In order to achieve the object defined above, a device for processing audio data, a method of processing audio data, a program element and a computer-readable medium according to the independent claims are provided.

According to an exemplary embodiment of the invention, a device for processing audio data is provided, wherein the device comprises at least one microphone (particularly a plurality of microphones) each adapted to detect audio data, a plurality of speakers each adapted to emit acoustic waves, wherein at least a part of (for instance each of) the plurality of speakers is provided (particularly equipped) with an assigned one of the at least one microphone, a calculation unit adapted to calculate acoustical transfer functions between the plurality of speakers based on the audio data detected by the at least one microphone, and a determining unit adapted to determine orientation information indicative of the relative orientation of the plurality of speakers based on the calculated acoustical transfer functions.

According to another exemplary embodiment of the invention, a method of processing audio data is provided, wherein the method comprises detecting audio data using at least one microphone (particularly a plurality of microphones), emitting acoustic waves using a plurality of speakers, wherein at least a part of (for instance each of) the plurality of speakers is provided (particularly equipped with an assigned one of the at least one microphone, calculating acoustical transfer functions between the plurality of speakers based on the audio data detected by the at least one microphone, and determining orientation information indicative of the relative orientation of the plurality of speakers based on the calculated acoustical transfer functions.

According to yet another exemplary embodiment of the invention, a computer-readable medium is provided, in which a computer program of processing audio data is stored which, when being executed by a processor, is adapted to control or carry out a method having the above mentioned features.

According to still another exemplary embodiment of the invention, a program element of processing audio data is provided, which program element, when being executed by a processor, is adapted to control or carry out a method having the above mentioned features.

Data processing for orientation estimation purposes which may be performed according to embodiments of the invention can be realized by a computer program, that is by software, or by using one or more special electronic optimization circuits, that is in hardware, or in hybrid form, that is by means of software components and hardware components.

According to an exemplary embodiment of the invention, an audio processing and/or playback system may be provided in which a configuration of a plurality of speakers (for instance loudspeakers or other reproduction apparatuses) may be determined automatically based on an evaluation of the audio emission and audio absorption properties of the speakers and assigned microphones. If necessary, the configuration of the speakers may be adjusted (for instance electronically and/or mechanically) so as to improve the audio playback performance of the multi-speaker apparatus.

In a system like an audio surround system in which a plurality of loudspeakers have to be mounted and adjusted, it may be difficult for a user to configure this system in an optimum manner with regard to loudspeaker position and orientation, since a user is in many cases not an expert. In accordance with an exemplary embodiment of the invention, when a user has installed such a system, each loudspeaker may emit (sequentially or simultaneously with the other loudspeakers) an audio signal (for instance a normal useful audio data signal or a signal specifically adapted for configuring) which may be detected by the microphones assigned (particularly located directly next to) to the other loudspeakers. By taking this measure, the acoustical transfer functions of the loudspeaker/microphone systems may be detected in a pair wise manner.

By evaluating this information, it is possible to calculate back the relative orientations and/or relative positions of the loudspeakers. With this information, the system may then adjust the playback characteristics of the speakers so as to improve the audio performance. This may include adjusting parameters like audio amplitude, frequency distribution, filter characteristics, addition of special effects like reverberation, etc. It may also include modifying the geometrical arrangement of the loudspeakers, for instance changing the spatial orientation of the loudspeakers (for instance using an electromotor installed in each of the loudspeakers). By taking these measures, the audio playback quality may be improved particularly at a special spatial area or point (which may be user-defined or which may be the position at which a listener is currently located or which can be a center of gravity of the loudspeakers). Thus, a user-friendly system may be provided which allows to automatically configuring the loudspeaker system in an appropriate manner even in a scenario in which a user has installed the loudspeakers in an incorrect manner.

Embodiments of the invention may take into account orientation properties of loudspeakers (having, in reality, directivity instead of being purely omni-directional). Thus, improper orientation may be compensated and it may thus be ensured that the loudspeaker points into the direction of a listener. Particularly, by considering transfer functions of an

audio system, a frequency-amplitude characteristic may be taken into account for correcting the audio system properties.

It is possible to equip each of the speakers with an assigned microphone. Alternatively, it is possible to equip only a part of the speakers (for instance a single one or a group of the speakers) with an assigned microphone.

According to an exemplary embodiment, automatic loudspeaker orientation correction may be provided. In such an embodiment, a surround sound system may be provided comprising at least two loudspeakers, each equipped with a (closely positioned) microphone. The surround sound system may further comprise a unit for measuring acoustical transfer functions between all speakers. A unit for determining the orientation of the speakers based on the transfer functions may be foreseen. According to an exemplary embodiment, an audio signal to be rendered by the speakers may be corrected based on the orientation information.

Thus, exemplary embodiments of the invention may not only have the capability that loudspeakers equipped with a microphone can automatically provide loudspeaker and/or room acoustics correction, but also the orientation of the loudspeakers may be taken into account. In other words, exemplary embodiments of the invention do not have to assume the loudspeaker to be omni-directional and may provide specific means to correct its (possibly) wrong orientation with respect to a listening position. According to an exemplary embodiment, automatic acoustic compensation in surround sound systems may be made possible.

According to an exemplary embodiment, a method for automatically correcting a wrong orientation of the loudspeakers in a home theatre (for instance in a 5.1 system, denoting a stereo format utilizing three primary channels (left, center, right), two surround channels (left surround, right surround) and an LFE channel, which is the ".1" channel because it uses approximately one-tenth of the bandwidth of a full-frequency channel) system based on the normalization of high frequency energy level contained in cross loudspeaker transfer functions may be made possible.

One aspect of home theatre systems is the loudspeaker setup and its calibration to the listener position. Quite often, it may happen that some loudspeakers are not properly connected (for instance polarity inversion, left/right inversion, etc.), and sometimes even not unpacked at all. According to an exemplary embodiment of the invention, an automated home theatre calibration system may be provided to improve a configuration of a loudspeaker setup, particularly with regard to orientation.

It may be advantageous that automatic home theatre calibration systems have a room correction feature. An issue is to compensate the acoustics of the loudspeakers in the listening room in order to get an improved or optimal ("flat") response at the listening position. To achieve this, it is conventionally possible to place a microphone at the listener position. Possible corrections with a microphone at the listener positions are:

level correction: compensation of the level (amplitude) differences between the different loudspeakers

delay correction: ensures all loudspeaker signals arrive simultaneously at the listener position

low frequency room acoustics correction: compensation of low frequency loudspeaker response and of the room (anti-)resonances and modes

high frequency room acoustics correction: compensation of the high frequency loudspeaker response, of the room response and of the wrong orientation of the loudspeaker boxes.

However, from a user perspective, merely placing a specific accessory (for instance a microphone) at the listener position during the calibration procedure is not user-friendly, particularly in terms of "Sense and Simplicity".

Therefore, exemplary embodiments of the invention are based on the recognition that the following reasoning holds: what parts of the possible improvements listed above would be possible if each loudspeaker box would be equipped with one microphone, without having a microphone at the listener position. Actually, it is not only possible to compute the geometrical configuration of the loudspeakers (by means of delay calculations). But it is also desirable to compensate for the wrong orientation of the loudspeaker boxes and simultaneously perform a high frequency room acoustics correction.

According to an exemplary embodiment of the invention, a system for automatically correcting a possibly wrong orientation of two, three, four, five, six, seven or more loudspeakers in a home theatre (for instance in a 5.1) system may be made possible by normalizing particularly high frequency energy level contained in the loudspeaker transfer functions. The transfer function having the most energy at high frequencies may be considered as a reference.

The term "transfer function" may describe the transfer characteristics of a system or equipment. It may relate to the relationship between an input and an output of the system or equipment in terms of the transfer characteristics. The term "acoustical transfer function" between loudspeakers/microphones may relate to properties of an acoustical

transfer in an acoustic field between the loudspeakers (including the microphones connected thereto), determinable on the basis of electric signals derived from the detection of acoustical audio signals. The transfer function may relate to the process by which an audio source wave passes through the space and is detected elsewhere. More particularly, a transfer function may be indicative of the transformation encountered by sound when passing from a source (like a loudspeaker) to a destination (like a microphone or a listener). The transfer function may be amplitude versus frequency curve indicative of the sound characteristic of the audio system. For instance, when a "white" audio signal is emitted by a loudspeaker and detected by a microphone, the characteristic of the loudspeaker-microphone system may transfer the white audio signal into a frequency-amplitude curve. In an audio system comprising two microphones ands two loudspeakers, four transfer functions may be measured (microphone 1-loudspeaker 1, microphone 1-loudspeaker 2, microphone 2-loudspeaker 1, microphone 2-loudspeaker 2).

In the following, some aspects concerning loudspeaker directivity of exemplary embodiments of the invention will be explained.

A loudspeaker box has a frequency dependent directivity characteristic. At low frequencies, a loudspeaker driver may act as a pure piston and the radiated sound field may be omni-directional. At high frequencies, the loudspeaker becomes more directive because the loudspeaker driver diameter becomes large relative to the wavelength. Therefore, a bad loudspeaker orientation can strongly effect the reproduction particularly of high frequencies.

Moreover, another aspect of bad loudspeaker orientation in a listening room is that if a loudspeaker box is pointing towards the wall, the wall may reflect a significant amount of energy back to the listening area. Because walls have a rather absorbent behavior, these reflected waves will also experience a low pass filtering that will also affect the overall frequency balance.

Exemplary fields of application of the embodiments of the invention are sound reproduction systems equipped with multiple (for instance at least two) loudspeakers, such as stereo (for instance portable) systems, and home theatre systems (for instance 5.1, 7.1, etc.).

Next, further exemplary embodiments of the invention will be explained. In the following, further exemplary embodiments of the device for processing audio data will be explained. However, these embodiments also apply for the method, for the computer-readable medium and for the program element.

The calculation unit may be adapted to calculate acoustical transfer functions between each pair of the plurality of speakers based on the audio data detected by the

plurality of microphones. In such a scenario, at one time, one of the loudspeakers may emit an acoustical (test) signal, which acoustical (test) signal may be detected by all microphones assigned to the other loudspeakers. Transfer functions may be derived from this information. After this, the next loudspeaker may emit an audio signal and the microphones assigned to the remaining loudspeakers detect the corresponding audio signals. By taking this measure, all loudspeakers serve sequentially as an audio source and the microphones detect the corresponding audio signals as a basis for deriving the acoustical transfer functions. This procedure allows deriving all information necessary to analyze the systems. If desired, correction instructions may be provided so as to correct the orientation or acoustical emission properties of the loudspeakers.

The determining unit may be adapted to determine the orientation information indicative of the spatial positions and/or of the audio emission direction of the plurality of speakers. From the calculated acoustical transfer functions, applying basic mathematical procedures, the orientations and positions of the loudspeakers may be determined (for instance by evaluating intensities, applying damping models, analyzing delays, analyzing correlations between different signals, evaluating frequency information, considering directivity characteristics, evaluating propagation times in combination with propagation velocities, etc.). This orientation and position information may serve as a basis for correcting the setup of the speakers.

At least a part of the plurality of speakers and the assigned one of the plurality of the microphones may be accommodated in a separate casing. In other words, a plurality of modules or separate entities may be provided, wherein each microphone and the corresponding loudspeaker may be provided in a separate housing. This may allow for a spatially distributed audio configuration and therefore a high quality audio performance.

A correction unit may be provided and may be adapted to correct an audio playback characteristic of at least a part of the plurality of speakers based on the determined orientation information. Therefore, after having analyzed the proper audio emission properties of the speakers, the correction unit may adjust the audio playback characteristics of the speakers so as to improve the audio performance. For instance, the audio playback characteristics may be improved or even optimized for a predetermined listening position. This listening position may be a user-defined position (for instance defined by a user of the sound system via an user interface), a geometrical center of the plurality of speakers (which may be calculated based on the knowledge at which positions the loudspeakers are positioned), or a position defined with respect to a given component of an audio system (for

instance improving the sound quality in front of a television where a user is usually sitting when using the sound system).

The adjusted audio playback characteristic may comprise an amplitude of the audio playback of an individual one of the speakers, of a part of the speakers or of all speakers, a frequency filtering characteristics (for instance the definition of cut-off frequencies or frequency bands), and an equalizer characteristic. These are only examples and may be substituted by or combined with any other audio playback characteristics.

The device may further comprise a correction unit that is adapted to correct the orientation of at least a part of the plurality of speakers based on the determined orientation information. In other words, the speakers may also be provided to be movable (for instance adapted for a translational movement and/or for a rotational movement). For this purpose, an electric motor may be provided, or the devices may simply be foreseen to be movable by a user. In the latter case, the user may be provided or guided by the device with an instruction as to how to modify a position and/or an orientation of one of the speakers to improve playback quality.

The calculation unit may be adapted to calculate the acoustical transfer functions between the plurality of speakers based on components of the audio data which components exceed a predetermined frequency threshold (of, for instance, several kHz). For instance, high frequencies may be particularly suitable to be analyzed in accordance with exemplary embodiments of the invention, since directivity of a loudspeaker is usually higher at high frequencies than at low frequencies. In other words, a loudspeaker is essentially omni-directional at low frequencies and shows directional behavior at high frequencies. Therefore, an evaluation in the high frequency domain may derive more meaningful results with regard to orientation. Such a frequency threshold or transition frequency may be in the range of 500 Hz to 20 kHz, particularly in the range of 1 kHz to 5 kHz, more particularly in the range of 2 kHz to 4 kHz. Thus, specifically such a high frequency range may be subject of the investigations. Although the given exemplary numbers for the transition frequency may be valid for many loudspeakers, it should be kept in mind that this frequency value, at which a transition between an omni-directional behavior and a directive behavior occurs, is usually smaller, the larger the loudspeaker is. More generally, the value may be dependent on the size of the loudspeaker and consequently dependent on the size of an acoustical cone emitted by the loudspeaker.

In the following, the technical definition of the so-called "piston range of a cone loudspeaker" will be given. The piston range, where a loudspeaker cone is considered as being omni-directional, is technically defined by:

$$k\,a < 1$$

where “k” is the wave number and “a” the loudspeaker cone radium in meters. For $k\,a > 1$, the loudspeaker cone starts to be more and more directional as frequency increases.

Furthermore, the way the loudspeaker is mounted may have an influence on the frequency value.

At least a part of the plurality of microphones may be omni-directional microphones. The term omni-directional may relate to a not directional component. It may denote receiving sound waves in or from any direction, particularly so-called 360° receiving capability.

The device for processing audio data may be realized as at least one of the group consisting of an audio surround system, a stereo audio system, a mobile phone, a headset, a hearing aid, a hands free system, a television device, a video recorder, a monitor, a gaming device, a laptop, an audio player, a DVD player, a CD player, a hard disk-based media player, an internet radio device, a public entertainment device, a portable audio player, an MP3 player, a hi-fi system, a vehicle entertainment device, a car entertainment device, a medical communication system, a body-worn device, a speech communication device, a home cinema system, and a music hall system.

However, although the system according to an embodiment of the invention primarily intends to improve the quality of sound or audio data, it is also possible to apply the system for a combination of audio data and visual data. For instance, an embodiment of the invention may be implemented in audiovisual applications like a portable video player in which multiple speakers are used.

It is further possible to use, instead of a single microphone assigned to each speaker, a plurality of microphones assigned to a particular speaker. By averaging the signals captured by the plurality of microphones assigned to a particular speaker, it is possible, with improved accuracy, to derive information to compensate for inaccurate speaker orientation. The aspects defined above and further aspects of the invention are apparent from the examples of embodiment to be described hereinafter and are explained with reference to these examples of embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in more detail hereinafter with reference to examples of embodiment but to which the invention is not limited.

Fig. 1 shows an audio processing system according to an exemplary embodiment of the invention.

Figs. 2A and 2B shows an audio playback system in two different configurations according to exemplary embodiments of the invention.

Figs. 3A and 3B illustrates a method of calibrating an audio processing system according to an exemplary embodiment of the invention.

Fig. 4 shows a flow diagram illustrating a method of processing audio data according to an exemplary embodiment of the invention.

DESCRIPTION OF EMBODIMENTS

The illustration in the drawing is schematically. In different drawings, similar or identical elements are provided with the same reference signs.

In the following, referring to Fig. 1, an audio processing system 100 according to an exemplary embodiment of the invention will be explained.

The audio processing system 100 comprises a first microphone 101, a second microphone 102, a third microphone 103 and a fourth microphone 104. The number of microphones may be larger or smaller than four, particularly may be larger than or equal to two. Each of the microphones 101 to 104 is adapted to detect audio data emitted by anyone of a plurality of loudspeakers, namely a first loudspeaker 105, a second loudspeaker 106, a third loudspeaker 107 and a fourth loudspeaker 108.

As can be taken from Fig. 1, a first housing 109 is provided in which the first microphone 101 and the first loudspeaker 105 are accommodated or integrated. The second microphone 102 and the second loudspeaker 106 are embedded in a second housing 110. The third microphone 103 and the third loudspeaker 107 are provided within a third housing 111. A fourth housing 112 accommodates the fourth microphone 104 and the fourth speaker 108. Therefore, each of the microphones 101 to 104 has an assigned speaker 105 to 108, and these pairs are located directly neighbored or adjacent to one another. The loudspeakers 105 to 108 are each adapted to emit acoustic waves and are each equipped with the corresponding microphone 101 to 104.

In normal use, the audio system 100 is used for reproducing audio content and may serve as an audio surround system. However, the system 100 also has an automatic loudspeaker orientation configuration feature that will be explained in the following in more detail. With respect to the actual audio playback functionality of a surround system, no further details will be explained in the following.

As can be taken from Fig. 1, each of the microphones 101 to 104 is electrically coupled to a calculation unit 113 so as to provide detected audio data 114 to 117 to the calculation unit 113. The calculation unit 113 is adapted to calculate acoustical transfer functions between the plurality of speakers 105 to 108 based on the audio data 114 to 117 detected by the plurality of microphones 101 to 104.

For example, in a first operation state, only the first loudspeaker 105 emits audio data and the microphones 102 to 104 detect the corresponding audio signals 115 to 117. Then, the second speaker 106 emits an audio signal which is detected by the microphones 101, 103, 104, and so on. From the corresponding data that are detected by the microphones 101 to 104, the calculation unit 113 may calculate all acoustical transfer functions indicative of the acoustical properties of the system and indicative of the present orientation of the speakers 105 to 108 with respect to one another.

The determined acoustical transfer functions 118 are supplied to a determining unit 119 adapted to determine orientation information indicative of the relative orientation of the plurality of speakers 105 to 108 based on the calculated acoustical transfer functions 118. Therefore, the determining unit 119 determines the orientation (that is to say the spatial positions and/or the directions) of the speakers 105 to 108 so as to determine whether there is a need to modify the configuration of the loudspeakers arrangement to improve playback quality.

