Products infringe claim 24. SIB at 60.

i) Limitation 24.1

Claim 24 includes the limitation "while operating as the slave of the synchrony group, receiving a request to disengage from the synchrony group." JX-0002, cl. 24.

Sonos contends that each '953 Accused Product, [redacted]. CIB at 82-83.

Google argues that none of the messages identified by Sonos are a "request" under the plain and ordinary meaning of that term. RIB at 84-85. Instead, Google contends that those messages are commands, and "[redacted]." *Id*. at 85.

Staff contends that one of ordinary skill in the art would not understand the plain and ordinary meaning of "request" to be limited to mutual acceptance. SIB at 59-60.

As previously discussed, the plain meaning of "request" does not require mutual agreement between two devices. *See supra* at Section VII.B.1.a.i. In addition, the evidence shows that a follower receives [redacted]

[redacted] *See* CX-0011C at Q/As 661-66; CX-0254C at 1-2; JX-0014C at 30-31; JX-0181C at 5-7; JX-0021C at 2-3. Thus, the undersigned finds that the '953 Accused Products meet this limitation.

ii) Conclusion

Google's briefing only substantively addresses limitation 24.1. *See* RIB at 84-85. With respect to limitation 24.2, Google merely states that "Sonos has also failed to provide any evidence or analysis showing that upon receiving these messages, a follower 'transition[s] . . . to operating as a standalone zone player,' as required by claim 24." However, because Google stated that limitations 24.0 and 24.2 were disputed, *see* RLUL at 9, Google was "expected to substantively address [those issues] in its brief and not rely on conclusory statements." *See* G.R. 13.3. In addition, the evidence shows that the '953 Accused Products are capable of receiving the request to disengage from the synchrony group and transition to operating in a standalone mode. *See* CX-0011C at Q/As 661-66; CX-0254C at 1-2; JX-0014C at 30-31; JX-0181C at 5-7; JX-0021C at 2-3. Accordingly, the undersigned finds that the '953 Accused Products infringe claim 24 of the '953 patent.

2. Google's Redesigns[35, 36]

Sonos asserts that Google's redesigns for the '953 patent are the same as for the '258 patent. CIB at 83. Sonos also asserts that at least the 953 NIA No. 2 and the 953 NIA No. 3 infringe the '953 patent. *Id*. Google contends that these redesigns do not infringe the '953 patent. RIB at 86-87. Staff asserts that the 953 NIA Nos. 2 and 3 infringe the '953 patent, but that the 953 NIA No. 1 does not. SIB at 62.

[35] As the undersigned previously determined, there is nothing preventing adjudication of the Google redesigns. *See supra* at Section VI.B.3.

[36] Google developed three allegedly "non-infringing alternative designs" for the '953 patent ("NIAs" or "redesigns"). *See* RIB at 85. The NIAs will be referred to as "953 NIA No. 1," "953 NIA No.2," and "953 NIA No. 3." *See id*. Google asserts that these are the same as the 258 NIA Nos. 1-3. *Id*.

a) 953 NIA No. 1

Sonos does not assert that the 953 NIA No. 1 infringes the '953 patent. *See* CIB at 83 ("[E]ven if considered, at least 'NIA No. 2' and 'NIA No. 3' still infringe the '953 Patent because the [redacted] constitutes 'playback timing information' for the reasons explained above.").

Google submits that the 953 NIA No. 1 is the same redesign as the 258 NIA No. 1. RIB at 86. Google argues that the 953 NIA No. 1 does not meet limitations 7.7 and 7.8 because [redacted] *Id*. Google contends that Sonos' expert concedes that the 953 NIA No. 1 does not literally meet the claim limitation. *Id*. In addition, Google contends that neither Sonos nor its expert has alleged that [redacted] *Id*. at 86-87

Staff asserts that the 953 NIA No. 1 is the same as the 258 NIA No. 1. SIB at 62. According to Staff, the 953 NIA No. 1 [redacted]. *Id*. Thus, Staff argues that Sonos has failed to meet its burden to show that the 953 NIA No. 1 infringes the asserted claims of the '953 patent. *Id*.

As previously discussed, the parties agree that the 258 NIA No. 1 (and thus, the 953 NIA No. 1) incorporates the following changes: [redacted] *See* CIB at 21-22; RIB at 31; SIB at 25. The undersigned previously determined, with respect to the '258 patent, that because [redacted] and thus, cannot be the claimed "clock time information." *See supra* at Section VI.B.3.a. The term "clock timing information" in the '953 patent has the same construction as "clock time information" in

the ’258 patent, and therefore, for the same reasons, [redacted] claimed “clock timing information.” *See* Order No. 20 at 15. Thus, the undersigned finds that the 953 NIA No. 1 does not meet limitations 7.7 and 7.8.[37] Accordingly, the undersigned finds that the 953 NIA No. 1 does not infringe claim 7 of the ’953 patent.