Corresponding orientation information 120 may be supplied to a correction unit 121 adapted to correct an audio playback characteristic of one or more of the loudspeakers 105 to 108 based on the determined orientation information 120. For this purpose, control signals 122 can, if needed, be provided to the corresponding loudspeakers 105 to 108 to improve the audio performance.

Particularly, the correction unit 121 may calculate the control parameters 122 in such a manner that an audio quality is improved at a predetermined listening position (for instance a position at which a listener is presently or usually located). A user may input such a position to the system 100 via a user interface device 123. Such an I/O device may include a graphical user interface (GUI) having an LCD, a plasma device, or a cathode ray tube.

Furthermore, input elements can be provided at the user interface 123 like a keypad, a joystick, buttons, a trackball, or even a microphone of a voice recognition system.

The control parameters 122 may alter amplitude of any signal to be reproduced by one of the loudspeakers 105 to 108, or may alter a frequency behavior, or may alter equalizer characteristics, or a spatial position of the microphones 105 to 108. Therefore, if needed, one or more of the loudspeakers 105 to 108 may be mechanically turned or shifted.

In the following, referring to Fig. 2 and Fig. 3, further aspects of an exemplary embodiment of the invention will be explained.

Fig. 2 shows a typical home theatre system setup in an ideal configuration 200 and in a non-ideal configuration 250.

Loudspeakers 105 to 108 are shown which are distributed around a human listener 201. Furthermore, a television 202 is shown which may also comprise one or more loudspeakers, wherein such a "center speaker" is assumed to be at the same position as the TV 202.

In the "ideal" configuration 200 as shown in Fig. 2A, all loudspeaker boxes 105 to 108 point towards the listener 201. But in many cases, as for instance shown in Fig. 2B for non-ideal configuration 250, the loudspeaker boxes 105 to 108 do not have an optimum orientation and will be pointing outside a listening area 203.

In the present embodiment, all loudspeakers 105 to 108, 202 are equipped with one omni-directional microphone (101 to 104, 204). This enables the measurement of the acoustical transfer functions between all loudspeakers 105 to 108, 202, the so-called "cross loudspeaker transfer functions". It is possible to make use of these transfer functions to get an idea of the orientation of the loudspeaker boxes 105 to 108, 202 with respect to the listener 201 and to provide the necessary corrections.

Fig. 3 shows two examples of cross loudspeaker transfer function measurements.

In a first scenario 300, the loudspeaker box 1 is properly oriented. In a second scenario 350, the loudspeaker 4 is wrongly oriented.

In the first scenario 300 as shown in Fig. 3A, the transfer functions between loudspeaker 1 and the others are measured. This may give an idea on the directivity of loudspeaker box 1. Because the directivity of a loudspeaker driver increases with frequency, a comparison of the high frequency content of the transfer functions can provide an idea of orientation of loudspeaker 1. Because the positions of the loudspeaker boxes can be

computed, it can be possible, by interpolation, to estimate the high frequency energy level reaching the center of the listening area 203, where the listener 201 is assumed to be sitting. In the second scenario 350 as shown in Fig. 3B, it is the directivity of loudspeaker 4 that is measured. In this case, the other loudspeakers will get much less high frequency energy than in the first scenario 300, which indicates that loudspeaker 4 is most likely wrongly oriented. By computing the level of high frequencies reaching the middle of the listening area 203 for the second scenario 350 and by comparing it with its level for the first scenario 300, a high frequency boost filter to be applied to loudspeaker 4 can be derived.

In the following, referring to Fig. 4, a block diagram 400 will be explained illustrating a method of processing audio data according to an exemplary embodiment of the invention. Such a method may work according to the following process:

All cross loudspeaker transfer functions are measured, see block 410.

The loudspeaker positions are computed (for instance by evaluating intensities, applying damping models, analyzing delays, analyzing correlations between different signals, evaluating frequency information, considering directivity characteristics, evaluating propagation times in combination with propagation velocities, etc.), see block 420.

The listening position is user-defined or assumed to be the geometrical center of the area enclosed by the loudspeakers, or assumed to be in front of the TV set, see block 430.

For each loudspeaker, the high frequency energy level radiated in the direction of the listening position is computed by interpolating the high frequency content of the different cross loudspeaker measurements. Because of the oval shape of the loudspeaker directivity, the interpolation may be non-linear, see block 440.

The high frequency energy levels of all loudspeakers are normalized to the highest one. In other words, the high frequency energy radiated towards the listening position is made equal for all loudspeakers, and preferably equal to the highest high frequency energy level value, see block 450.

It should be noted that the term “comprising” does not exclude other elements or features and the “a” or “an” does not exclude a plurality. Also elements described in association with different embodiments may be combined.

It should also be noted that reference signs in the claims shall not be construed as limiting the scope of the claims.

CLAIMS:

1. A device (100) for processing audio data, wherein the device (100) comprises at least one microphone (101 to 104) each adapted to detect audio data (114 to 117);

a plurality of speakers (105 to 108) each adapted to emit acoustic waves, wherein at least a part of the plurality of speakers (105 to 108) is provided with an assigned one of the at least one microphone (101 to 104);

a calculation unit (113) adapted to calculate acoustical transfer functions (118) between the plurality of speakers (105 to 108) based on the audio data (114 to 117) detected by the at least one microphone (101 to 104);

a determining unit (119) adapted to determine orientation information (120) indicative of the relative orientation of the plurality of speakers (105 to 108) based on the calculated acoustical transfer functions (120).

2. The device (100) according to claim 1,

wherein the calculation unit (113) is adapted to calculate the acoustical transfer functions (118) for each pair of the plurality of speakers (105 to 108) based on the audio data (114 to 117) detected by the at least one microphone (101 to 104).

3. The device (100) according to claim 1,

wherein the determining unit (119) is adapted to determine the orientation information (120) indicative of a spatial position and/or of an audio emission direction of the plurality of speakers (105 to 108).

4. The device (100) according to claim 1,

wherein, for at least a part of the plurality of speakers (105 to 108), a respective one of the plurality of speakers (105 to 108) and the assigned one of the at least one microphone (101 to 104) are accommodated in a separate casing (109 to 112).

5. The device (100) according to claim 1,

comprising a correction unit (121) adapted to correct an audio playback characteristic of at least a part of the plurality of speakers (105 to 108) based on the determined orientation information (121).

6. The device (100) according to claim 1,

comprising a correction unit (121) adapted to correct the orientation of at least a part of the plurality of speakers (105 to 108) based on the determined orientation information (120).

7. The device (100) according to claim 5 or 6,

wherein the correction unit (121) is adapted to correct the audio playback characteristic so as to improve an audio quality at a predetermined listening position.

8. The device (100) according to claim 5 or 6,

wherein the predetermined listening position is one of the group consisting of a user-defined position, a geometrical center of the plurality of speakers (105 to 108), and a position defined with respect to a defined component (202) of an audio playback system comprising the device (100).

9. The device (100) according to claim 5,

wherein the audio playback characteristic comprises at least one of an amplitude, a frequency filtering characteristic, and an equalizer characteristic.

10. The device (100) according to claim 1,

wherein the calculation unit (119) is adapted to calculate the acoustical transfer functions (120) between the plurality of speakers (105 to 108) selectively based on components of the audio data (114 to 117) which components exceed a predetermined frequency threshold value.

11. The device (100) according to claim 10,

wherein the predetermined frequency threshold value is in the range between essentially 1 kHz and essentially 5 kHz.

12. The device (100) according to claim 1,

wherein at least one of the at least one microphone (101 to 104) is an omni-directional microphone.

13. The device (100) according to claim 1,

realized as at least one of the group consisting of an audio surround system, a stereo audio system, a mobile phone, a headset, a hearing aid, a hands free system, a television device, a video recorder, a monitor, a gaming device, a laptop, an audio player, a DVD player, a CD player, a hard disk-based media player, an internet radio device, a public entertainment device, a portable audio player, an MP3 player, a hi-fi system, a vehicle entertainment device, a car entertainment device, a medical communication system, a body-worn device, a speech communication device, a home cinema system, and a music hall system.

14. A method of processing audio data (114 to 117), wherein the method comprises

detecting audio data (114 to 117) using at least one microphone (101 to 104);

emitting acoustic waves using a plurality of speakers (105 to 108), wherein at least a part of the plurality of speakers (105 to 108) is provided with an assigned one of the at least one microphone (101 to 104);

calculating acoustical transfer functions (118) between the plurality of speakers (105 to 108) based on the audio data (114 to 117) detected by the at least one microphone (101 to 104);

determining orientation information (120) indicative of the relative orientation of the plurality of speakers (105 to 108) based on the calculated acoustical transfer functions (118).

15. A computer-readable medium, in which a computer program of processing audio data (114 to 117) is stored, which computer program, when being executed by a processor (113, 119), is adapted to carry out or control a method according to claim 14.

16. A program element of processing audio data (114 to 117), which program element, when being executed by a processor (113, 119), is adapted to carry out or control a method according to claim 14.

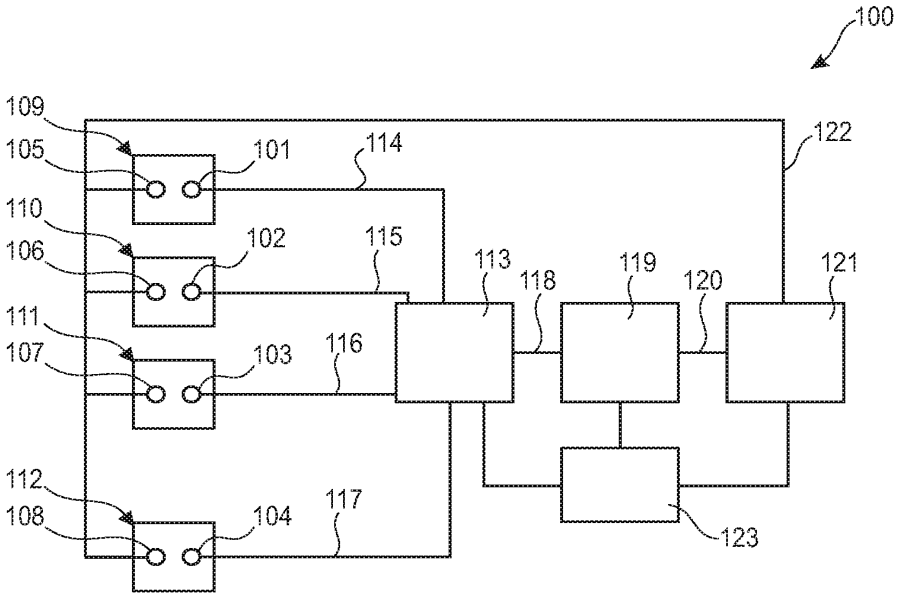


FIG 1

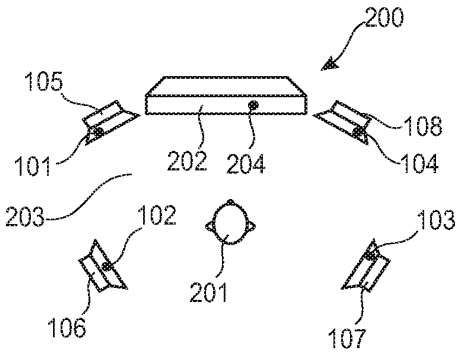


FIG 2A

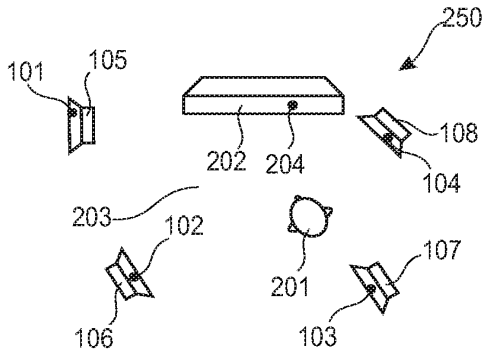


FIG 2B

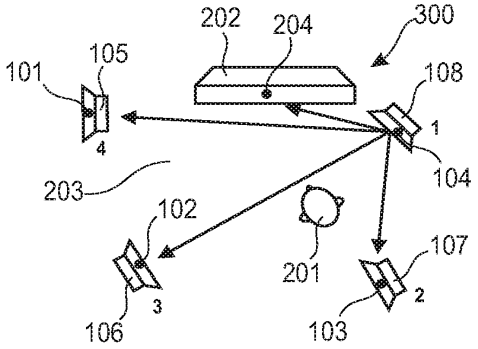


FIG 3A

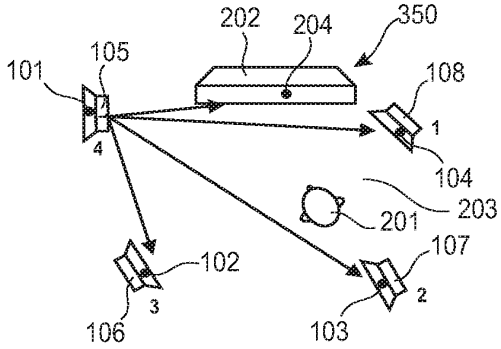


FIG 3B

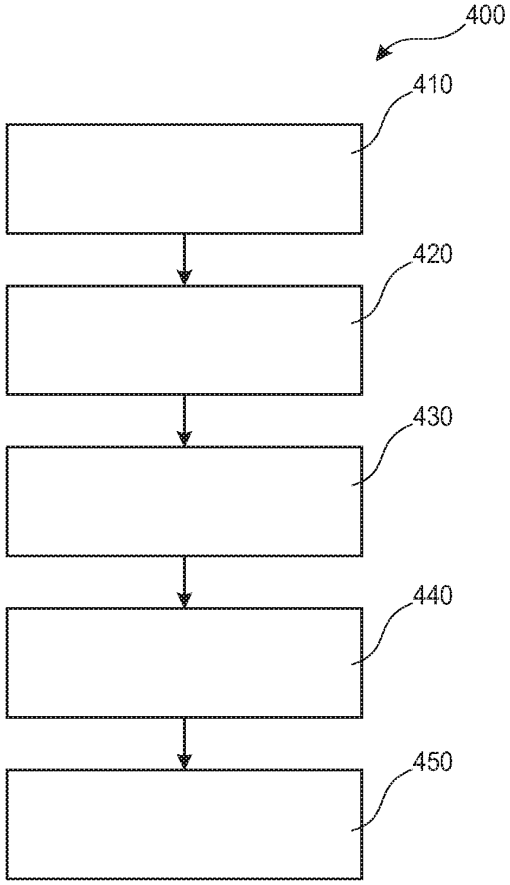


FIG 4

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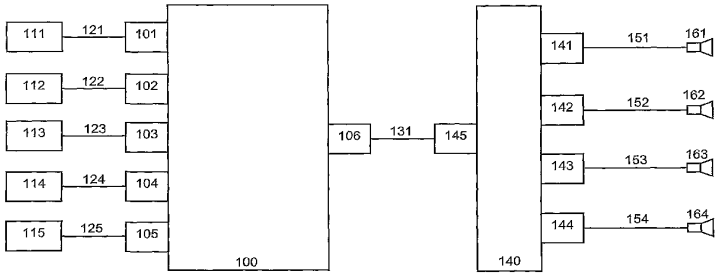
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(54) **Title:** DEVICE AND METHOD FOR PRIORITIZING AUDIO IN A VEHICLE



(57) **Abstract:** An improved device and method for prioritizing audio in a vehicle is disclosed. According to the invention, an audio priority device for use in a vehicle, includes a plurality of audio source input connectors, at least one output connector connectable to a sound emitting system, and a selecting means arranged to select the audio signal with highest priority level received at the input connectors and further arranged to output the selected audio signal to the at least one output connector. Each input connector is arranged assigned with a specific fixed priority level, whereby a present audio signal from an audio source that is connected to one of the input connectors is assigned the priority level of that input connector.

WO 2008/082350 A1

DEVICE AND METHOD FOR PRIORITIZING AUDIO IN A VEHICLE

Field of the invention

The present invention relates to an audio priority device for use in a vehicle including a selecting means arranged to select an audio signal. The present invention also relates to a vehicle including such an audio priority device and to a method for prioritizing audio in a vehicle.

Related art and background of the invention

Audio management systems managing signals from a number of audio sources are previously known in the background art. These systems include a plurality of audio sources and a selecting means arranged to select one of the audio signals and to output the selected audio signal to a sound emitting system, as one single sound emitting system handles signals from a plurality of audio sources. Such audio management systems are known from documents EP 0 531 094, EP 1 056 216 and US 6 052 471.

EP 0 531 094 shows a system for integrated cellular telephone and vehicular audio. In this system, an interface selects which one of the cellular telephone signal and the audio system signal to present to a driver of the vehicular. Control signals are sent on a control bus from the cellular telephone and the audio system to the interface, informing the interface whether the cellular phone and the audio system are active or in use. The interface controls, based on these control signals, which audio source to apply to the loud speakers of the system.

EP 1 056 216 shows an audio component system. In this system, a number of audio devices are connected to an amplifier unit. The amplifier unit controls, by the use of a control unit and a control bus connected to each of the audio devices, which device that is to be delivered to the loud speakers of the system.

US 6 052 471 shows an audio receiver that automatically selects an input audio source. The receiver detects which input signals that are present and then a priority

logic block selects, using a priority table, which audio source to provide to the amplifiers. The priority table contains the priorities of the different types of audio sources present and sets the rules for how to select an audio source to be amplified for different scenarios of audio sources present. The priority logic block then, by the use of control signals, controls switches in the receiver such that the chosen audio source is passed through to amplification. The priority of different types of audio sources can for instance be set such that a CD player has a higher priority than a radio, resulting in that the receiver selects the CD player when they both are active. The priority can also be set such that the type of audio source that is most recently turned into an active mode is given the highest priority. That is if a TV is most recently turned on it will be given highest priority and will thus be selected regardless of which other audio sources are being present.

The background art solutions for audio management are all fairly complicated. The background art systems include control circuits and control buses for managing the audio sources and/or complex priority setting and selecting processes.

When installing audio management systems in vehicles, such as trucks, cars, buses and tractors, there arises a problem regarding installation space. The amount of space behind a dashboard available for fitting in audio management systems and cables accompanying these systems is very limited. According to the solutions in background art documents EP 0 531 094 and EP 1 056 216 mentioned above, a control bus is used for controlling which audio source to be selected. This control bus constitutes a problem because of the limited installation space in the vehicle, especially since these audio management systems often are installed after the vehicle has been assembled in a factory.

Weight of the cables can be another problem in solutions involving a large amount of cabling. Troubleshooting can also be very difficult and time consuming when a problem arises in such a system.

Audio management systems that rely on control signals to or from each of the audio source components of the system for handling the selection of audio sources to

output to a sound emitting system, such as a number of loud speakers, will also encounter difficulties relating to the different types of control signaling used by the different audio sources. The different audio sources are often provided by different suppliers and these different audio sources may then have differing control signaling. For instance, the signaling format, such as levels and shapes of the signals, can differ from one audio source to another. The different control signaling can result in difficulties for the audio management system to communicate with all audio source components in the system.

There is further a problem related to complex priority setting and selecting processes of background art solutions, such as the one mentioned in US 6 052 471 above, regarding their capabilities of being able to easily alter priorities of already present audio sources as well as easily assigning priorities to audio sources that are not known by the system at the time of installation of the system, but can be added to the system thereafter. Background art systems need to be reprogrammed when priorities are to be changed or when new audio sources are to be added to the system. Reprogramming is time consuming and expensive for the vehicle owner.

Aim and most important features of the invention

It is an object of the present invention to provide an audio priority device that solves the above stated problems.

The present invention aims to provide a future compatible, more simple, less space consuming, lighter and less costly audio priority device than the devices known from audio management system in the background art.

The object is achieved by the above mentioned audio priority device according to the characterizing portion of claim 1, i.e. that each input connector is arranged invariably assigned with a specific fixed priority level, whereby a present audio signal from an audio source that is connected to one of said input connectors is assigned the specific priority level of that input connector to which the audio source is connected.

One embodiment of the audio priority device according to the present invention comprises that the specific priority level of each input connector is assigned in the selecting means.

Another embodiment of the audio priority device according to the present invention comprises that the input connectors are arranged assigned with mutually different priority levels.

The object is also achieved by the above mentioned vehicle according to the characterizing portion of claim 11.

The object is also achieved by the above mentioned method according to the characterizing portion of claim 12, i.e. that a present audio signal from an audio source connected to an input connector is assigned a priority level corresponding to a specific priority level invariably assigned for that input connector at which the audio source is present, and that all of the audio source input connectors are assigned with mutually different priority levels.

The general idea of the present invention is to assign a priority level to an audio source signal in correspondence to the audio source connector through which the audio source is connected to the audio priority device. The priorities for the audio sources are thus set by the operation of connecting the audio source cables to a suitable audio source input connector, which simplifies changes of the priority order of the audio source signals, since no reprogramming of the device is needed when priorities need to be changed or when new audio sources are added to the system. Further, no control cables between the audio sources and the audio priority device are needed in the audio management system according to the present invention, which makes the system less space consuming, lighter, less costly and easier to troubleshoot.

In different embodiments of the present invention, the amplification of the audio signals is performed in different locations of the system. The amplification circuits may be integrated with the audio sources, with the audio priority device or with a

radio subsequent to the audio priority device. The amplification circuits may also be located in an external amplification stage subsequent of the audio priority device. These different locations of the amplifying circuitry have different advantages. Amplification within the audio sources has the advantage that amplifying circuitry already existing in the audio sources may be used. Amplification within or subsequent to the audio priority device has the advantage that low level signal cables may be used from the audio sources to the location where the amplification takes place, which makes use of more simple, smaller and less costly cables possible. Amplification within, for instance, a radio in a stage subsequent to the audio priority device has the advantage that RDS (Radio Data System) interruptions are very easily achieved.

Detailed exemplary embodiments and advantages of the device and method for prioritizing audio according to the invention will now be described with reference to the appended drawings illustrating some preferred embodiments.

Brief description of the drawings

Fig. 1 shows an audio management system including an audio priority device according to an embodiment of the present invention.

Fig. 2 shows a schematic view of an audio priority device according to the present invention.

Fig. 3 shows an audio management system including an audio priority device according to an embodiment of the present invention.

Fig. 4 shows an audio management system including an audio priority device according to an embodiment of the present invention.

Fig. 5 shows an audio management system including an audio priority device according to an embodiment of the present invention.

Fig. 6 shows a flowchart corresponding to a method of an embodiment of the present invention.

Detailed description of preferred embodiments

Fig. 1 shows an audio management system including an audio priority device 100 according to an embodiment of the present invention. In the audio management system, a number of audio sources 111-115, provide audio signals to an audio priority device 100. These audio sources may include music creating systems, such as radios, CD players, mp3 players or the like; communication equipment, such as mobile telephones, communication radios or the like; multimedia equipment, such as DVD players or the like; navigation systems, such as Global Positioning Systems (GPS) or the like; and safety systems, such as Lane Departure Warning (LDW) systems or the like. In an audio management system according to the present invention, any present or future audio source may be incorporated in the system, since this is easily achieved.

Audio signals provided by the audio sources are sent to the audio priority device over audio source cables 121-125. The audio source cables are connected to audio source input connectors 101-105 of the audio priority device 100. The audio priority device 100, e.g. through a selecting means (not shown), chooses or selects which of the audio sources that should be forwarded to a sound emitting system and outputs the signal corresponding to the selected audio source on the output connector 106. The selected signal is sent to an amplifier 140 over an output cable 131 and is received at the amplifier 140 in an amplifier input connector 145. The amplifier 140 amplifies the selected signals and provides them via amplifier output connectors 141-144 and speaker cables 151-154 to speakers 161-164.

According to the present invention, the selection of audio sources to be forwarded to the sound emitting system is related to which one of the audio source input connectors 101-105 the audio source is connected to. Each one of the audio source input connectors 101-105 is assigned a specific priority level. This priority level is invariably assigned and preferably mutually different for each of the audio source input connectors 101-105, so that every audio source signal, regardless of which type

of signal, present at one of these audio source input connectors 101-105 is assigned the corresponding specific priority level as that assigned to the audio source input connector at which it is present.

The priority level assigned to an audio source signal is, according to the present invention, thus not related to the type of audio source from which it originates, as was the case in background art solutions. The priority level assigned to an audio source signal is instead only related to the specific audio source input connector 101-105 to which the audio source is connected. This means that the priorities for the audio sources are set by the operation of connecting the audio source cables 121-125 to a suitable audio source input connector 101-105. To change the priority order of the audio source signals, a simple operation of switching the corresponding audio source cable to another audio source input connectors has to be performed.

This is an improvement compared to background art solutions, since no reprogramming of the device is needed when priorities need to be changed or when new audio sources are added to the system. In background art solutions, a complex priority decision table or the like is used for deciding which audio source to select. If a new audio source is added to the background art systems or if priorities are to be changed, this priority decision table need to be altered, which means that the circuits or processors need to be reprogrammed or otherwise adjusted by a skilled person. This can be troublesome, time consuming and costly for the vehicle owner. In an audio management system according to the present invention, an unskilled person can easily switch audio source input connectors used, when priorities for the audio sources are to be changed. He may also easily connect a new audio source to a suitable audio source connector and thereby assigning the new audio source a suitable priority level.

Further, no control cables between the audio sources 111-115 and the audio priority device 100 are needed in the audio management system according to the present invention. Less cabling is an advantage, since cables are space consuming, heavy and expensive. Troubleshooting is further difficult in systems having excessive cabling.

The number of audio sources, audio source cables, audio source input connectors, audio source output connectors, output cables, amplifier input connectors, amplifier output connectors, speaker cables and speakers in the audio management system may vary. The system according to the present invention can easily be modified to any number of audio sources. The number of speakers is set by the amplifier 140 and can thus be varied in a large number of ways. The audio source cables 121-125 and output cable 131 can in this embodiment of the invention include a number of different types of cables. Single cables as well as data buses, such as CAN (Controller Area Network), MOST (Media Oriented Systems Transport), Byteflight, TTCAN (Time Triggered Controller Area Network), Flexray, LIN (Local Interconnected Network) or the like, can be used for these cables.

Further, according to this embodiment of the present invention, the amplifier 140 is common to all the audio sources. All audio sources 121-125 therefore provide low level signals. This has the advantage that the audio source cables 121-125 and the output cable 131 can be implemented using low level signal cables that are less costly, less heavy and smaller in size than high level signal cables. The solution having one common amplifier also has the advantage that a separate amplifier in each of the audio sources can be omitted, since the single amplifier handles amplification of signals from all audio sources. The common amplifier solution according to the present invention thus lowers the overall cost of the audio system.

Fig. 2 shows a schematic view of a possible implementation of an audio priority device 200. The audio priority device 200 has a number of audio source input connectors 201-205 and an output connector 206. Cables conveying audio signals from the audio sources are connected to the connectors 201-205 and are provided to a selecting means 270 on signal lines 271-275. A selection switch 276 within the selecting means 270 is then switched into a position that lets the chosen signal through to the output connector 206. The audio source input connectors 201-205 all have a fix specific priority level assigned to them. For example, the audio source input connector 201 may have been assigned the highest priority level and the audio source input connectors 202-205 may have decreasing priority levels compared to

the audio source input connector 201, such that connector 202 has a lower assigned priority level than connector 201, connector 203 has a lower assigned priority level than connector 202 and so forth.

For example, if there are signals present at both the audio source input connectors 201 and 202 then the signal present at audio source input connector 201 will be selected since the selection switch will select the signal present on the input connector having, i.e. being assigned with, the highest priority level. On the other hand, if there is no signal present at audio source input connector 201 but at audio source input connectors 202 and 203 then the signal present at audio source input connector 202 will be selected.

The schematic view of audio priority device 200 shown in fig. 2 is not meant to show all details of the audio priority device, but is more meant to illustrate a general selection process of the device. A more detailed view of the audio priority device 200 may further include signal detection circuits for detection of whether there are signals present at the audio source connectors 201-205, a control circuit for controlling the selection switch 276 and wiring carrying control signals. There are, as is clear to a skilled person, a number of ways to implement the details within the selecting means 200. The implementation may be a hardware implementation, a software implementation or any combination of the both.

Fig. 3 shows an audio management system including an audio priority device according to another embodiment of the present invention. According to this embodiment of the audio priority device, an amplifier 340 is included within the audio priority device casing 300. Otherwise, the audio priority device 300, audio sources 311-315, audio source cables 321-325, audio source input connectors 301-305, amplifier output connectors 342-345, speaker cables 351-354 and speakers 361-364 correspond to the parts in the audio management system shown in fig. 1.

According to the embodiment of the invention shown in fig. 3, the amplifier circuit 340 used for amplifying all audio signals in the audio management system is integrated with the audio priority device 300. This means that no amplification is needed within

the audio sources 311-315, which results in less costly audio resources, and that low level signal cables can be used for the audio source cables 321-325, which results in use of lighter, less costly and less space consuming audio source cables.

Fig. 4 shows an audio management system including an audio priority device according to another embodiment of the present invention. According to this embodiment of the audio priority device, amplifiers 471-475 are included within the casing of the audio sources 411-415. According to this embodiment, the audio priority device 400, audio source cables 421-425 and audio source input connectors 401-405 are designed for coping with high level audio signals being outputted from the amplifiers 471-475. The amplifier output connectors 442-445, speaker cables 451-454 and speakers 461-464 correspond to the parts in the audio management system shown in fig. 1.

This embodiment has the advantage that it uses amplifiers circuits 471-475 already present in the audio sources 411-415. The audio sources 411-415 may have amplifying circuits installed by the producer of the audio sources. If it is desirable to use these built in amplifiers, this embodiment is suitable to use.

Fig. 5 shows an audio management system including an audio priority device according to another embodiment of the present invention. According to this embodiment, it is also possible to have an audio source 546, such as a radio, with an integrated amplifier coupled after the audio priority device 500, between the audio priority device 500 and the speakers 561-564 or some of the speakers. According to this embodiment of the audio priority device, an amplifier 540 is included in the audio source 546. The audio priority device 500, audio source cables 521-525, audio source input connectors 501-505, the output connector 506, the output cable 531, the amplifier input connector 541, the amplifier output connectors 542-545, speaker cables 551-554 and speakers 561-564 correspond to the parts in the audio management system shown in fig. 1. This embodiment has the advantage that if the audio source 546 itself creates a high priority signal, it can easily output this signal. For instance, if the audio source 546 is a radio having RDS (Radio Data System) then the RDS interruptions may be easily achieved and outputted to the speakers.

As a skilled person realises, combinations of the different solutions in figs. 1, 3, 4 and 5 may be used in a combination audio management system. That is, different locations of the amplifying circuits may be advantageous for different audio sources. Some audio sources may have integrated amplifiers and for some audio sources it is more advantageous to have the amplifying circuits in a separate amplifying stage, in a subsequent radio or integrated in the audio priority device.

Fig. 6 shows a flowchart corresponding to a method of an embodiment of the present invention. In a first step of the method, an audio priority device receives signals from one or more audio sources being connected to input connectors of the audio priority device. In a second step of the method, the audio signal having the highest priority level received at said input connectors is selected. The priority level of each audio signal is set by a fix priority level specific for the input connector to which it is connected. In a third step of the method, the selected audio signal is outputted to at least one output connector of the audio priority device.

The device and method for prioritizing audio according to the invention may be modified by those skilled in the art, as compared to the exemplary embodiments described above.

As is obvious for a skilled person, a number of other implementations, modifications, variations and/or additions can be made to the above described exemplary embodiments. It is to be understood that the invention includes all such other implementations, modifications, variations and/or additions which fall within the scope of the claims.

Claims

1. An audio priority device for use in a vehicle, including
- a plurality of audio source input connectors,
- at least one output connector connectable to a sound emitting system, and
- a selecting means arranged to select the audio signal with the highest priority level provided at said input connectors and further arranged to output the selected audio signal to said at least one output connector,
characterized in that each input connector is arranged invariably assigned with a specific priority level, whereby a present audio signal from an audio source that is connected to one of said input connectors is assigned the specific priority level of that input connector to which the audio source is connected.

2. Audio priority device as claimed in claim 1, wherein said audio priority device is arranged for receiving low level audio signals from said audio sources.

3. Audio priority device as claimed in claim 2, wherein said audio priority device includes an amplifier, located before said at least one output connector, amplifying audio signals outputted from the device.

4. Audio priority device as claimed in claim 2, wherein said at least one output connector is connected to an amplifying stage, external from the audio priority device.

5. Audio priority device as claimed in claim 2, wherein said at least one output connector is connected to a radio including an amplifying stage.

6. Audio priority device as claimed in claim 1, wherein said audio priority device is arranged for receiving high level audio signals from said audio sources.

7. Audio priority device as claimed in claim 1, wherein said sound emitting system is a loud speaker system.

8. Audio priority device as claimed in claim 1, wherein said audio sources include at least one of the following audio sources in the group: radio, CD player, mp3 player, mobile telephone, DVD player, navigation system, Lane Departure Warning (LDW) system.

9. Audio priority device as claimed in claim 1, wherein the specific priority level of each input connector is assigned in said selecting means.

10. Audio priority device as claimed in any one of claims 1-9, wherein said input connectors are arranged assigned with mutually different priority levels.

11. A vehicle **characterized in** that it includes an audio priority device as the one claimed in any one of claims 1-10.

12. Method for prioritizing audio in a vehicle, including the steps of:
- receiving, in an audio priority device, signals from one or more audio sources, said audio sources each being connected to a respective input connector of said audio priority device
- selecting the audio signal with the highest priority level received at said input connectors,
- outputting the selected audio signal to at least one output connector of said audio priority device,
characterized in that an audio signal present at one of said input connectors is assigned a priority level corresponding to a specific priority level invariably assigned to that input connector at which the audio source is present, and that all of said audio source input connectors are assigned with mutually different priority levels.

13. Method as claimed in claim 12, wherein a priority level assigned to an audio source is changed by switching said audio source to another input connector.