Because the undersigned has found that independent claim 7 is not infringed by the 258 NIA No. 1, it is not necessary to determine whether dependent claims 14 and 22-24 are infringed. *See Wahpeton Canvas Co.*, 870 F.2d at 1552 n.9.

b) 953 NIA No. 2

i) Claim 7

Sonos states that “even if considered, at least ‘NIA No. 2’ and ‘NIA No. 3’ still infringe the ’953 Patent because [redacted] constitutes ‘playback timing information’ for the reasons explained above.” CIB at 83.

Google submits that the 953 NIA No. 2 is the same redesign as the 258 NIA No. 2. RIB at 87. Google argues that this redesign does not meet limitation 7.9 because [redacted]. *Id*.

Staff asserts that the 953 NIA No. 2 is the same as the 258 NIA No. 2. SIB at 63. Therefore, Staff argues that for at least the same reasons as for the ’258 patent, the 953 NIA No. 2 infringes the asserted claims of the ’953 patent. *Id*.

As previously discussed, in the 258 NIA No. 2 (and thus, the 953 NIA No. 2), [redacted] and therefore, those amount to the claimed “playback timing information.” *See supra* at Section VI.B.3.b.ii. Thus, the undersigned similarly finds that the 953 NIA No. 2 meets

[37] Unlike the ’258 patent, Sonos does not allege that these limitations are met under the doctrine of equivalents. *See* CIB at 83.

limitation 7.9. Accordingly, the undersigned finds that the 953 NIA No. 2 infringes claim 7 of the '953 patent.

ii) Claims 14 and 22-24

Google does not dispute that the 953 NIA No. 2 meets the additional limitations of claims 12-14 and 22. RLUL at 8-9. Nor is there any indication that the 953 NIA No. 2 operates differently from the '953 Accused Products as it relates to the additional limitations of claims 12-14 and 22. In addition, while Google disputes that the 953 NIA No. 2 meets the additional limitations of claims 23 and 24, Google does not brief this issue nor provide any evidence that the 953 NIA No. 2 operates differently from the '953 Accused Products as it relates to the additional limitations of claims 23 and 24. *Compare* RLUL at 9, *with* RIB at 87. Thus, for the same reasons as the '953 Accused Products, the undersigned finds that the 953 NIA No. 2 infringes claims 14 and 22-24 of the '953 patent. *See supra* at Sections VII.B.1.b-d.

c) 953 NIA No. 3

i) Claim 7

Sonos states that "even if considered, at least 'NIA No. 2' and 'NIA No. 3' still infringe the '953 Patent because [redacted] constitutes 'playback timing information' for the reasons explained above." CIB at 83.

Google submits that the 953 NIA No. 3 is the same redesign as the 258 NIA No. 3. RIB at 87. Like the 953 NIA No. 2, Google argues that the 953 NIA No. 3 does not meet limitation 7.9 because [redacted]. *Id.*

Staff asserts that the 953 NIA No. 3 is the same as the 258 NIA No. 3. SIB at 63. Therefore, Staff argues that for at least the same reasons as for the '258 patent, the 953 NIA No. 3 infringes that asserted claims of the '953 patent. *Id*.

As previously discussed, in the 258 NIA No. 3 (and thus the 953 NIA No. 3), [redacted] amount to the "playback timing information." *See supra* at Section VI.B.3.c.ii. Thus, the undersigned finds that the 953 NIA No. 3 meets limitation 7.9. Accordingly, the undersigned finds that the 953 NIA No. 3 infringes claim 7 of the '953 patent.

ii) Claims 14 and 22-24

Google does not dispute that the 953 NIA No. 3 meets the additional limitations of claims 12-14 and 22. RLUL at 8-9. Nor is there any indication that the 953 NIA No. 3 operates differently from the '953 Accused Products as it relates to the additional limitations of claims 12-14 and 22. In addition, while Google disputes that the 953 NIA No. 3 meets the additional limitations of claims 23 and 24, Google does not brief this issue nor provide any evidence that the 953 NIA No. 3 operates differently from the '953 Accused Products as it relates to the additional limitations of claims 23 and 24. *Compare* RLUL at 9, *with* RIB at 87. Thus, for the same reasons as the '953 Accused Products, the undersigned finds that the 953 NIA No. 3 infringes claims 14 and 22-24 of the '953 patent. *See supra* at Sections VII.B.1.b-d.

C. Technical Prong of the Domestic Industry Requirement

Sonos asserts that the ’953 DI Products satisfy the technical prong of the domestic industry requirement for claims 7, 14, and 22-24 of the ’953 patent. CIB at 7.