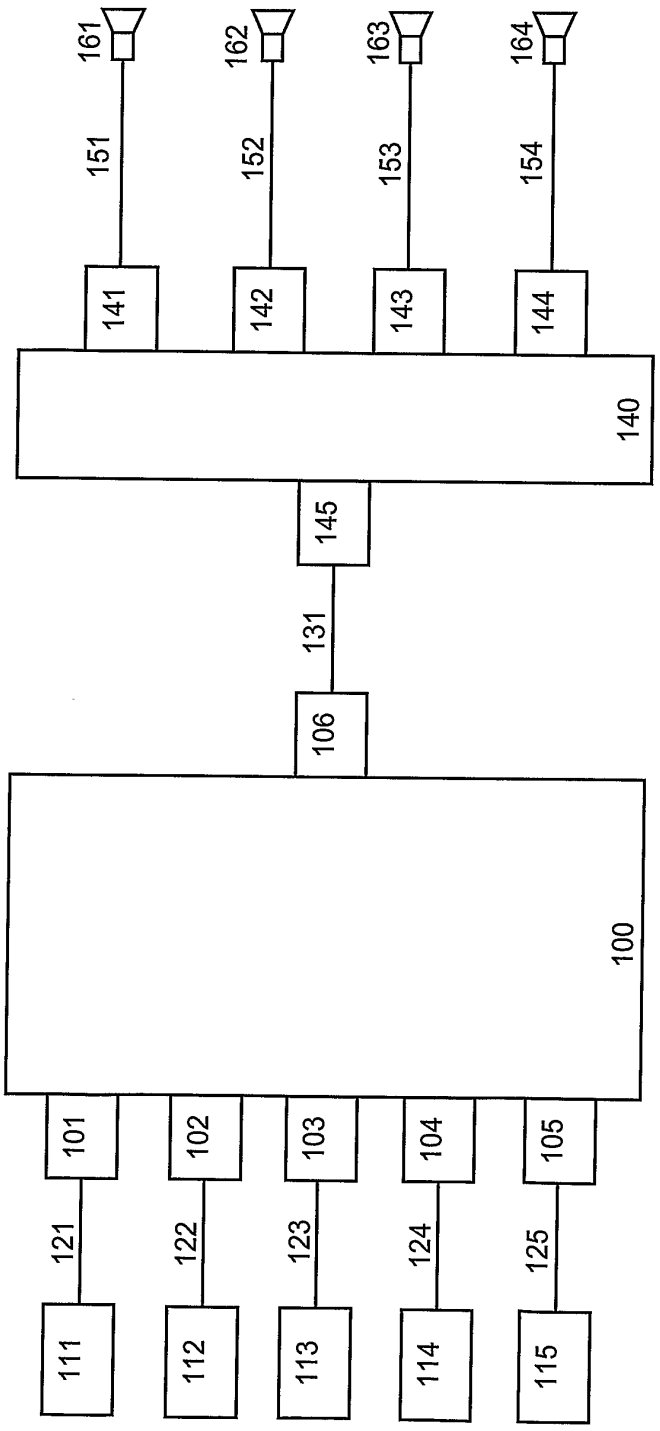

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Fig. 1

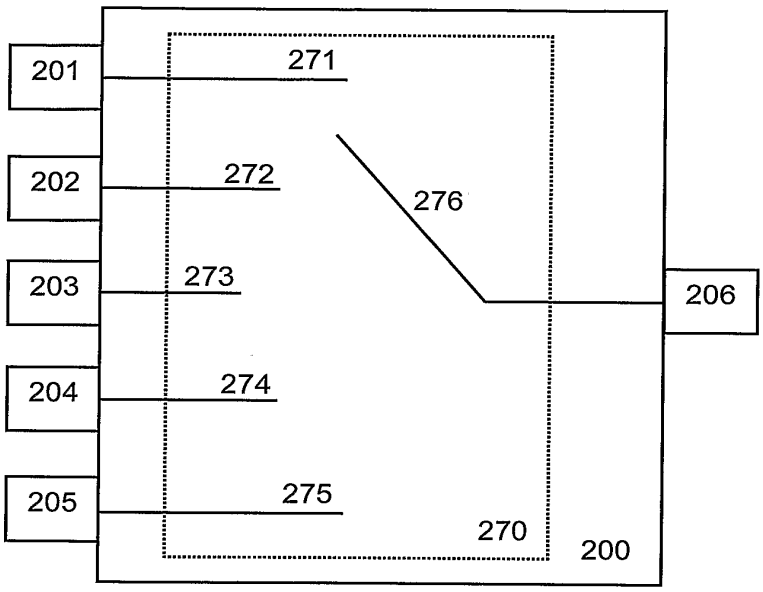


Fig. 2

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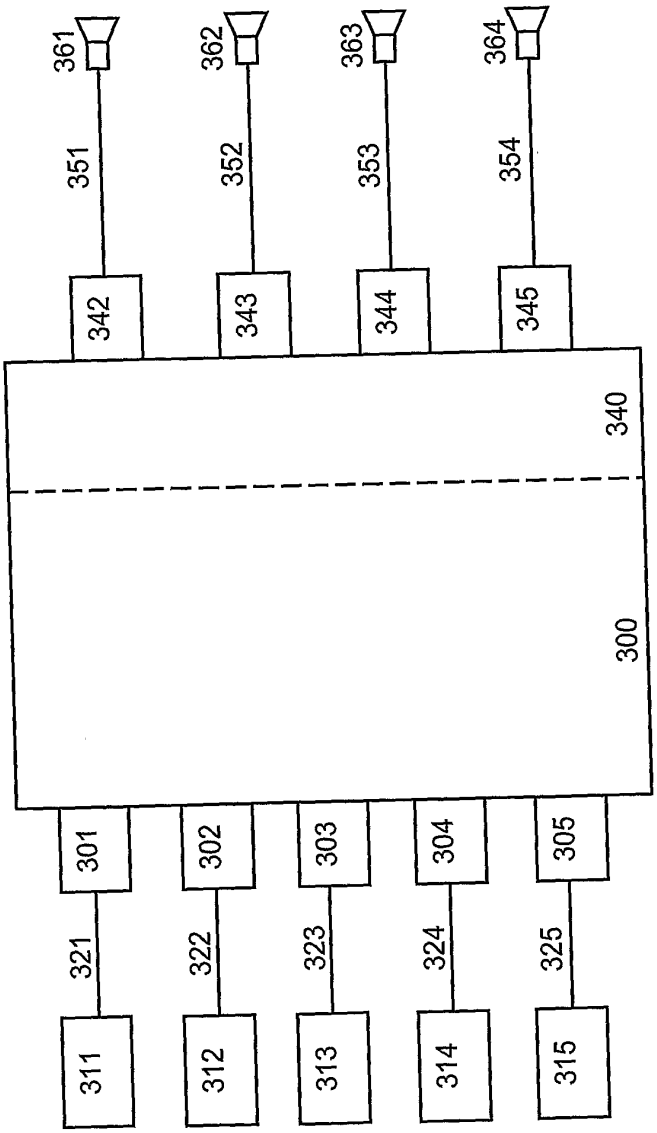

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Fig. 3

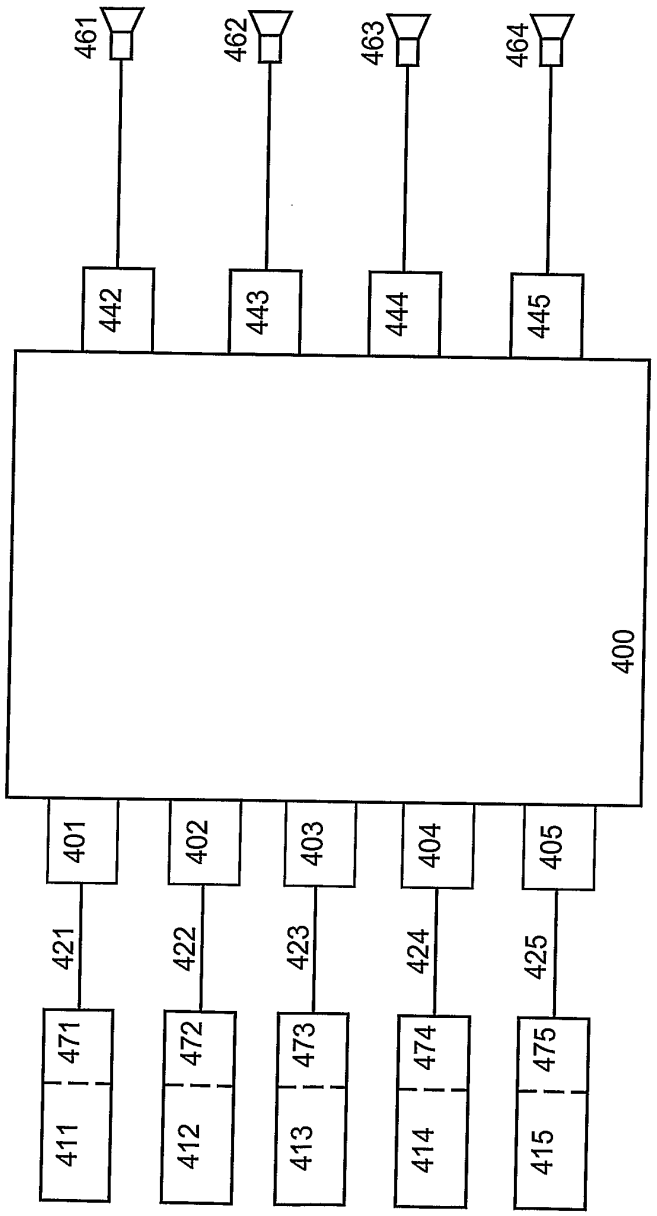

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Fig. 4

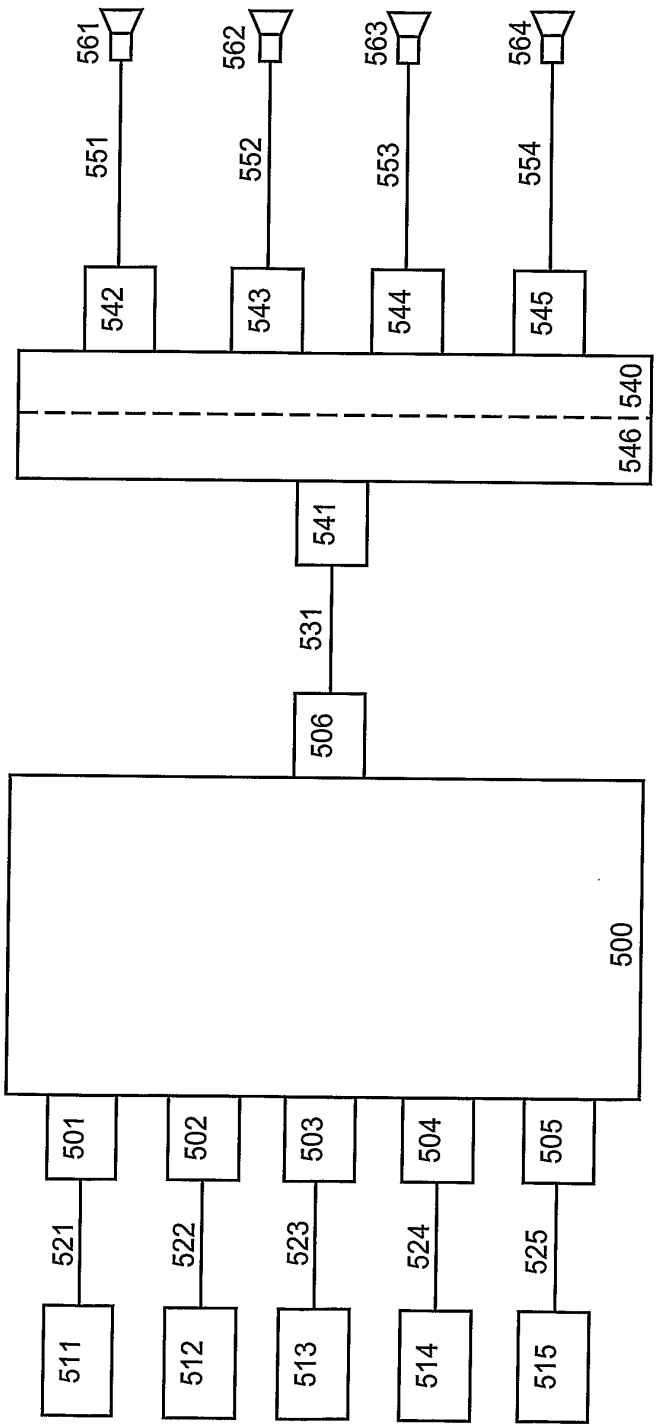

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Fig. 5

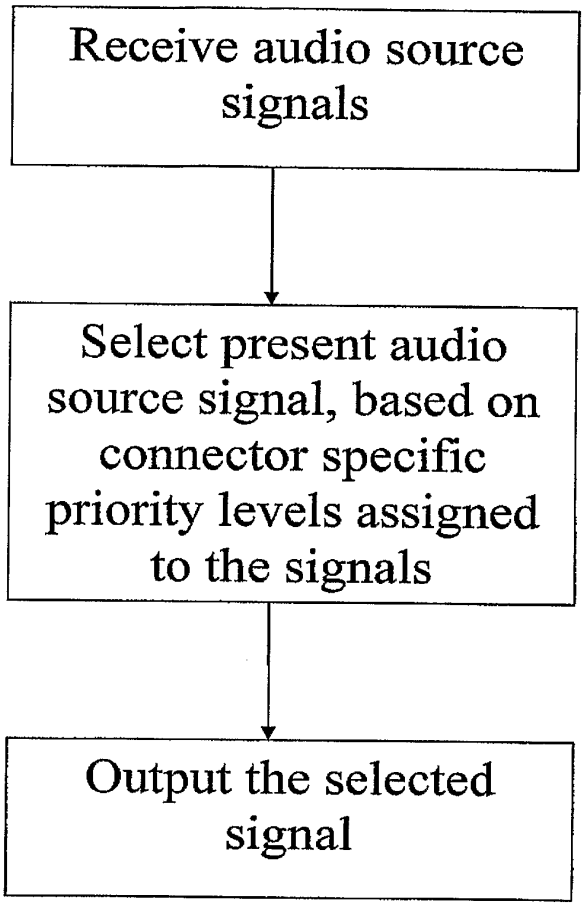

Receive audio source signals
Select present audio source signal, based on connector specific priority levels assigned to the signals
Output the selected signal

Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2007/051047

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: B60R, G06F, G08G, H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1460769 A1 (PHONAK COMMUNICATIONS AG), 22 Sept 2004 (22.09.2004), paragraphs [0007]-[0009], [0026], [0036], [0038]	1-13
A	US 5774016 A (KETTERER, E R), 30 June 1998 (30.06.1998), column 3, line 66 - column 4, line 32, claim 3	1-13
A	WO 2005055046 A1 (VOLVO TECHNOLOGY CORPORATION), 16 June 2005 (16.06.2005), the whole document	1-13
A	US 6052471 A (VAN RYZIN, J M), 18 April 2000 (18.04.2000), column 2, line 2 - line 63	1-13

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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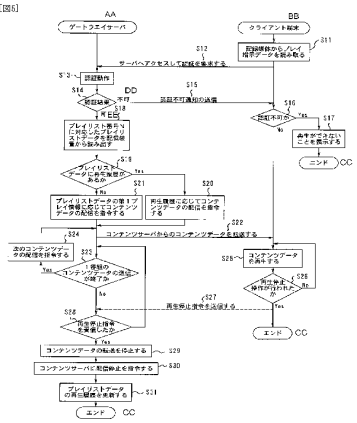
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[続葉有]

(54) **Title:** CONTENT REPRODUCING SYSTEM AND ITS CONTROL METHOD

(54) **発明の名称:** コンテンツ再生システム及びその制御方法



AA GATEWAY SERVER
BB CLIENT SERVER
S11 READ PLAY INSTRUCTION DATA FROM RECORDING MEDIUM
S12 ACCESS SERVER AND REQUEST FOR AUTHENTICATION
S13 AUTHENTICATION OPERATION
S14 AUTHENTICATION RESULT
DD UNSUCCESSFUL
EE SUCCESSFUL
S15 TRANSMIT UNSUCCESSFUL AUTHENTICATION NOTIFICATION
S16 UNSUCCESSFUL AUTHENTICATION?
S17 DISPLAY THAT REPRODUCTION IS IMPOSSIBLE
CC END
S18 READ PLAY LIST DATA CORRESPONDING TO PLAY LIST NUMBER IN FROM STORAGE DEVICE
S19 PLAY LIST DATA INCLUDE REPRODUCTION HISTORY?
S20 INSTRUCT TO DELIVER CONTENT DATA ACCORDING TO REPRODUCTION HISTORY
S21 INSTRUCT TO DELIVER CONTENT DATA ACCORDING TO FIRST PLAY INFORMATION OF PLAY LIST DATA
S22 TRANSFER CONTENT DATA FROM CONTENT SERVER
S23 CONTENT DATA TRANSMISSION OF FIRST PROGRAM COMPLETED?
S24 INSTRUCT TO DELIVER NEXT CONTENT DATA
S25 REPRODUCE CONTENT DATA
S26 REPRODUCTION STOP OPERATION PERFORMED?
S27 TRANSMIT REPRODUCTION STOP INSTRUCTION
S28 REPRODUCTION STOP INSTRUCTION RECEIVED?
S29 STOP TRANSFERRING OF CONTENT DATA
S30 INSTRUCT CONTENT SERVER TO STOP DELIVERY
S31 UPDATE REPRODUCTION HISTORY OF PLAY LIST DATA

(57) Abstract: Play list data is created that indicates, for each program, the stored position and reproduction order of the content data stored in a server device, and is stored into a storage means. Play instruction data including play list specification information for specifying the play list data is recorded onto a recording medium. A terminal reads out the play instruction data on the recording medium, according to which the terminal transmits the information for specifying the play list data to the server device and receives content data delivered from the server device.

(57) 要約: サーバ装置において蓄積しているコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶し、そのプレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを記録媒体に記録し、端末において記録媒体のプレイ指示データを読み出してそれに応じてサーバ装置にプレイリストデータ特定する情報を送信してサーバ装置からコンテンツデータの配信を受ける。

WO 2008/114389 A1

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

添付公開書類:
— 国際調査報告書

明 細 書

コンテンツ再生システム及びその制御方法

技術分野

[0001] 本発明は、コンテンツデータをネットワークを介して端末に配信してそこで再生するシステム及びその制御方法に関する。

背景技術

[0002] インターネット等のネットワークを利用して映像や音声を示すコンテンツデータを端末に配信するシステムがある。このようなシステムにおいては、コンテンツデータを蓄積したデータベースを有するサーバ装置と、少なくとも1つの端末とがネットワークを介して接続されている(例えば、特許文献1参照)。端末からサーバ装置にアクセスすると、サーバ装置では配信できるコンテンツを番組単位でリスト表示するためのメニューデータが端末に送信される。端末ではメニューデータに応じてリスト表示がされ、そのリスト表示からユーザが所望の番組を選択することによりサーバ装置にコンテンツ選択指令が届き、サーバ装置ではそのコンテンツ選択指令に対応したコンテンツデータをデータベースから読み出してストリーミング配信することが行われる。端末では配信されたコンテンツデータの再生が行われ、それによりユーザは映像や音声を得ることができる。

特許文献1:特開2003－69956号公報

発明の開示

発明が解決しようとする課題

[0003] しかしながら、上記したような従来のコンテンツ再生システムにおいては、コンテンツデータがストリーミング配信されて映像や音声が実際に端末で得られるまでには通常、端末のユーザは煩雑な操作を必要とする。例えば、サーバ装置の選択操作、パスワードを入力を含むユーザ認証操作、コンテンツ選択操作が必要とである。よって、年寄りや子供には操作が難しいためコンテンツデータの配信により映像や音声を容易に楽しむことはできないという問題がある。

[0004] 本発明が解決しようとする課題には、上記の欠点が一例として挙げられ、端末のユ

ーザが極めて簡単な操作でコンテンツデータの配信を受けて映像や音声を容易に楽しむことができるコンテンツ再生システム及びその制御方法を提供することが本発明の目的である。

課題を解決するための手段

[0005] 請求項1に係る発明のコンテンツ再生システムは、コンテンツデータを番組単位で蓄積した少なくとも1つのデータベースを有するコンテンツ配信サーバ装置と、コンテンツデータの再生機能を有する少なくとも1つの端末とがネットワークを介して接続されたコンテンツ再生システムであって、コンテンツ配信サーバ装置は、前記データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶して管理する管理手段と、前記プレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを作成するデータ作成手段と、前記プレイ指示データを記録媒体に記録する記録手段と、を備え、前記端末は、前記記録媒体の前記プレイ指示データを読み取る読取手段と、前記読取手段によって読み取られたプレイ指示データ中の少なくともプレイリスト特定情報を前記管理手段に送信する送信手段と、を備え、前記管理手段は、前記送信手段からの前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出し、その読み出した前記プレイリストデータに示された蓄積位置及び再生順番で番組毎に前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送し、前記端末は前記管理手段によって転送された前記コンテンツデータを受信して再生すること特徴としている。

[0006] 請求項6に係る発明のコンテンツ再生システムの制御方法は、コンテンツデータを番組単位で蓄積した少なくとも1つのデータベースを有するコンテンツ配信サーバ装置と、コンテンツデータの再生機能を有する少なくとも1つの端末とがネットワークを介して接続されたコンテンツ再生システムの制御方法であって、前記データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶して管理する管理ステップと、前記プレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを作成するステップと、前記プレイ指示データを記録媒体に記録するステップと、前記記録媒体の前記プレイ指

示データを前記端末にて読み取る読取ステップと、前記読取ステップにて読み取られたプレイ指示データ中の少なくともプレイリスト特定情報を前記コンテンツ配信サーバ装置に送信する送信ステップと、を備え、前記管理ステップでは、前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出し、その読み出した前記プレイリストデータに示された蓄積位置及び再生順番で番組毎に前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送し、前記端末ではその転送された前記コンテンツデータを受信して再生すること特徴としている。