1. Claim 7

Sonos asserts that the ’953 DI Products meet every limitation of claim 7 of the ’953 patent. CIB at 84. Google contends that the ’953 DI Products do meet limitations 7.5, 7.6, 7.8, 7.10, or 7.11. RLUL at 10. Google does not dispute that the ’953 DI Products meet the remaining limitations of claim 7. *Id*. Staff contends that Sonos has met its burden of showing that the ’953 DI Products practice the asserted claims of the ’953 patent. SIB at 66.

a) Limitations 7.5 and 7.6

Sonos argues that the control messages include a “[redacted]” message from a Sonos-enabled controller or coordinator of a zone group that directs a ’953 DI Product to enter into the zone group. CIB at 85. In addition, Sonos argues that the control messages include an “[redacted]” or “[redacted]” message from a coordinator of a bonded zone group that directs a ’953 DI Product to enter into the bonded zone group. *Id*. Sonos contends that each of these messages are a “request to enter into a synchrony group.” *Id*. Sonos also asserts that a person of ordinary skill in the art would understand that “request” covers both non-obligatory messages and obligatory messages. *Id*.

Google argues that the ’953 DI Products do not receive the claimed “request to enter into a synchrony group,” but rather, a member receives a direction or command from the group coordinator to join the group. RIB at 88. Google contends that, under the plain meaning of “request,” none of the messages identified by Sonos constitute a “request to enter into a synchrony group” because they do not require mutual acceptance. *Id*.

Staff asserts that, similar to infringement, the evidence shows that a person of ordinary skill in the art would not understand the plain and ordinary meaning of "request" to be limited to mutual acceptance. SIB at 64. Thus, Staff contends that the evidence shows that the '953 DI Products practice these limitations. *Id*.

Google's position rests on the plain meaning of the term "request." *See* RIB at 88. As previously discussed, the plain meaning of "request" does not require mutual agreement between two devices. *See supra* at Section VII.B.1.a.i. In addition, the evidence shows that the '953 DI Products can receive a "[redacted]" message that directs the '953 DI Product to enter into a zone group, and an "[redacted]" or "[redacted]" message that directs the '953 DI Product to enter into a bonded zone. *See* CX-0011C at Q/As 435-39; CX-0007C at Q/As 129-30, 133-34. Thus, these messages are a "request to enter into a synchrony group." Accordingly, the undersigned finds that the '953 DI Products meet limitations 7.5 and 7.6.

b) Limitation 7.8

Sonos argues that a member in a zone group or bonded zone [redacted]. CIB at 85-86. Sonos contends that the member [redacted]. *Id*. at 86. To do this, Sonos asserts that the member [redacted]. *Id*. Sonos contends that in certain '953 DI Products that have the capability to [redacted]. *Id*.; CRB at 47. In other '953 DI Products, Sonos asserts that the [redacted]. CIB at 86; CRB at 47. Sonos argues that similar to infringement, Google improperly imports limitations into the claims as to how the

"differential" must be determined. CIB at 86-87. In addition, Sonos claims that Google's expert admits that the [redacted] is within the scope of this limitation. *Id*. at 87.

Google asserts that under the plain meaning of "differential," [redacted] in the '953 DI Products does not amount to the claimed "differential." RIB at 89. Google argues that the '953 DI Products [redacted]. *Id*. Google contends that none of the variables can be the claimed "differential." *Id*. at 89-90. Google argues that the [redacted]. RRB at 33. Instead, Google argues that it is a [redacted]." *Id*.

Staff argues that, similar to infringement, Google improperly attempts to import a limitation into the claims by limiting the claimed "differential" to $\Delta T=TS-TC$. SIB at 64-65. Staff therefore contends that under a proper interpretation of the claims, the evidence shows that the '953 DI Products practice this limitation. *Id*. at 65.

As previously discussed with respect to infringement, the undersigned finds that the term "differential" is not limited to a particular formula for determining the differential, and does not exclude determining the differential based on multiple samples over time. *See supra* at Section VII.B.1.a.ii. In addition, the evidence shows that each '953 DI Product, when acting as a member, [redacted]. *See* CX-0011C at Q/As 458-59,

463. [redacted] *See id.* [redacted]. *See id.* This meets the claimed "determining a differential" limitation.[38] *See id.* Thus, the undersigned finds that the '953 DI Products meet this limitation.

c) Limitation 7.10

Sonos argues that a member of a zone group or bonded zone [redacted]. CIB at 88. Sonos submits that in certain '953 DI Products, this is performed using [redacted], while in other '953 DI Products, this is performed using [redacted]. *Id.* Sonos argues that the [redacted] is the "determined differential" regardless of whether it is [redacted]. *Id.* at 89. Sonos contends that Google's expert even confirmed that a [redacted] determined [redacted] falls within the scope of the "differential" limitation. *Id.*

Google asserts that the local playtime is not adjusted by the [redacted]. RIB at 90. Instead, Google contends that the [redacted] is only used as an additional data point to [redacted]. *Id.* at 90-91. Google also asserts that the [redacted]. *Id.* at 91. Google argues that the [redacted]. *Id.*

[38] Google's expert agrees that [redacted] and that a clock difference determined using such protocols falls within the scope of the "differential" limitation. *See* Schonfeld, Tr. at 1035:20-1036:14.