図面の簡単な説明

[0007] [図1]本発明によるコンテンツ再生システムの構成を示すブロック図である。

[図2]コンテンツリストデータを示す図である。

[図3]プレイリスト登録動作を示すフローチャートである。

[図4]プレイリスト作成動作を示すフローチャートである。

[図5]クライアント端末からの再生動作を示すフローチャートである。

[図6]プレイリスト再編集動作を示すフローチャートである。

符号の説明

[0008] 1 コンテンツ配信サーバ装置

2 クライアント端末

11, 12 コンテンツサーバ

14 ゲートウエイサーバ14

15 LAN回線

16 記録媒体

発明を実施するための最良の形態

[0009] 請求項1に係る発明のコンテンツ再生システム及び請求項6に係る発明のコンテンツ再生システムの制御方法においては、コンテンツ配信サーバ装置では、データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータが作成されて記憶手段に保存され、そのプレイリストデータを特定するためのプレイ指示データが記録媒体に記録される。端末では、記録媒体のプレイ指示

データを読み取ってそのプレイ指示データ中の少なくともプレイリスト特定情報をコンテンツ配信サーバ装置に送信することが行われる。コンテンツ配信サーバ装置では、端末から受信したプレイリスト特定情報に対応したプレイリストデータが記憶手段から読み出され、そのプレイリストデータに示された蓄積位置及び再生順番で番組毎にコンテンツデータがデータベースから読み出されて端末に転送される。端末は転送されたコンテンツデータを受信して再生する。

[0010] よって、端末のユーザは記録媒体をセットするだけでコンテンツデータの配信を受けることができるので、映像や音声を容易に楽しむことができる。

実施例

[0011] 以下、本発明の実施例を図面を参照しつつ詳細に説明する。

[0012] 図1は本発明によるコンテンツ再生システムを示している。このコンテンツ再生システムは、コンテンツ配信サーバ装置1とクライアント端末2とを備えている。コンテンツ配信サーバ装置1とクライアント端末2とはインターネット等のネットワーク20によって接続されている。

[0013] コンテンツ配信サーバ装置1は第1及び第2コンテンツサーバ11，12、ネットワーク機能付き再生装置13及びゲートウエイサーバ14からなる。コンテンツサーバ11，12、再生装置13及びゲートウエイサーバ14はLAN回線15で互いに接続されている。コンテンツ配信サーバ装置1は一般家庭のホームサーバ装置或いは、オフィスの業務装置であっても良い。

[0014] 第1及び第2コンテンツサーバ11，12各々は、LAN回線15に接続可能なPC（パーソナルコンピュータ）やハードディスクレコーダからなり、コンテンツデータのデータベース11a，12aを備え、コンテンツ配信サーバ装置1内の再生装置13及びゲートウエイサーバ14にコンテンツデータを直接配信する機能を有している。また、クライアント端末2等の外部の端末からのデータ要求に応答してコンテンツデータをゲートウエイサーバ14を介して配信する機能を有している。コンテンツデータとはテレビの放送番組等の番組単位の映像データ及び音声データを含むデータであり、例えば、MPEG2形式で構成されている。データベースにおいてはコンテンツデータは番組毎のファイルとして存在する。

[0015] また、第1及び第2コンテンツサーバ11，12各々は配信可能なコンテンツデータについて番組名等の番組情報を示すコンテンツリストデータを有している。コンテンツリストデータは図2(a)及び(b)に示すように、少なくともコンテンツId、番組名Title、記録日時Date、記録時間長Duration等のを示すデータである。コンテンツIdはコンテンツデータの格納アドレス及びファイル名からなる。また、リストデータは新たなコンテンツデータがデータベースに加えられる毎にゲートウエイサーバ14に供給されるか、ゲートウエイサーバ14が定期的に第1及び第2コンテンツサーバ11，12各々にリストデータが更新されたかどうか問い合わせ、更新されている場合にリストデータの供給を受ける。

[0016] ゲートウエイサーバ14はコンテンツデータを送信先に転送する。コンテンツサーバ11又は12からクライアント端末2に向けて送信されたコンテンツデータはLAN回線15、ゲートウエイサーバ14、ネットワーク20を介してクライアント端末2に伝送される。

[0017] また、ゲートウエイサーバ14においては、ディスプレイ14aの他にキーボードやマウス等の操作部14bが備えられ、そのディスプレイ14aに表示されるメニュー映像に従ってユーザが操作部14bを直接操作してプレイリストを作成することができる。プレイリストは第1及び第2コンテンツサーバ11，12が備えている上記のコンテンツリストデータに応じて作成され、サーバの固有識別子、プレイリスト番号、コンテンツの格納位置（アドレス及びファイル名を含む）、番組名、記録日時、記録時間長、デジタル証明書を示す。作成されたプレイリストはゲートウエイサーバ14内のハードディスク装置等の記憶装置14cにプレイリストデータとして保存される。

[0018] ゲートウエイサーバ14はプレイリストデータの一部のデータを記録媒体16に記録するための記録装置14dを備えている。プレイリストデータの一部のデータとは少なくともサーバの固有識別子、プレイリスト番号及びデジタル証明書からなるプレイ指示データである。プレイ指示データのプレイリスト番号がプレイリスト特定情報である。記録媒体としてはこの実施例ではCD－R、DVD－R、DVD－RW等の書込可能なディスクが用いられるが、持ち運ぶことができるUSBメモリ等の半導体メモリでも良い。更に、Blutoothや赤外線通信等により外部とデータ通信が可能な携帯電話機を用いて携帯電話機内のメモリにプレイ指示データを書き込んでも良い。

[0019] 再生装置13は第1及び第2コンテンツサーバ11，12各々に記録されたコンテンツデータを選択的に再生することができ、また記録媒体16に書き込まれたプレイリストデータを読み取ることができる。

[0020] クライアント端末2はネットワーク20を介してゲートウエイサーバ14等の他の通信機器と通信する機能と、受信したコンテンツデータを再生して映像表示しかつ音声出力する機能とを有するPCで良い。また、クライアント端末2は再生装置13と同様の、通信機能を有する再生装置でも良い。クライアント端末2は記録媒体16に書き込まれたプレイ指示データを読み取るためにドライブ装置21を備えている。ドライブ装置21に記録媒体16が挿入されると、それによって自動的に記録媒体16に書き込まれたプレイ指示データを読み取って後述する通信再生動作を行うことができる。なお、PC以外のクライアント端末2としては、専用端末、携帯電話機、カーナビゲーション装置、携帯ゲーム端末が利用可能である。

[0021] 次に、かかる構成のコンテンツ再生システムのゲートウエイサーバ14において行われるプレイリスト登録動作について具体的に説明する。プレイリスト登録動作は上記したように、プレイリストを作成してそれを記憶装置14cに保存する動作である。

[0022] プレイリスト登録動作は、ユーザが新規のプレイリスト登録を上記のメニュー映像から選択操作することにより開始される。ゲートウエイサーバ14のプロセッサ14eは、プレイリスト登録動作では図3に示すように、先ず、新規プレイリスト番号Nを作成し（ステップS1）、第1パスワード及び第2パスワードを設定する（ステップS2，S3）。新規プレイリスト番号Nは予め定められた順番の番号であり、プレイリストの登録のために付けられる。第1パスワードはプレイリストを新規登録後に再編集する際に必要なパスワードである。第2パスワードは遠隔アクセスの際、例えば、クライアント端末2からゲートウエイサーバ14にアクセスする際に必要となるパスワードである。第1パスワード及び第2パスワードとしてはユーザによる操作部14bの操作によって任意の英数字を指定しても良い。或いは、プロセッサ14eによりランダムにそれらパスワードを生成してそれをユーザに対して表示しても良い。ただし、第1パスワード及び第2パスワード各々の設定は必須ではなく、いずれか一方或いは両方を省略しても良い。

[0023] 次に、ゲートウエイサーバ14のプロセッサ14eは、プレイリスト名を設定する（ステッ

プS4)。プレイリスト名としては初期名としてプレイリスト番号Nに基づいて例えば、「PlayList N:作成日時」がユーザに対して示されるが、ユーザが操作部14bを操作して任意の文字を入力することにより指定することが可能である。

[0024] そして、サーバの固有識別子、プレイリスト番号N、第1パスワード、第2パスワード及び作成日時に基づいてデジタル証明書を作成する(ステップS5)。サーバの固有識別子はゲートウエイサーバ14のネットワーク20上のアドレス位置を示し、例えば、IPアドレスである。プレイリスト番号N、第1及び第2パスワードはステップS1～S3で決定されたものである。デジタル証明書は、クライアント端末2等の遠隔地の端末でプレイリストを用いる際に正規の登録プレイリストであることを証明するために用いられる。

[0025] デジタル証明書の作成後、ゲートウエイサーバ14のプロセッサ14eは、プレイリスト作成を行う(ステップS6)。

[0026] プレイリスト作成では、図4に示すように、先ず、利用可能なコンテンツサーバの名称がディスプレイ14aに選択メニューとして表示される(ステップS61)。ユーザはその選択メニューに従って操作部14bの操作によってコンテンツサーバを選択する。この実施例では第1及び第2コンテンツサーバ11，12の名称、例えば、コンテンツ1、コンテンツ2の如くが選択メニューとして表示される。ユーザがこの選択メニューから選択操作を行うことにより、コンテンツサーバが選択される。実際にはコンテンツ1、コンテンツ2のような表示ではなく、レコーダの機種名、PCのネットワーク配信ソフトのアプリケーション名などが表示されても良い。また、ユーザはどのサーバにどのコンテンツがあるのかか、把握していない状況もありえるので、全てのコンテンツサーバのコンテンツを一覧にして、コンテンツの付属情報として、どのコンテンツサーバ内のコンテンツであるのかを表示するなどして、ステップS61と次のステップS62を1ステップで実現する方法でも良い。更に、コンテンツ選択の補助として、ソート機能を有しても良い。

[0027] そして、その選択されたコンテンツサーバのコンテンツがディスプレイ14aにリスト表示される(ステップS62)。リスト表示は第1及び第2コンテンツサーバ11，12各々のコンテンツリストデータに応じて行われる。コンテンツリストデータにはコンテンツサーバが配信可能なコンテンツの番組名が示されているので、それが読み出されて番組リストとして表示される。ユーザは操作部14bの操作によって番組リストから1つの番組を

任意に選択することができる。1つの番組が選択されると、その選択番組についてのリストデータ内の番組情報が読み出されて、それがプレイリストデータにプレイ情報として加えられ(ステップS63)、そのプレイリストデータの現在の内容がディスプレイ14aに表示される(ステップS64)。プレイリストデータにおいては、第1プレイ情報、第2プレイ情報、……のように選択順にブロックが形成される。プレイリストデータの現在の内容表示ではユーザによって選択された番組がその番組名で選択順に示される。なお、選択順が再生順でもある。再生動作については後述するが、第1プレイ情報に対応した番組のコンテンツデータが最初に再生されることになる。

[0028] ステップS64の実行後、ユーザが更なるコンテンツのプレイリストへの追加を指示したか否かを判別する(ステップS65)。操作部14bの操作によって更なるコンテンツのプレイリストへの追加が指示された場合には、ステップS61が再度実行される。一方、更なるコンテンツのプレイリストへの追加が指示されていない場合には、ユーザがプレイリスト作成の終了を指示したか否かを判別する(ステップS66)。操作部14bの操作によって終了が指示された場合にはプレイリスト作成が終了したと判断される。

[0029] プレイリスト作成の作成後、ゲートウエイサーバ14のプロセッサ14eは、その時点におけるプレイリストデータを記憶装置14cに保存して管理する(ステップS7)。その保存されるプレイリストデータには上記のサーバの固有識別子、プレイリスト番号N、第1パスワード、第2パスワード、作成日時及びデジタル証明書が付加される。第1パスワード及び第2パスワードについてはステップS2, 3で一方又は双方が省略された場合には省略されたパスワードはプレイリストデータに付加されない。そして、記録媒体16にプレイリストデータのうちの少なくともサーバの固有識別子、プレイリスト番号N及びデジタル証明書からなるプレイ指示データの書き込みを記録装置14dに対して指令する(ステップS8)。その書き込み指令に応じて記録装置14dは記録媒体16にプレイ指示データを書き込む。このようなプレイ指示データが書き込まれた記録媒体16をユーザは記録装置14dから取り出して持ち運ぶことができる。

[0030] なお、プレイリストデータには再生履歴が含まれる。再生履歴は前回の再生コンテンツ(コンテンツId)の再生中断位置情報である。また、クライアント端末2からゲートウエイサーバ14にアクセスする際に第2パスワードの入力を要求する場合には、プレイ

指示データには第2パスワードが含まれる。ただし、第2パスワードについては、プレイ指示データを記録した記録媒体が盗まれたり、紛失した場合に第2パスワードが無意味なものになってしまう可能性があるので、実際には記録媒体には第2パスワードをプレイ指示データと共に記録せず、アクセスの際にはデジタル証明書と入力されたパスワードからなる別の証明書を作り、それによってゲートウエイにアクセス認証をする形の方が良い。

[0031] 次に、この記録媒体16を用いてクライアント端末2でコンテンツ再生する場合の動作について説明する。なお、クライアント端末2を操作するユーザはゲートウエイサーバ14においてプレイリスト登録を操作したユーザと同一でも良いし、別のユーザでも良い。

[0032] クライアント端末2のドライブ装置21に記録媒体16がセットされると、コンテンツ再生動作が開始される。図5に示すように、コンテンツ再生動作ではクライアント端末2のプロセッサは記録媒体16に記録されたプレイ指示データをドライブ装置21を介して読み取り(ステップS11)、サーバへのアクセスを行って認証を要求する(ステップS12)。ステップS11ではプレイ指示データに含まれているサーバの固有識別子、プレイリスト番号N及びデジタル証明書が得られる。ステップS12ではその得られた固有識別子で示されるアドレス位置にアクセスが行われる。この実施例ではクライアント端末2からゲートウエイサーバ14へのアクセスが行われて通信が可能になるとする。認証要求ではプレイリスト番号N及びデジタル証明書が送信される。

[0033] ゲートウエイサーバ14は認証要求を受信すると、ゲートウエイサーバ14のプロセッサ14eは認証要求に含まれるプレイリスト番号N及びデジタル証明書に応じて認証動作を行う(ステップS13)。認証動作ではデジタル証明書が正規のものであるかが判別され、その判別ではプレイリスト番号に対応して記憶装置14cに保存されているデジタル証明書が参照される。認証動作の結果が判別され(ステップS14)、認証不可ならば、認証不可通知がクライアント端末2に送信される(ステップS15)。

[0034] ゲートウエイサーバ14が認証動作するのではなく、専用の認証サーバが認証動作を行う形態でも勿論良い。その場合は、クライアント端末2はまず、その認証サーバにアクセスし、認証サーバによってデジタル証明書が認証されると、ゲートウエイサーバ

14のアドレスがクライアント端末2に通知され、それから、クライアント端末2がゲートウエイサーバ14にアクセスすることになる。

[0035] クライアント端末2のプロセッサは認証不可通知を受信すると(ステップS16のYes)、そのユーザにコンテンツ再生ができないことをディスプレイに表示する(ステップS17)。ステップS17ではサーバが認証しなかったことを表示しても良い。

[0036] ゲートウエイサーバ14のプロセッサ14eは、認証動作の結果が認証可ならば、プレイリスト番号Nに対応したプレイリストデータを記憶装置14cから読み出す(ステップS18)。プレイリストデータに再生履歴があるか否かを判別する(ステップS19)。再生履歴がある場合には、その再生履歴、すなわちコンテンツId及び再生中断位置情報に応じてコンテンツデータの配信を指令する(ステップS20)。再生履歴がない場合には、プレイリストデータの第1プレイ情報によって指定されるコンテンツデータの配信を指令する(ステップS21)。

[0037] ステップS20又はS21の指令に応じて第1コンテンツサーバ11又は第2コンテンツサーバ12は指定のコンテンツデータを読み出してゲートウエイサーバ14に供給する。ゲートウエイサーバ14は第1コンテンツサーバ11又は第2コンテンツサーバ12からのコンテンツデータをクライアント端末2に向けて転送する(ステップS22)。コンテンツデータはいわゆるストリーミングデータとしてクライアント端末2に送信される。

[0038] ゲートウエイサーバ14のプロセッサ14eは、1番組についてのコンテンツデータの読み出しが終了すると(ステップS23のYes)、プレイリストデータの次のプレイ情報によって指定されるコンテンツデータの読み出しを指令する(ステップS24)。ステップS24の指令に応じて第1コンテンツサーバ11又は第2コンテンツサーバ12は指定のコンテンツデータを読み出してゲートウエイサーバ14に供給する。そして、ステップS22によってゲートウエイサーバ14は第1コンテンツサーバ11又は第2コンテンツサーバ12からのコンテンツデータをクライアント端末2に向けて転送する。

[0039] クライアント端末2のプロセッサは、コンテンツデータを受信すると、コンテンツデータを再生して映像信号及び音声信号を生成する(ステップS25)。その映像信号に応じてクライアント端末2のディスプレイに映像が表示され、その音声信号に応じてクライアント端末2のスピーカから音響出力が得られる。

[0040] クライアント端末2においては、コンテンツ再生動作中にユーザによって再生停止操作が行われたか否かが判別される(ステップS26)。再生停止操作が行われた場合には、再生停止指令がゲートウエイサーバ14に送信される(ステップS27)。

[0041] ゲートウエイサーバ14のプロセッサ14eは、ステップS22にてコンテンツデータの転送開始後、クライアント端末2からの再生停止指令を受信したか否かを判別する(ステップS28)。再生停止指令を受信した場合には、コンテンツデータのクライアント端末2に向けての転送を停止し(ステップS29)、コンテンツデータを配信中の第1コンテンツサーバ11又は第2コンテンツサーバ12に配信停止を指令し(ステップS30)、記憶装置14c内のプレイリスト番号Nに対応したプレイリストデータの再生履歴を更新する(ステップS31)。すなわち、プレイリストデータの再生履歴更新ではコンテンツデータの転送停止した時点における当該コンテンツデータに応じてコンテンツId及び再生中断位置情報を書き換えることが行われる。

[0042] なお、クライアント端末2のドライブ装置21に記録媒体16がセットされると、直ちにユーザに対して上記した第2パスワードの入力を要求しても良い。ユーザによる入力操作によって入力されたパスワードがステップS3で設定された第2パスワードに等しい場合にのみコンテンツ再生動作が開始される。