Staff argues that, similar to limitation 7.8, under a proper interpretation of the claims, the evidence shows that the '953 DI Products practice this element. SIB at 65.

As discussed above, the undersigned determined that each '953 DI Product, when acting as a member, receives [redacted], which the member uses to determine [redacted]. In addition, the evidence shows that the [redacted]. *See* CX-0011C at Q/As 472-73, 477. Then, [redacted]. *See id*. Thus, the undersigned finds that the '953 DI Products meet this limitation.

d) Limitation 7.11

Sonos argues it is undisputed that a member of a zone group or bonded zone is configured to initiate synchronous playback with the coordinator. CIB at 89. Sonos also argues that the follower does this "[redacted]" *Id*. Sonos contends that the [redacted]" *Id*.

Google argues that the limitation is not met because there is no [redacted]. RIB at 91. Google contends that a group member does not initiate playback [redacted]. *Id*.

Staff argues that, similar to limitation 7.8, under a proper interpretation of the claims, the evidence shows that the '953 DI Products practice this element. SIB at 65.

As discussed above, the member [redacted]. In addition, the evidence shows that each '953 DI Product [redacted]. *See* CX-0011C at Q/As 480-81; JX-0290C; JX-0285C. Thus, the undersigned finds that the '953 DI Products meet this limitation.

e) Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the '953 DI Products satisfy the technical prong of the domestic industry requirement for claim 7 of the '953 patent.

2. Claims 14, 22, and 24[39]

Sonos asserts that the '953 DI Products practice the additional limitations of claims 14 (which depends from claims 7, 12, and 13) and 22. CIB at 89-90. Sonos also asserts that the '953 DI Products, except the Sonos Sub, practice the additional limitations of claim 24. *Id*. at 90. Google does not dispute that the additional limitations of those dependent claims are met. RLUL at 11-12. In addition, the evidence shows that the '953 DI Products meet the additional limitations of claims 12-14 and 22. *See* CX-0011C at Q/As 487-88, 493-94, 499-500, 505-14; JX-0290C; JX-0285C. The evidence also shows that the '953 DI Products, except the Sonos Sub, meet the additional limitations of claim 24. *See* CX-0011C at Q/As 526-29; CX-0007C at Q/As 82-83, 131-32, 135-36.

Accordingly, the undersigned finds that the '953 DI Products practice claims 14 and 22, and the '953 DI Products, except the Sonos Sub, practice claim 24.

[39] Other than limitation 23.1, Staff does not explicitly address limitations in the dependent claims, but states that "Sonos has met its burden of showing that the '953 DI Products practice the asserted claims of the '953 patent." SIB at 66.

3. Claim 23

Sonos asserts that the '953 DI Products, except the Sonos Sub, meet the additional limitations of claim 23, which depends from claim 7. CIB at 90. Google contends that the '953 DI Products do not practice any of the limitations of claim 23. *See* RLUL at 11.

a) Limitation 23.1

Sonos argues that after a zone group is formed, each product is operable to engage in a [redacted] where the coordinator role is transferred to a member of the zone group. CIB at 90. Sonos contends that this [redacted] involves a member receiving a message carrying control information that enables it to begin operating as the new coordinator, and in response to receiving the message, transitioning to operating as the new coordinator. *Id*.

Google argues that Sonos "has not set forth any evidence or analysis to show that a member device receives the asserted '[redacted]' 'from the second zone player' (i.e., the coordinator)." RIB at 91.

Staff argues that the evidence shows that the coordinator transmits the "[redacted]" message to the member. SIB at 66. Thus, Staff contends that Sonos has met its burden of showing that the '953 DI Products practice claim 23. *Id*.

The evidence shows in the '953 DI Products, the coordinator role can be transferred to a member of the zone group. *See* CX-0011C at Q/As 518-19, 522; CX-0007C at Q/As 146-48; CX-1299C; JX-0293C. To do this, a member receives a "[redacted]" message from the current coordinator with control information that enables it to begin to operate as the new coordinator. *See id*. Then, in response to receiving the message, the member transitions to operating as the new coordinator. *See id*. Thus, the undersigned finds that the '953 DI Products, except the Sonos Sub, meet this limitation.

b) Conclusion

Google's brief only addresses limitation 23.1. *See* RIB at 91. However, because Google stated that limitations 23.0 and 23.2 were disputed (*see* RLUL at 9), Google was "expected to substantively address the issue in its brief and not rely on conclusory statements." *See* G.R. 13.3. In addition, the evidence shows that in response to receiving the "[redacted]" message, the member transitions to operating as the new coordinator. *See* CX-0011C at Q/As 518-19, 522; CX-0007C at Q/As 146-48; CX-1299C; JX-0293C. Accordingly, the undersigned finds that the '953 DI Products meet the limitations of claim 23.

D. Validity[40]

Google argues that the asserted claims are rendered obvious by: (1) Balassanian; (2) Balassanian in combination Goldberg; and (3) Balassanian in combination with U.S. Patent No. 5,313,524 ("Van Hulle"). RIB at 93.

1. Balassanian

a) Claim 7

Google argues that Balassanian renders claim 7 of the '953 patent obvious. RIB at 93. For purposes of obviousness, Sonos does not dispute limitations 7.0-7.4 and 7.7-7.8 as to Balassanian. CLUL at 4. Staff asserts that Google failed to present clear and convincing evidence that Balassanian renders claim 7 of the '953 patent obvious. SIB at 78.

i) Limitations 7.5 and 7.6

Google claims that the only disputed element of these limitations is whether Balassanian discloses a first zone player "receiving a request to enter into a synchrony group" with a second

[40] The parties agree that the claims of the '953 patent are entitled to a priority date of July 28, 2003. *See* SIB at 67; JX-0002 at 2-3.

zone player. RIB at 94. Google argues that Balassanian discloses a synchronization system that designates rendering devices as either a master device or a slave device. *Id*. Google further argues that when a rendering device receives a designation to start operating as a slave device, this meets the "receiving a request to enter into a synchrony group" element. *Id*. at 94-95. Similar to the '258 patent, Google contends that there is no requirement in the claims for the devices to have the ability to dynamically group. *Id*. at 95. In addition, Google asserts that even if there was such a requirement, Balassanian discloses that the same device may operate as a slave at one time and as a master at another time, thus requiring a dynamic designation of the role. *Id*.

Sonos argues that like limitations 17.5 and 17.6 of the '258 patent, the rendering devices in Balassanian are pre-programmed to synchronize their rendering without receiving the claimed "request to enter into a synchrony group." CIB at 99.

Staff contends that like elements 17.5 and 17.6 of the '258 patent, one of ordinary skill in the art would not have understood Balassanian's disclosure of designating rendering devices as a master or slave to necessarily disclose or render obvious the claimed "request to enter into a synchrony group." SIB at 76. Staff points to evidence that the rendering devices in Balassanian are pre-programmed to synchronize by default. *Id*. Staff therefore argues that Google failed to present clear and convincing evidence that Balassanian renders these limitations obvious. *Id*. at 76-77.

As previously discussed, Balassanian does not disclose that a rendering device (which Google alleges reads on the claimed "zone player") receives control information that "comprises a direction . . . to enter into a synchrony group." *See supra* at Section VI.D.1.a.i. In addition, Balassanian only generally teaches that the "synchronization system" designates the rendering devices as a master or slave rendering device. *See* JX-0448 at Abstract ("The synchronization

system designates one of the rendering devices as a master rendering device and designates all other rendering devices as slave rendering devices."), 2:28-32 ("To help ensure synchronization of rendering devices, the synchronization system designates one of the rendering devices as a master rendering device and designates all other rendering devices as slave rendering devices."). That does not amount to clear and convincing evidence that Balassanian teaches a rendering device receiving a request to enter into a synchrony group, and then in response to such a request, entering into the synchrony group. *See id.*; CX-0014C at Q/As 619-21; Almeroth, Tr. at 806:1-15. Thus, the undersigned finds that Google has not met its burden to prove that Balassanian renders these limitations obvious.

ii) Limitation 7.9

Google argues that Balassanian discloses a master device sending a message containing the master rendering time, which is "an indication of when the master device renders content." RIB at 97. Google contends that upon receiving this, each slave device determines whether a time domain differential exists and adjusts the rendering of the content proportional to the time domain differential so that content can be rendered at the same time. *Id.* As with the '258 patent, Google asserts that the master rendering time is an indication of when the master device renders content, and the rendering can be delayed into the future by buffering the audio. *Id*. at 98.

Sonos argues that "Balassanian's backward-looking 'master rendering time' does not qualify as the claimed 'playback timing information.'" CIB at 99. Sonos also argues that Google fails to explain how Balassanian's master rendering time "comprises an indicator of a first future time, relative to the clock time of the second zone player, at which the first and second zone players are to initiate synchronous playback of the audio information for the first audio track." CRB at 49.

According to Sonos, Balassanian discloses that the master rendering time does not even exist until after the rendering is initiated. *Id*. at 49-50.