[0043] ゲートウエイサーバ14において、ユーザがプレイリスト再編集を上記のメニュー映像から選択操作すると、プレイリスト再編集動作が開始される。

[0044] プレイリスト再編集動作においては、プロセッサ14eはユーザに対してプレイリスト番号Nの入力を要求する(ステップS41)。これはディスプレイ14aにプレイリスト番号Nの入力要求又は選択が表示される。プレイリスト番号Nが入力されると、プレイリスト番号Nに対応したプレイリストデータを記憶装置14cから読み出す(ステップS42)。読み出したプレイリストデータに第1パスワードが含まれているか否かを判別する(ステップS43)。プレイリストデータに第1パスワードが含まれている場合には、第1パスワードの入力をユーザに対して要求する(ステップS44)。ユーザの操作部14bの入力操作によってパスワードが入力されると、その入力パスワードが第1パスワードと一致するか否かを判別する(ステップS45)。ステップS45にてパスワードが一致すると判別すると、プレイリスト番号Nのプレイリストデータの現在の内容をディスプレイ14aに表

示する（ステップS46）。プレイリストデータの現在の内容表示ではユーザによって選択された番組がその番組名で選択順に示される。

[0045] ステップS43の判別においてプレイリストデータに第1パスワードが含まれていない場合には、ゲートウエイサーバ14のプロセッサ14eは直ちにステップS46を実行する。

[0046] ステップS46の実行後、例えば、編集開始をユーザが指令する操作を行うと上記のステップS6のプレイリスト作成動作（ステップS61～S66）が行われる。なお、プレイリスト再編集動作では番組を追加するだけでなく、既に設定した番組を変更したり、再生順を変更しても良い。

[0047] プレイリスト再編集は、プレイリスト指示データを記録した記録媒体を用いて、クライアント端末2で再生動作を行った後でも可能であり、その場合は、記録媒体のデータを更新することなく、再生するコンテンツの追加や、削除が可能となる。また、記録媒体の紛失や盗難により、正規でないユーザがゲートウエイサーバ14にアクセスする恐れが生じた場合には、当該プレイリストを削除することにより、無効化することができる。

[0048] このように、本発明によるコンテンツ再生システムにおいては、番組単位のコンテンツデータの再生順を示すプレイリストデータが作成された後、そのプレイリストデータを指定するプレイ指示データが記録媒体16に記録されると、その記録媒体16をクライアント端末2のドライブ装置21にセットするだけでプレイリストデータに従ってコンテンツデータの再生動作が行われる。クライアント端末2のユーザの操作としては記録媒体16をドライブ装置21に挿入或いは直接セットするだけで良いので、難しい操作をしなくてもコンテンツサーバに保存されたコンテンツデータのストリーミング再生が可能となり、そのユーザは番組のデータ再生映像及び音声を楽しむことができる。よって、本発明による再生システムは年寄りや子供のように難しい操作ができない端末ユーザには特に好適である。

請求の範囲

[1] コンテンツデータを番組単位で蓄積した少なくとも1つのデータベースを有するコンテンツ配信サーバ装置と、コンテンツデータの再生機能を有する少なくとも1つの端末とがネットワークを介して接続されたコンテンツ再生システムであって、

コンテンツ配信サーバ装置は、前記データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶して管理する管理手段と、

前記プレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを作成するデータ作成手段と、

前記プレイ指示データを記録媒体に記録する記録手段と、を備え、

前記端末は、前記記録媒体の前記プレイ指示データを読み取る読取手段と、

前記読取手段によって読み取られたプレイ指示データ中の少なくともプレイリスト特定情報を前記管理手段に送信する送信手段と、を備え、

前記管理手段は、前記送信手段からの前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出し、その読み出した前記プレイリストデータに示された蓄積位置及び再生順番で番組毎に前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送し、前記端末は前記管理手段によって転送された前記コンテンツデータを受信して再生すること特徴とするコンテンツ再生システム。

[2] 前記端末は、前記コンテンツデータの再生中に操作に応じて再生停止指令を発生してその再生停止指令を前記管理手段に送信する手段を有し、

前記管理手段は、前記再生停止指令に応答して前記端末への前記コンテンツデータの転送を停止し、その転送停止のコンテンツデータについてのコンテンツ中断位置情報を示す再生履歴を前記プレイリストデータに加えて前記記憶手段に記憶する手段と、

前記プレイリストデータを前記記憶手段から読み出したときには前記プレイリストデータ中に前記再生履歴があるか否かを判別する手段と、を有し、

前記再生履歴がある場合には前記再生履歴に示される前記コンテンツ中断位置情

報に応じて前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送することを特徴とする請求項1記載のコンテンツ再生システム。

[3] 前記コンテンツ配信サーバ装置は前記1つのデータベースを含む複数のデータベースを有し、

前記プレイリストデータは前記複数のデータベース各々に蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すこと特徴とする請求項1記載のコンテンツ再生システム。

[4] 前記プレイ指示データは前記プレイリスト特定情報の他に、前記管理手段の固有識別子と、前記管理手段が認証用のデジタル証明書とを含み、

前記送信手段は、前記読取手段によって読み取られたプレイ指示データ中の前記プレイリスト特定情報及び前記デジタル証明書を、前記管理手段の固有識別子によって示される前記管理手段のアドレスに向けて送信し、

前記管理手段は、前記送信手段からの前記デジタル証明書に応じて認証動作を行って前記プレイリスト特定情報が正規のものであることを確認した後、前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出すこと特徴とする請求項1記載のコンテンツ再生システム。

[5] 前記管理手段、前記データ作成手段及び前記記録手段はゲートウエイサーバ内に構成され、

前記ゲートウエイサーバと前記データベースを有するコンテンツサーバとローカルネットワークを介して接続されていることを特徴とする請求項1記載のコンテンツ再生システム。

[6] コンテンツデータを番組単位で蓄積した少なくとも1つのデータベースを有するコンテンツ配信サーバ装置と、コンテンツデータの再生機能を有する少なくとも1つの端末とがネットワークを介して接続されたコンテンツ再生システムの制御方法であって、

前記データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶して管理する管理ステップと、

前記プレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを

作成するステップと、

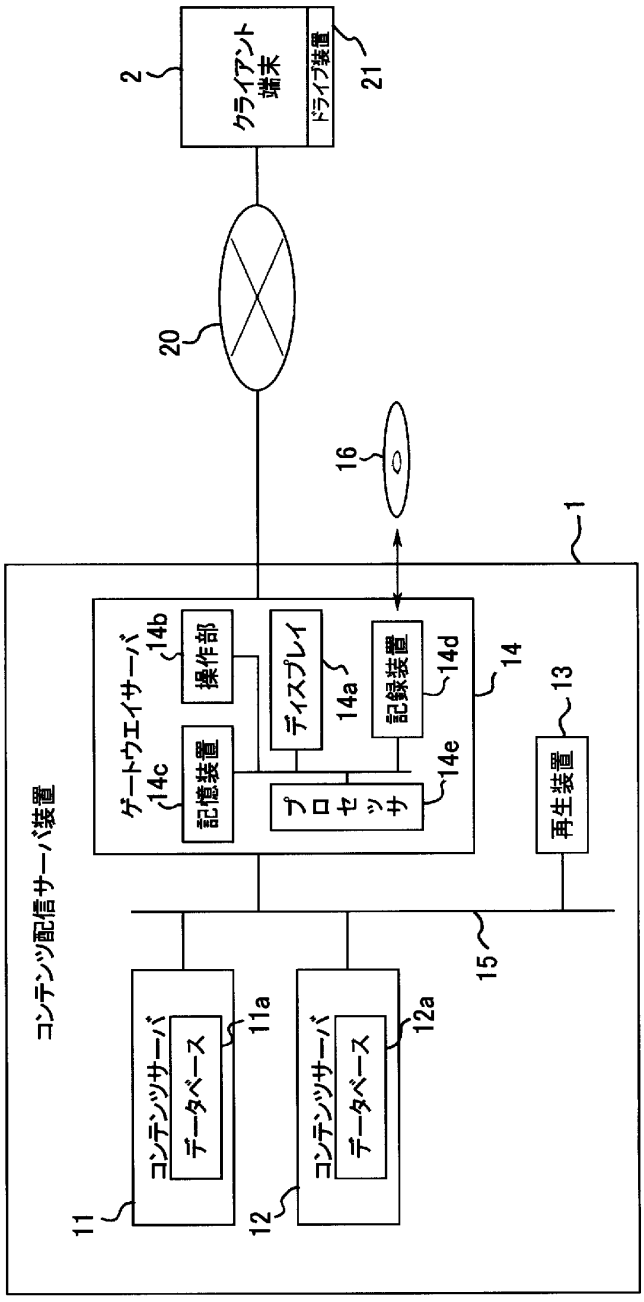
前記プレイ指示データを記録媒体に記録するステップと、

前記記録媒体の前記プレイ指示データを前記端末にて読み取る読取ステップと、

前記読取ステップにて読み取られたプレイ指示データ中の少なくともプレイリスト特定情報を前記コンテンツ配信サーバ装置に送信する送信ステップと、を備え、

前記管理ステップでは、前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出し、その読み出した前記プレイリストデータに示された蓄積位置及び再生順番で番組毎に前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送し、前記端末ではその転送された前記コンテンツデータを受信して再生すること特徴とする制御方法。

[図1]


2
クライアント端末
ドライブ装置
21
20
16
1
コンテンツ配信サーバ装置
ゲートウエイサーバ
14b
操作部
14c
記憶装置
ディスプレイ
14a
プロセッサ
14e
記録装置
14d
14
再生装置
13
15
コンテンツサーバ
データベース
11a
11
コンテンツサーバ
データベース
12a
12

[図2]

(a)

第1コンテンツサーバのコンテンツリストデータ

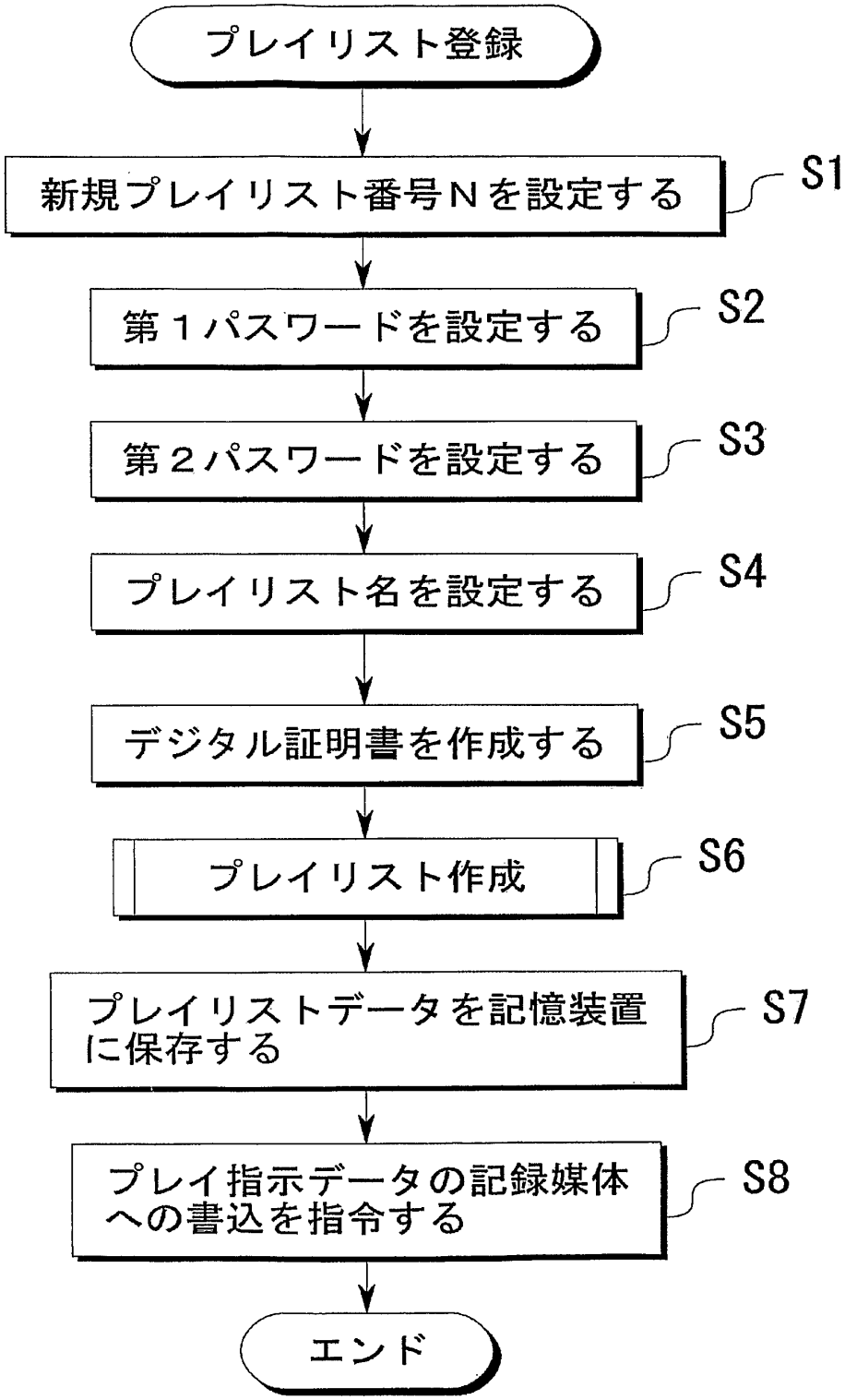
Id=/Video/PS_28.mpg
Title:7時のニュース;
Date: 2006-08-23T11:30:00
Duration=00:29:41.000
Info=・・・
Id=/Video/PS_29.mpg
Title:ワイド！スクランブル;
Date: 2006-08-30T10:00:00
Duration=01:00:00.000
Info=・・・
Id=/Video/PS_30.mpg
Title:駅伝中継;
Date: 2006-09-01T13:30:00
Duration=03:29:05.000
Info=・・・
Id=/Video/PS_31.mpg
Title:洋画劇場;
Date: 2006-09-02T21:30:00
Duration=01:55:00.000
Info=・・・
Id=/Video/PS_32.mpg
Title: 笑いのオリンピック;
Date: 2006-09-03T22:00:00
Duration=00:59:00.000
Info=・・・
Id=/Video/PS_33.mpg
Title: ドラマ「風」;
Date: 2006-09-04T19:30:00
Duration=00:58:30.000
Info=・・・

(b)

第2コンテンツサーバのコンテンツリストデータ

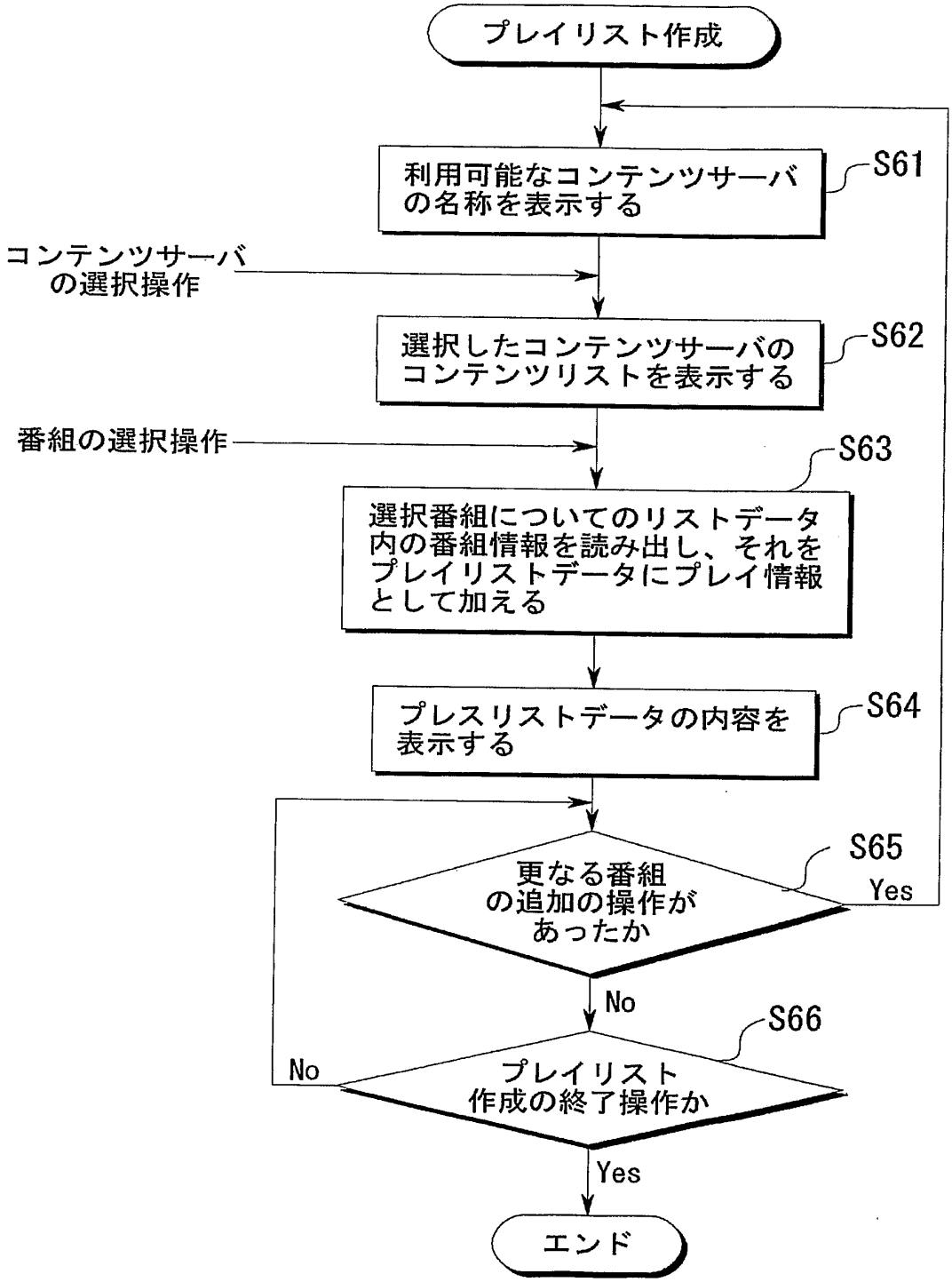
Id=/Video/PS_01.mpg
Title:9時のニュース;
Date: 2006-08-10T21:00:00
Duration=00:45:27.000
Info=・・・
Id=/Video/PS_02.mpg
Title:情報番組;
Date: 2006-08-16:T10:00:00
Duration=01:00:00.000
Info=・・・
Id=/Video/PS_03.mpg
Title:野球中継;
Date: 2006-09-01T18:56:00
Duration=002:43:05.000
Info=・・・

[図3]