Staff argues that similar to claim 24 of the '258 patent, Google failed to present clear and convincing evidence that a person of ordinary skill in the art would have been motivated to modify Balassanian such that the slaves receive audio content from the master, rather than from the source device. SIB at 77. Staff therefore contends that Google failed to present clear and convincing evidence that one of ordinary skill would have been motivated to modify Balassanian to meet this limitation. *Id*. In addition, Staff argues that because Balassanian fails to disclose or render obvious receiving "audio information for at least a first audio track," it fails to disclose or render obvious "playback timing information associated with the audio information for the first audio track that comprises an indicator of a first future time." *Id*. at 77-78.

As previously discussed with respect to limitation 17.7 of the '258 patent, Balassanian's master rendering time does not amount to the claimed "playback timing information."[41] *See supra* at Section VI.D.1.a.ii. Thus, at least for the same reasons as the '258 patent, the undersigned finds that Google has not met its burden to prove that Balassanian renders this limitation obvious.

iii) Limitations 7.10 and 7.11

Google argues that Balassanian discloses a slave device determining a time domain differential between its clock and the master device's clock. RIB at 98. Google also argues that Balassanian discloses that the slave device uses the time domain differential to convert the master device time to the time domain of the slave when synchronizing the rendering of content. *Id*. at 98-99. Google contends that "Sonos fails to provide any explanation as to why converting of the master device time diminishes the express disclosure that the slave device adjusts its rendering

[41] Again, the term "playback timing information" in the '953 patent has the same construction as in the '258 patent. *See* Order No. 20 at 15.

time to account for the time differential." *Id*. at 99. Google asserts that the master time is converted to the time domain of the slave device precisely so that the slave device can adjust its rendering by the amount of the time domain differential. *Id*.

Sonos asserts that because Balassanian does not disclose the transmission of "audio information" and "playback timing information" in limitation 7.9, Balassanian does not teach limitations 7.10 and 7.11. CIB at 100. Sonos contends that Balassanian instead explains that the slave rendering device adjusts the received master device time to account for the time domain differential. CRB at 50. Sonos argues that the claim language Google points to does not suggest that the slave adjusts the received master rendering time. *Id*. Sonos claims that "a slave rendering device adjusting its own rendering time is not the same thing as a slave adjusting the received master rendering time." *Id*. Sonos also argues that Balassanian does not disclose a slave rendering device "updating [a] first future time" or "initiating synchronous playback" when its "clock time . . . reaches the update first future time." CIB at 100.

Staff argues that because Balassanian fails to disclose or render obvious "playback timing information associated with the audio information for the first audio track that comprises an indicator of a first future time," Google failed to present clear and convincing evidence that Balassanian discloses or renders obvious "updating the future time" and "the updated first future time." SIB at 78.

As discussed above, Balassanian's master rendering time does not amount to the claimed "playback timing information associated with the audio information for the first audio track that comprises an indicator of a first future time" in limitation 7.9. Thus, at least for the same reasons as limitation 7.9, the undersigned finds that Google has not met its burden to prove that Balassanian renders these limitations obvious.

iv) Conclusion

The undersigned found that Google has not met its burden to prove that Balassanian renders limitations 7.5-7.6 and 7.9-7.11 obvious. Accordingly, the undersigned finds that Google has failed to establish, by clear and convincing evidence, that claim 7 of the ’953 patent is rendered obvious by Balassanian.

b) Claims 12-14 and 22-24

Claims 12-14 and 22-24 depend from claim 7. Because claim 7 is not rendered obvious by Balassanian, then claims 12-14 and 22-24 are also not rendered obvious by Balassanian.

2. Balassanian with Goldberg

a) Claim 7

Google asserts that to the extent that “Balassanian alone does not disclose or render obvious claim limitation 7.9(a) and claim 23, they are rendered obvious by Balassanian in view of Goldberg.” RIB at 104. Because the undersigned found above that Balassanian did not render limitations 7.5-7.6 and 7.9-7.11 obvious, Goldberg cannot cure the deficiencies of Balassanian. Accordingly, the undersigned finds that Google has failed to establish, by clear and convincing evidence, that claim 7 of the ’953 patent is rendered obvious by Balassanian in combination with Goldberg.

b) Claim 23

Claim 23 depends from claim 7. Because claim 7 is not rendered obvious by Balassanian in combination with Goldberg, then claim 23 is also not rendered obvious by Balassanian in combination with Goldberg.

3. Balassanian with Van Hulle

Google asserts that "to the extent the CALJ finds that Balassanian does not render obvious claim 22, the claim is rendered obvious by Balassanian in view of Van Hulle." RIB at 108. Claim 22 depends from claim 7. Because claim 7 is not rendered obvious by Balassanian, Van Hulle cannot cure the deficiencies of Balassanian. Accordingly, the undersigned finds that Google has failed to establish, by clear and convincing evidence, that claim 22, which depends from claim 7, of the '953 patent is rendered obvious by Balassanian in combination with Van Hulle.