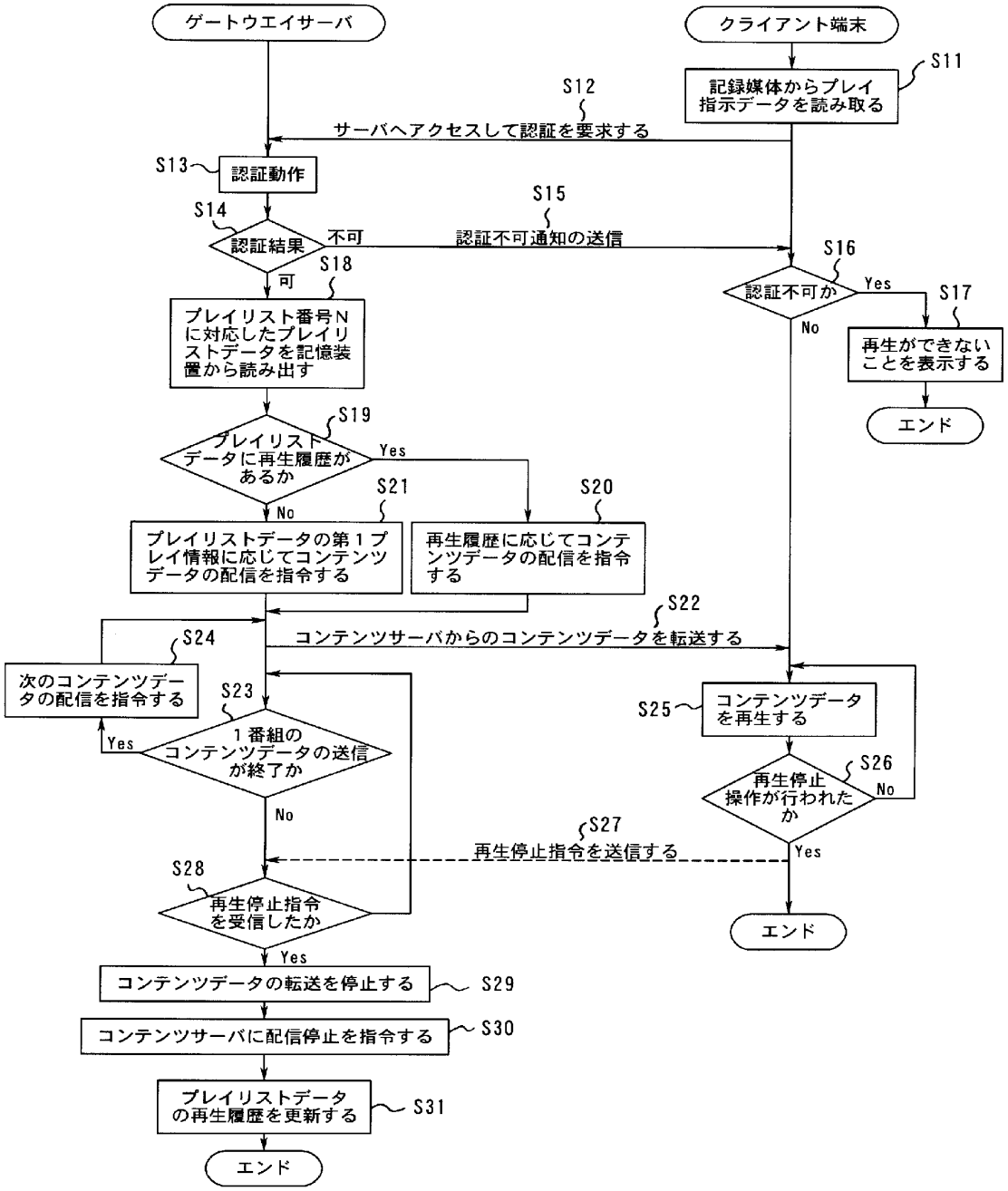
差替え用紙 (規則26)

[図4]

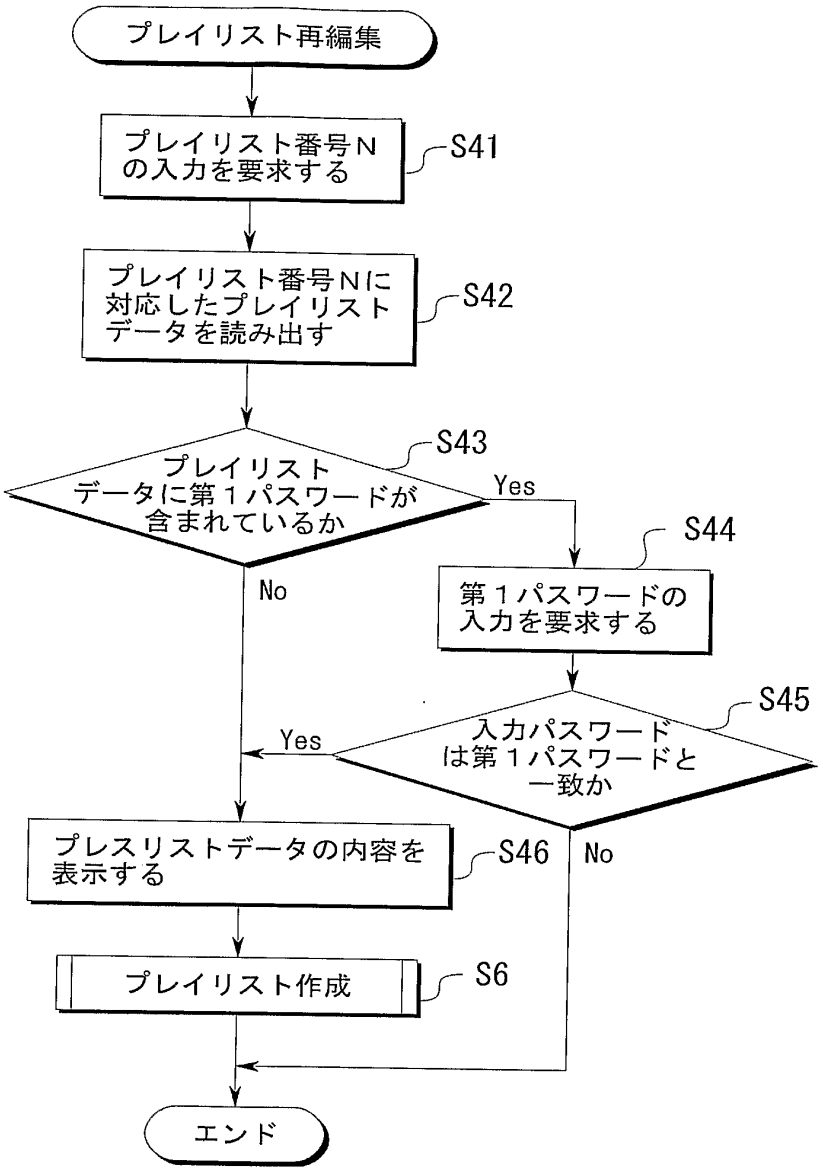


差替え用紙 (規則26)

[図5]


ゲートウエイサーバ
クライアント端末
S11
記録媒体からプレイ指示データを読み取る
S12
サーバへアクセスして認証を要求する
S13
認証動作
S14
認証結果
不可
S15
認証不可通知の送信
S16
認証不可か
Yes
S17
再生ができないことを表示する
エンド
No
可
S18
プレイリスト番号Nに対応したプレイリストデータを記憶装置から読み出す
S19
プレイリストデータに再生履歴があるか
Yes
No
S21
プレイリストデータの第1プレイ情報に応じてコンテンツデータの配信を指令する
S20
再生履歴に応じてコンテンツデータの配信を指令する
S22
コンテンツサーバからのコンテンツデータを転送する
S24
次のコンテンツデータの配信を指令する
S23
1番組のコンテンツデータの送信が終了か
Yes
No
S25
コンテンツデータを再生する
S26
再生停止操作が行われたか
No
Yes
S27
再生停止指令を送信する
S28
再生停止指令を受信したか
Yes
エンド
コンテンツデータの転送を停止する
S29
コンテンツサーバに配信停止を指令する
S30
プレイリストデータの再生履歴を更新する
S31
エンド

[図6]



差替え用紙（規則26）

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2007/055548

A. CLASSIFICATION OF SUBJECT MATTER
H04N7/173(2006.01)i, *G06F21/20*(2006.01)i, *G10K15/02*(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04N7/16-7/173, G06F21/20, G10K15/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2007
Kokai Jitsuyo Shinan Koho 1971-2007 Toroku Jitsuyo Shinan Koho 1994-2007

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 2006-172392 A (Kenwood Corp.), 29 June, 2006 (29.06.06), Par. Nos. [0068] to [0069]; all drawings (Family: none)	1-3,5,6 4
Y A	WO 2003/102919 A1 (Onkyo Corp.), 11 December, 2003 (11.12.03), Pages 43 to 56; Figs. 24 to 29 & AU 2003/241772 A1 & EU 1508892 A1 & KR 2005/003371 A & US 2005/0203991 A1 & CN 1659623 A	1-3,5,6 4

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 June, 2007 (15.06.07)	26 June, 2007 (26.06.07)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2007/055548

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 2001-249694 A (Matsushita Electric Industrial Co., Ltd.), 14 September, 2001 (14.09.01), Par. Nos. [0272] to [0281]; Figs. 74 to 77 & EP 1056093 A1 & WO 2000/074060 A1 & CN 1321319 A & KR 2001-085310 A & MX 2001/000997 A1 & US 6832293 B1	2 1,3-6
A	JP 2006-47644 A (Denso Corp.), 16 February, 2006 (16.02.06), Par. Nos. [0053] to [0083]; Figs. 1 to 16 (Family: none)	1-6
A	WO 2006/092996 A1 (Matsushita Electric Industrial Co., Ltd.), 08 September, 2006 (08.09.06), All pages; all drawings (Family: none)	1-6

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

国際調査報告

国際出願番号　ＰＣＴ／ＪＰ２００７／０５５５４８

Ａ．　発明の属する分野の分類（国際特許分類（ＩＰＣ））

Int.Cl.　H04N7/173(2006.01)i, G06F21/20(2006.01)i, G10K15/02(2006.01)i

Ｂ．　調査を行った分野

調査を行った最小限資料（国際特許分類（ＩＰＣ））

Int.Cl.　H04N7/16 - 7/173, G06F21/20, G10K15/02

最小限資料以外の資料で調査を行った分野に含まれるもの

日本国実用新案公報	１９２２－１９９６年
日本国公開実用新案公報	１９７１－２００７年
日本国実用新案登録公報	１９９６－２００７年
日本国登録実用新案公報	１９９４－２００７年

国際調査で使用した電子データベース（データベースの名称、調査に使用した用語）

Ｃ．　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求の範囲の番号
Y A	JP 2006-172392 A（株式会社ケンウッド）2006.06.29, 段落[0068]-[0069], 全図（ファミリーなし）	1-3,5,6 4
Y A	WO 2003/102919 A1（オンキヨー株式会社）2003.12.11, 第43-56頁, 第24-29図 & AU 2003/241772 A1　& EU 1508892 A1 & KR 2005/003371 A　& US 2005/0203991 A1 & CN 1659623 A	1-3,5,6 4

☑　Ｃ欄の続きにも文献が列挙されている。　　☐　パテントファミリーに関する別紙を参照。

＊　引用文献のカテゴリー
「Ａ」特に関連のある文献ではなく、一般的技術水準を示すもの
「Ｅ」国際出願日前の出願または特許であるが、国際出願日以後に公表されたもの
「Ｌ」優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献（理由を付す）
「Ｏ」口頭による開示、使用、展示等に言及する文献
「Ｐ」国際出願日前で、かつ優先権の主張の基礎となる出願の日の後に公表された文献
「Ｔ」国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの
「Ｘ」特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの
「Ｙ」特に関連のある文献であって、当該文献と他の１以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの
「＆」同一パテントファミリー文献

国際調査を完了した日 １５．０６．２００７	国際調査報告の発送日 ２６．０６．２００７
国際調査機関の名称及びあて先 日本国特許庁（ＩＳＡ／ＪＰ） 郵便番号１００－８９１５ 東京都千代田区霞が関三丁目４番３号	特許庁審査官（権限のある職員）　５Ｃ　９７４６ 古川　哲也 電話番号　０３－３５８１－１１０１　内線　３５４１

様式ＰＣＴ／ＩＳＡ／２１０（第２ページ）（２００５年４月）

Ｃ（続き）．　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求の範囲の番号
Y A	JP 2001-249694 A（松下電器産業株式会社）2001.09.14, 段落[0272]-[0281]，第74-77図 & EP 1056093 A1　& WO 2000/074060 A1 & CN 1321319 A　& KR 2001-085310 A & MX 2001/000997 A1　& US 6832293 B1	2 1,3-6
A	JP 2006-47644 A（株式会社デンソー）2006.02.16, 段落[0053]-[0083]，第1-16図（ファミリーなし）	1-6
A	WO 2006/092996 A1（松下電器産業株式会社）2006.09.08, 全頁，全図（ファミリーなし）	1-6

LINKPLAY EXHIBIT 1004
Page 3963 of 4822

Electronic Acknowledgement Receipt	
EFS ID:	30222068
Application Number:	90013959
International Application Number:	
Confirmation Number:	9548
Title of Invention:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK
First Named Inventor/Applicant Name:	9213357
Customer Number:	107361
Filer:	John Gerrard Tolomei/Jeffrey P. Armstrong
Filer Authorized By:	John Gerrard Tolomei
Attorney Docket Number:	04-0401-REEXAM (14-1800-R
Receipt Date:	31-AUG-2017
Filing Date:	16-JUN-2017
Time Stamp:	18:36:23
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Foreign Reference	WO9961985A1_EFS.PDF	3747367 a91b3429d3b1367d12c8ed7179e7e70965 9e2571	no	95
Warnings:					

Information:					
2	Foreign Reference	WO0153994_EFS.PDF	5933951 f022864d4a3282c77262376253e553bf82be463b	no	124
Warnings:					
Information:					
3	Foreign Reference	WO2003093950A2.PDF	7382515 c2230b06f8f9c6abae7af849b7f54a1b1eaa04e7	no	147
Warnings:					
Information:					
4	Foreign Reference	WO2005013047A2_EFS.PDF	9206725 6d8331a1eb9f731b77bb38214d85b58240fed407	no	143
Warnings:					
Information:					
5	Foreign Reference	WO2007023120A1.PDF	1574651 e190d69e8ea31b006ac1311207c60121cd28b598	no	33
Warnings:					
Information:					
6	Foreign Reference	WO2007127485A2.PDF	1743497 51dbdbf632a2131bb27538bd84dc36132b5c830f	no	32
Warnings:					
Information:					
7	Foreign Reference	WO2007131555A1.PDF	2374487 f1e473bd1adddf7fe9604ba6392202e2eef23bc3	no	49
Warnings:					
Information:					
8	Foreign Reference	WO2007135581A2.PDF	1027402 74775785e488515e2fcb8e7a5102e9f18cd59150	no	19
Warnings:					
Information:					