4. Conclusion

For the reasons set forth above, the undersigned finds that Google has failed to establish, by clear and convincing evidence, that any asserted claim is rendered obvious.

5. Secondary Considerations

Secondary considerations of nonobviousness may rebut a *prima facie* case of obviousness. Here, where Google has not made out a *prima facie* case of obviousness, there is no showing to rebut. Accordingly, the undersigned need not consider any secondary considerations of nonobviousness.

VIII. U.S. PATENT 9,219,959

A. Overview

The '959 patent, entitled "Multi-Channel Pairing in a Media System," issued on December 22, 2015 to Christopher Kallai; Michael Darrell Andrew Ericson; Robert A. Lambourne; Robert Reimann; and Mark Triplett. JX-0004. The '959 patent is assigned to Sonos. *Id*. An *Ex Parte* Reexamination Certificate issued on April 5, 2017 in response to Reexamination Request No. 90/013,756 (filed May 25, 2016). Compl. at ¶ 78. As a result of the reexamination, original claims 1 and 14 were cancelled, claims 2-13 and 15-22 were determined to be patentable as amended, and

new claims 23-48 were added and determined to be patentable. *Id*.; *see also* Compl. Ex. 7. The '959 patent relates generally to "devices and methods for providing audio in a multi-channel listening environment (*e.g.*, a stereo sound or home theater surround sound environment)." *Id*. at ¶ 81; *see also* JX-0004 at 1:54-63, 3:32-46.

1. Asserted Claim

Sonos is only asserting claim 10, which reads as follows:[42]

10.0 [The playback device of claim 1, wherein the playback device is further configured to] *A playback device configured to output audio in a multi-channel listening environment, the playback device comprising:*

10.1 *a network interface configured to receive audio data over a network;*
10.2 *a plurality of speaker drivers configured to output audio based on the audio data;*

10.3 *one or more processors; and*

10.4 *tangible, non-transitory, computer readable memory comprising instructions encoded therein, wherein the instructions, when executed by the one or more processors, cause the playback device to*

10.5 *(i)* receive a signal from a controller over the network, wherein the signal comprises an instruction for the playback device to pair with one or more playback devices,

10.6 *(ii) process the audio data before the playback device outputs audio from the plurality of speaker drivers,*

10.7 *(iii) determine that a type of pairing of the playback device comprises one of at least a first type of pairing or a second type of pairing,*

10.8 *(iv) configure the playback device to perform a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the first type of pairing, and*

10.9 (v) *configure the playback device to perform a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the second type of pairing.*

[42] The claim language has been copied directly from the reexamination certificate. As such, matter enclosed in brackets [ ] originally appeared in the '959 patent, but has been deleted and matter printed in italics indicates additions made to the '959 patent during reexamination.

2. Claim Construction

The undersigned has construed the following terms from claim 10 of the '959 patent:

TERM	CLAIM CONSTRUCTION
equalization [of the audio data]	"alteration of the relative strength of certain frequency ranges in the audio data by performing one or more of the following: adjusting one or more parameters related to speaker drivers, such as gain, frequency response, channel output, phase, or time delay; adjusting amplifier gain of the playback device; or using one or more filters"
type of pairing / first type of pairing / second type of pairing	Plain and ordinary meaning
zone player / playback device / player	"data network device configured to process and output audio"
network interface	"physical component of a device that provides an interconnection with a data network"
pairing	"configuration involving two or more playback devices that have different playback roles"

Order No. 20 at 15, 40-50.

B. Infringement

Sonos asserts that the '959 Accused Products meet every limitation of claim 10 of the '959 patent. CIB at 105-117. Google disagrees and asserts that these products do not meet the "first equalization" and "second equalization" elements of limitations 10.8 and 10.9. RIB at 115-116. Google does not contest that the '959 Accused Products meet the remaining limitations of claim 10. RLUL at 13-14; *see* RIB at 115-116 ("The Google Home Max and Nest Audio devices do not infringe asserted claim 10 of the '959 Patent because they are not configured to perform a "first equalization" for one pairing configuration and a "second equalization" for another configuration.").

1. Claim 10

Sonos asserts that each of the '959 Accused Products is [redacted]

[redacted]. CIB at 106-107 (emphasis in original); *see also* CRB at 55. Google insists the Home Max and Nest devices do not infringe under either theory. RIB at 114-116. Staff submits that the '959 Accused Products only infringe under [redacted]. SIB at 86-88; SRB at 29.

a) Infringement Argument No. 1: Driver Matrix Coefficients

i) Home Max Devices

Sonos contends that the Home Max performs equalization of audio data by [redacted]. CIB at 107-110. Sonos explains: [redacted]." *Id*. at 107. "[redacted]." *Id*. According to Sonos, [redacted]. *Id*.

Google asserts that the Home Max is configured to [redacted].[43] RIB at 116-123; RRB at 40. In other words, the Home Max does the "exact opposite" of what Sonos alleges. *Id*. at 116.

[43] Sonos attacks Google's noninfringement argument as being based on an improper claim construction. CIB at 110-113. Sonos writes: "Google asserts a very narrow claim scope that extends only to when, ***in the aggregate***, 'the strength of high-frequency' ranges are 'altered relative to low-frequency ranges' – not simply to when there are frequency-range changes to speaker drivers more generally." *Id*. at 111 (emphasis in original). For the reasons discussed *infra*, the undersigned disagrees.

Staff agrees with Google. SIB at 80-83. In Staff's view, Sonos has failed to meet its burden of showing that the Home Max practices elements 10.8 and 10.9 under this infringement theory. *Id.*

[redacted]. RX-1521C at Q/A 90; RDX-0019C.19; RX-1471C at Q/As 22-24; RDX-0003.4C; CX-3788C. [redacted]. RX-1521C at Q/As 91-92; RX-1471C at Q/As 25-26. [redacted]. *Id.* [redacted]. *Id.* [redacted]. *Id.*

The diagram below explains [redacted]:

[redacted]

CX-0011C at Q/A 975; CDX-0005C.45. As shown in the diagram, [redacted]. *Id*.; *see also* RX-1471C at Q/A 29; JX-0474C at 83:10-91:4. [redacted]. CX-0011C at Q/A 975; RX-1471C at Q/As 29-30; JX-0474C at 83:10-91:4.

It is undisputed that [redacted]. CX-0011C at Q/As 973-978; RX-1521C at Q/As 90-103; CIB at 107-110; RIB at 116-119. It is also undisputed that [redacted]. RX-1521C at Q/As 104-125; CX-0011C at Q/As 980-986; RDX-0019C.21.

RDX-0019C.21 ([redacted]); *see also* RX-1471C at Q/A 32; RDX-0003C.6.

Thus, as Staff noted in its briefing, the parties' dispute centers on '[redacted]'." SIB at 90. Google and Staff submits that it does not. The undersigned agrees with Google and Staff.

"[E]qualization [of the audio data]" requires "*alteration of* ***the relative strength*** *of certain frequency ranges in the audio data . . ..*" Order No. 20 at 47 (emphasis added). To determine if changes to the driver output levels alter the relative strength of frequency ranges in the audio data, a person of skill in the art would compare the driver levels for each configuration. RX-1521C at Q/As 101-111; RX-1471C at Q/As 32-36. The strength of low-frequency audio content for each

configuration can be calculated by summing the values of the left and right woofers, and the strength of high-frequency audio content for each configuration can be calculated by summing the values of the left and right tweeters. RX-1521C at Q/A 104. From this information, a person of skill in the art can then determine whether the strength of low-frequency audio is altered relative to the strength of high-frequency audio when the device transitions from a non-paired to a stereo-paired configuration.

[redacted]. *Id.* at Q/As 104-111.

RDX-0019C.23 ([redacted]); *see also* RX-1521C at Q/As 104-125; RDX-0019C.25. As can be seen, [redacted]. *Id.*; *see also* RX-

[redacted]

Accordingly, the undersigned finds that the Home Max device does not meet limitations 10.8 and 10.9 of claim 10 under the "matrix coefficients" theory

ii) Nest Audio Devices

Sonos asserts that it is "unaware of anything that suggests the Nest Audio operates differently from the Home Max [redacted]'" CIB at 107 n.65. Neither Google nor Staff believe Sonos has met its burden to show that the "matrix coefficients" theory applies to the Nest Audio Devices. RIB at 123-124; RRB at 42-43; SIB at 88 n.16.

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[44] Sonos and Dr. Almeroth do not dispute that the Home Max device is configured to maintain (not alter) the relative strength of frequency ranges in the audio data when switching from non-paired to stereo-paired configurations. *See, e.g.*, CIB at 107-110; CX-0011C at Q/A 975; *see also* Almeroth, Tr. at 204:11-205:16 (admitting that [redacted] *See, e g.,* CIB at 108-110 ([redacted]); CX-0011C at Q/A 977; *see also* RX-1512C at Q/As 113-118; RDX-0019C.24. Analyzing drivers in isolation, however, is not consistent with the claim language. Claim 10 does not focus on changes to individual drivers; rather, it requires a "playback device" configured to perform a "first equalization" and "second equalization of the audio data." JX-0004, cl. 10. As Dr. Jeffay explained: "This makes sense from a practical perspective because what the user hears is audio from the device as a whole, not just the output of a single driver in isolation." RX-1512C at Q/A 120; *see also id.* at Q/A 85 ([redacted]).