9	Foreign Reference	WO2008082350A1.PDF	837564 5c10dac2e1b463b41ea0fb6fb3c9ce2d804a33a1	no	23
Warnings:					
Information:					
10	Foreign Reference	WO2008114389.PDF	1149796 504f681538790f754ba2b307b8e2fd4c7077457c	no	27
Warnings:					
Information:					
11	Non Patent Literature	CANADIAN_NO_2842342_OFFICE_ACTION_4-4-16_V2.PDF	5278543 63f607f2a2c4796a17091456a25caa7a3088fa64	no	5
Warnings:					
Information:					
12	Non Patent Literature	CANADIAN_NO_2842342_OFFICE_ACTION_9-14-15_V2.PDF	247332 c634bfcb086987bfafda72a74a9693cd2377e6ef	no	2
Warnings:					
Information:					
13	Non Patent Literature	CEN_1995.PDF	12536896 4889122ea8a7b54b9767ff674a11d92674f59442	no	12
Warnings:					
Information:					
14	Non Patent Literature	CHAKRABARTI_2004.PDF	261907 80f1076f7b536daab366329f36023ce0422508ba	no	6
Warnings:					
Information:					
15	Non Patent Literature	CHANGE_NOTIFICATION_AVAGO0042-V2.PDF	448506 34643fd4abc2cf948b4d151003fa21499a50c8c4	no	2
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16	Non Patent Literature	CHINESE_NO_201380044468_OFFICE_ACTION_12-20-16.PDF	427357 7384c644704dedaa27db6624b76ca7b3441d45cd	no	16
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17	Non Patent Literature	CHINESE_NO_201380044380_OFFICE_ACTION_7-5-16.PDF	599681 eb74c69370ce5abe4baff0064abb5c39e44719fa	no	25
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22	Non Patent Literature	CREATIVE_CONNECTINGBLUETOOTHDEVICES.PDF	203394 b0c5a61de0182c2a01d7fe19a965e28d90289ad3	no	2
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23	Non Patent Literature	CROWN_PIP_MANUAL_2004_68_PAGES.PDF	3402875 bd58fdeac41e1d1c0dc9fc8d71bfb1c31045ccb4	no	68
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24	Non Patent Literature	DANNENBERG_2001.PDF	8402099 6a1e14591fac14b428f173e4549fb72bac655040	no	4
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25	Non Patent Literature	DANNENBERG_1993.PDF	12753317 6aa78fb27e1db3f44c2e3e8e8365012df4289ae4	no	8
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37	Non Patent Literature	EUROPEAN_NO_13184747-7_EXTENDED_SEARCH_REPORT_02-28-14-V2.PDF	275453 48d797771408dba3d73f798cea3e9f65107b2407	no	8
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40	Non Patent Literature	EUROPEAN_NO_138086236-1502_EXAMINATION_REPORT_10-24-16.PDF	125370 17ccd8f3f4b2a143762e0a38304d1ce4c5e0c505	no	4
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44	Non Patent Literature	90013423_FILE_HISTORY_12-5-16.PDF	17403263 e59ac9b6d06990a9403e800c1bea026a105c7daf	no	313
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51	Non Patent Literature	FOA_10816217_30JUN2008.PDF	838826 6c76e502e675fb822118de17054bb2eaca976487	no	30
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52	Non Patent Literature	13848932_FINAL_OA_13-0317_6-2-17_32PAGES.PDF	1150157 2d24b766a699b6b6db2506ac88ab65a69e63b3b7	no	32
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53	Non Patent Literature	13298090_FOA_7-3-12_46PAGES.PDF	1761958 4587543944d15fb1e54d856fb334bce3086a9ca7	no	46
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54	Non Patent Literature	13705176_FOA_06-03-2016.PDF	859254 392c30c0f724bc76d4002161681d787e15ccb77c	no	24
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55	Non Patent Literature	13864251_FINAL_OA_3-3-15.PDF	454610 2c7c737ae1fd3642d55b1c7d1545fc7b3c7626d3	no	13
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56	Non Patent Literature	13848904_FINAL_OA_3-4-15.PDF	536474 ad8f1fe749737534978777719ce54b1fe84bc07da	no	16
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Information:					
57	Non Patent Literature	13618829_FOA_12-0903_7-5-13_22pages.PDF	763235 6840fe76389b4a4b191da0e526923b9453c10640	no	22
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58	Non Patent Literature	13888203_FINAL_REJECTION_3-5-15.PDF	452378 a66666dc96254 68e81471aefa1f2fd2609476f93	no	13
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59	Non Patent Literature	14486667_FOA_03-08-2017.PDF	1405490 0c2f50742710f286d8667fb88512715a7bb4a489	no	39
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60	Non Patent Literature	13907666_FOA_06-05-14.PDF	407723 a7adfe78c33770836235c29d95ed63b90b3726d3	no	12
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		Total Files Size (in bytes):	222690670		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt	
EFS ID:	30235212
Application Number:	90013959
International Application Number:	
Confirmation Number:	9548
Title of Invention:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK
First Named Inventor/Applicant Name:	9213357
Customer Number:	107361
Filer:	John Gerrard Tolomei/Jeffrey P. Armstrong
Filer Authorized By:	John Gerrard Tolomei
Attorney Docket Number:	04-0401-REEXAM (14-1800-R
Receipt Date:	31-AUG-2017
Filing Date:	16-JUN-2017
Time Stamp:	18:39:55
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	MICROSOFT_WINDOWS_FILE_AND_PRINTER_SHARE_NOV2003_65PAGES.PDF	5516100 19593193f4a86aac2fc42da33e516cf584afb293	no	65
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2	Non Patent Literature	MILLS_NETWORKTIMEPROTOCOL_1992-V2.PDF	20484 aa3f9676a0a4633642aff8fcea935b1e297a522d	no	7
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3	Non Patent Literature	MILLS_ACMSIGCOMM_COMPCOMMREVIEW_1994_24_28.PDF	259733 8125058f649863b2ee78e95e79519f8cd1a8012d	no	16
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4	Non Patent Literature	MRC44_FOUR_ZONE.PDF	16084736 ec4982b2ff224de138570e8c6d3bf25ab00e3e8a	no	52
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5	Non Patent Literature	MOTOROLA_2001-V2.PDF	9111149 802a59cc70cb70a70dbe858a7f49abfdf61ea3e0	no	111
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6	Non Patent Literature	SMPTE_MADE_SIMPLE_TIMELINE_46PAGES.PDF	3022054 2a88cd7c1d356ad7add38a86fa6364256ed9e6ca	no	46
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7	Non Patent Literature	NETWORK_TIME_PROTOCOL_DM_0397417-536_120PAGES_PART1.PDF	12964521 f2f7a78a57b5eaea2f0587b97f4f6915af387ca9	no	60
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8	Non Patent Literature	NETWORK_TIME_PROTOCOL_DM_0397417-536_120PAGES_PART2.PDF	12684304 34c64ea88c1b1967f97c23c716a2e7d16654235f	no	60
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9	Non Patent Literature	NEXSYS_SOFTWAREMANUAL.PDF	7692260 26268f59601b6550c4863f3554c99f63b6d3af69	no	76
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10	Non Patent Literature	WEBDESIGN_IN_A_NUTSHELL_678PAGES_PART1OF2.PDF	7695780 18f5a3aab078bc1da1312108592fb28d2afd46c8	no	300
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19	Non Patent Literature	10816217_NON-FINAL_OA_01-18-2008-V2.PDF	1135054 29609af1be86928dd60bbf2a7077f9cef802c25e	no	38
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20	Non Patent Literature	11801468_NON-FINAL_OA_04-19-2010-V2.PDF	656828 b909d4ac147ef11ca626cc53cea34740652c2e3b	no	16
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21	Non Patent Literature	13724048_NON-FINAL_OA-03-19-13_9pages-v2.pdf	309885 17d27ebf2d9b60269af7d82a5e7c23827e0d1f50	no	9
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22	Non Patent Literature	10816217_NFOA_04-0401_6-21-11_13PAGES-V2.PDF	419703 6e557997c3bdd1a0ad7448ec91fd3f1b46aee90a	no	13
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23	Non Patent Literature	10816217_NFOA_04-0401_1-22-2009_18PAGES-V2.PDF	577860 69cbc57ea750aa7fb76dfc1f90a3cb171fc057ef	no	18
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24	Non Patent Literature	14184526_NFOA_14-0212_7-25-2014_9PAGES-V2.PDF	259357 c56efa6f69f271d9600807e8257bbd67384b6f60	no	9
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26	Non Patent Literature	10816217_NFOA_6-25-2010_17pages-v2.pdf	539884 11a32763a872aebc3e52dab896719599a8237772	no	17
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37	Non Patent Literature	11147116_NFOA_05-0601_02-03-2009_32pages-v2.pdf	1159547 34c5c1a7983b031c1eab02de4cedcfbba1055b7e	no	32
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42	Non Patent Literature	13871795_NON-FINAL_OA_6-4-15.PDF	513966 d0e52ff11adeef9811795be56fba251f3b0d49d9	no	16
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48	Non Patent Literature	11147116_NFOA_05-0601_11-07-2011_48pages-v2.pdf	2059373 daf9d4e965724628349 5c74ceedf34e8afacec10	no	48
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		Total Files Size (in bytes):	110611984		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt	
EFS ID:	30236267
Application Number:	90013959
International Application Number:	
Confirmation Number:	9548
Title of Invention:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK
First Named Inventor/Applicant Name:	9213357
Customer Number:	107361
Filer:	John Gerrard Tolomei/Jeffrey P. Armstrong
Filer Authorized By:	John Gerrard Tolomei
Attorney Docket Number:	04-0401-REEXAM (14-1800-R
Receipt Date:	31-AUG-2017
Filing Date:	16-JUN-2017
Time Stamp:	18:41:04
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	12035112_NON-FINAL_OA_3-10-11.PDF	388655 3982f869da68eb1e6785c6b4d882bdcf88c54b31	no	12

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48	Non Patent Literature	15088678_NOA_12-02-2016.PDF	445323 75d948ad1d23fd04764457f3f319fba88bed8400	no	9
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt	
EFS ID:	30237309
Application Number:	90013959
International Application Number:	
Confirmation Number:	9548
Title of Invention:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK
First Named Inventor/Applicant Name:	9213357
Customer Number:	107361
Filer:	John Gerrard Tolomei/Jeffrey P. Armstrong
Filer Authorized By:	John Gerrard Tolomei
Attorney Docket Number:	04-0401-REEXAM (14-1800-R
Receipt Date:	31-AUG-2017
Filing Date:	16-JUN-2017
Time Stamp:	18:43:16
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	13848904_NOA_7-2-15.PDF	715587 33aa5e9722b9bd49354140fa23e6d189d4fdb52e	no	17
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4	Non Patent Literature	14486667_NOTICE_OF_ALLOWANCE_14-0902_6-2-17-10PAGES.PDF	505025 e1e9d700f1f39e064e1908b1cb646171f64a8fd9	no	10
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44	Non Patent Literature	15156392_NOTICEOFALLOWANCE_04-25-17_04-0401-CON0416B.PDF	404003 20cf4dff23831f7e9900c718c20cba707e8ee4c0	no	8
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt	
EFS ID:	30237873
Application Number:	90013959
International Application Number:	
Confirmation Number:	9548
Title of Invention:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK
First Named Inventor/Applicant Name:	9213357
Customer Number:	107361
Filer:	John Gerrard Tolomei/Jeffrey P. Armstrong
Filer Authorized By:	John Gerrard Tolomei
Attorney Docket Number:	04-0401-REEXAM (14-1800-R
Receipt Date:	31-AUG-2017
Filing Date:	16-JUN-2017
Time Stamp:	18:44:11
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	ROTHERMEL_1997.PDF	6385230 b89e3b45c6d27fc1112b421bfc52f69ef8a01cf9	no	26
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2	Non Patent Literature	ROTHERMEL_1995.PDF	16064216 0ac6e2db1ebe6021aa90018bcbab0bf22d7a8260	no	12
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3	Non Patent Literature	ROTHERMEL_ADAPTIVESTREAMSYNCPROTOCOL_1995.PDF	196987 92a695bed4cd699cedf0997a8280f81a7a367e4f	no	13
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4	Non Patent Literature	ROTHERMEL_CLOCKHIERARCHIES_23PAGES.PDF	78220 a6e31f12d2f8cfce12cb470f2b99b662037e1e55	no	23
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5	Non Patent Literature	ROTHERMEL_1992.PDF	19798637 fee9878f60457fc7abcb04ee318b63c1c7dffb73	no	13
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6	Non Patent Literature	ROTHERMEL_STATE_OF_ART_3PAGES.PDF	1013152 3371105e4474c4bf7c7c3c42bad2ca9151510d5a	no	3
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7	Non Patent Literature	RVL-6_MODULAR_1999.PDF	2801763 f5f6bfc67cf54ebfac01bc9e7925ab17ff777b98	no	46
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8	Non Patent Literature	SCHMANDT_2004.PDF	199894 556fdacc53c12d34b9c9196ee4b78a7a456fb346	no	11
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14	Non Patent Literature	SONOS_V_DM_SUPP_OPPOSITION_BRIEF_INCLUDING_EXHIBITS_17MARCH2017_23PAGES-V2.PDF	1056821 c3f7de769b54eb0fd2deabbad9eaad9545a4bf26	no	23
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17	Non Patent Literature	DEFENDANTS_AMENDED_INVALIDITY_CONTENTIONS_9-14-2016-V2.PDF	748641 b8fa07886128ee9b3d80033c1c077e6b25eb1f00	no	100
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37	Non Patent Literature	SONOSVDM_DI_226_OPINION_DENYING_INEQUITABLE_CONDUCT-UPDATED_5_PAGES.PDF	724324 3f02345b7b2f06b9e45aa1015a18195b4607e521	no	5
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41	Non Patent Literature	DECLARATION_VISSER_9-9-2016.PDF	649129 b7aa741947f051aaee7456807017a31d1010189	no	40
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42	Non Patent Literature	EXHIBIT1_AMENDED_INVALIDITY_CHARTS_7571014_PATENT-.PDF	3002889 0449bb41f4c2fb8b85d7909b0b8be2308f11b90c	no	270
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt	
EFS ID:	30237087
Application Number:	90013959
International Application Number:	
Confirmation Number:	9548
Title of Invention:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK
First Named Inventor/Applicant Name:	9213357
Customer Number:	107361
Filer:	John Gerrard Tolomei/Jeffrey P. Armstrong
Filer Authorized By:	John Gerrard Tolomei
Attorney Docket Number:	04-0401-REEXAM (14-1800-R
Receipt Date:	31-AUG-2017
Filing Date:	16-JUN-2017
Time Stamp:	18:42:04
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	13863083_NOA_4-29-15.PDF	901353 0cbb7cc507d596d144f82fd1f20ebbc3aba7a38d	no	19
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9	Non Patent Literature	15088283_NOTICEOFALLOWANCE_04-06-17_04-0401-CON0316C.PDF	400587 11e0567beaeca9bb9d8099958459f0b0ffb51d4	no	7
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27	Non Patent Literature	PROGRAMMING_INTERFACE_AVAGO0066_V2.PDF	2024854 83ae38b8895183cb7f9d80aeffeb1601fb0f30da	no	16
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New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt	
EFS ID:	30240346
Application Number:	90013959
International Application Number:	
Confirmation Number:	9548
Title of Invention:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK
First Named Inventor/Applicant Name:	9213357
Customer Number:	107361
Filer:	John Gerrard Tolomei/Jeffrey P. Armstrong
Filer Authorized By:	John Gerrard Tolomei
Attorney Docket Number:	04-0401-REEXAM (14-1800-R
Receipt Date:	31-AUG-2017
Filing Date:	16-JUN-2017
Time Stamp:	18:45:13
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	60490768_APPLICATION_AS_FILED.PDF	398895 2e14f32fdfe4c9586584837c348fa0225cf3ea18	no	13

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2	Non Patent Literature	60825407_APPLICATION_AS_FILED.PDF	6702353 05b6cb160da42c57ff258ba118197dc6f6fab263	no	82
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3	Non Patent Literature	UNIVERSAL_PLUG_AND_PLAY_DEVICE_UPNP_2000_V1_54PAGES.PDF	3033111 4fc9201973ba3a7a92f039585f4854f1d7e14207	no	54
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4	Non Patent Literature	UNIVERSAL_PLUG_AND_PLAY_DM_0402041-73_33PAGES.PDF	9144769 ee301763531b3ea9e00ca230963d5f3cc0d5c2d8	no	33
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6	Non Patent Literature	UNIVERSAL_PLUG_AND_PLAY_PLUGFEST_VENDORGUIDE_2000_7PAGES.PDF	94631 6d33af37a20b364ce9eaaeb13d1b04fc2cac6796	no	7
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9	Non Patent Literature	UPNP_DESIGN_BY_EXAMPLE_DM_0401307-818_511PAGES_PART1.PDF	18363066 0ab3558a359713bbf1746a3375dc654f2f28c6b9	no	40
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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Electronic Acknowledgement Receipt	
EFS ID:	30240555
Application Number:	90013959
International Application Number:	
Confirmation Number:	9548
Title of Invention:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK
First Named Inventor/Applicant Name:	9213357
Customer Number:	107361
Filer:	John Gerrard Tolomei/Jeffrey P. Armstrong
Filer Authorized By:	John Gerrard Tolomei
Attorney Docket Number:	04-0401-REEXAM (14-1800-R
Receipt Date:	31-AUG-2017
Filing Date:	16-JUN-2017
Time Stamp:	18:46:36
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

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47	Non Patent Literature	SONY_WIRELESS_SURROUND_KIT_WHAT-SA2_56PAGES.PDF	4349085 8ee4c46d3e4da042de0df5e4a72ad67fe2a56528	no	56
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49	Non Patent Literature	TOA_DP-0206_DACSYS2000_INSTRUCTION_MANUAL_67PAGES.PDF	4662842 b2c26110d9aab4d1c79884e95e5e90e896325502	no	67
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50	Non Patent Literature	UNDERSTANDING_UNIVERSAL_PLUG_AND_PLAY_DM_0402074-118_45PAGES.PDF	9005889 431cbe90f9a08914e3cb93fa280a23b2fcd28814	no	45
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	1	Notice of Allowance mailed on 29 April 2015, issued in connection with U.S. Patent Application No. 13/863083, filed on 15 April 2013, 19 pages.	☐
	2	Notice of Allowance mailed on 29 July 2015, issued in connection with U.S. Patent Application No. 13/359976, filed on 27 January 2012, 28 pages	☐
	3	Notice of Allowance mailed on 29 July 2015, issued in connection with U.S. Patent Application No. 14/186850, filed on 21 February 2014, 9 pages	☐
	4	Notice of Allowance mailed on 29 March 2017, issued in connection with U.S. Patent Application No. 14/803953, filed on 20 July 2015, 8 pages	☐
	5	Notice of Allowance mailed on 30 August 2016, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 7 pages	☐
	6	Notice of Allowance mailed on 30 July 2015, issued in connection with U.S. Patent Application No. 13/705178, filed on05 December 2012, 18 pages	☐
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	8	Notice of Allowance mailed on 5 August 2015, issued in connection with U.S. Patent Application No. 13/435776, filed on 30 March 2012, 26 pages	☐
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	12	Notice of Intent to Issue Re-Examination Certificate mailed on 03 August 2017, issued in connection with U.S. Patent Application No. 90/013882, filed on 27 December 2016, 20 pages	☐
	13	NUTZEL et al., "Sharing Systems for Future HiFi Systems," IEEE, 2004, 9 pages.	☐
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	17	PARK et al., "Group Synchronization in MultiCast Media Communications," Proceedings of the 5th Research on Multicast Technology Workshop, 2003, 5 pages	☐
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	23	Presentations at WinHEC 2000, May 2000, 138 pages	☐
	24	PRISMIQ, Inc., "PRISMIQ Media Player User Guide," 2003, 44 pages.	☐
	25	Proficient Audio Systems M6 Quick Start Guide, 2011, 5 pages.	☐
	26	Proficient Audio Systems: Proficient Editor Advanced Programming Guide, 2007, 40 pages.	☐
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	28	Radio Shack, "Auto-Sensing 4-Way Audio/Video Selector Switch," 2004, 1 page	☐
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	35	Real Time Control Protocol (RTCP) and Realtime Transfer Protocol (RTP), RFC 1889 (Jan. 1996) (D+M_0397810-84) (75 pages)	☐
	36	Realtime Streaming Protocol (RTSP), RFC 2326 (Apr. 1998) (D+M_0397945-8036) (92 pages)	☐
	37	Realtime Transport Protocol (RTP), RFC 3550 (July 2003) (D+M_0398235-323) (89 pages)	☐
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	46	"Residential Distributed Audio Wiring Practices," Leviton Network Solutions, 2001, 13 pages	☐
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	49	RITCHIE, John, "MediaRenderer:1 Device Template Version 1.01," Contributing Members of the UPnP Forum, June 25, 2002, 12 pages	☐
	50	ROLAND CORPORATION, "Roland announces BA-55 Portable PA System," press release, April 6, 2011, 2 pages.	☐

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Jeffrey P. Armstrong/	Date (YYYY-MM-DD)	2017-08-31
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	1	ROTHERMEL et al., "An Adaptive Protocol for Synchronizing Media Streams," Institute of Parallel and Distributed High-Performance Systems (IPVR), 1997, 26 pages	☐
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	7	"RVL-6 Modular Multi-Room Controller, Installation & Operation Guide," Nile Audio Corporations, 1999, 46 pages	☐
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	9	SCHULZRINNE et al., "RTP: A Transport Protocol for Real-Time Applications," Network Working Group, January 1996, pp. 1-75	☐
	10	SCHULZRINNE H., et al., "RTP: A Transport Protocol for Real-Time Applications, RFC 3550," Network Working Group, 2003, pp. 1-89.	☐
	11	Simple Network Time Protocol (SNTPI), RFC 1361 (August 1992) (D+M_0397537-46) (10 pages)	☐

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	12	Simple Network Time Protocol (SNTPII), RFC 1769 (March 1995) (D+M_0397663-76) (14 pages)	☐
	13	Simple Service Discovery Protocol/1.0 Operating without an Arbiter (Oct. 28, 1999) (24 pages)	☐
	14	Sonos, Inc. v D&M Holdings, D&M Supp Opposition Brief including Exhibits, 17 March 2017, 23 pages	☐
	15	Sonos, Inc. v. D&M Holdings, Expert Report of Jay P. Kesan including Appendices A-P, Feb. 20, 2017, 776 pages.	☐
	16	Sonos, Inc. v. D&M Holdings Inc. et al., Complaint for Patent Infringement, filed October 21, 2014, 20 pages.	☐
	17	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions, filed September 14, 2016, 100 pages.	☐
	18	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions, filed April 15, 2016, 97 pages.	☐
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	21	Sonos, Inc. v. D&M Holdings Inc. et al., Defendants' Answer to Plaintiff's Second Amended Complaint, filed April 30, 2015, 19 pages	☐
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	23	Sonos, Inc. v. D&M Holdings Inc. et al., Defendants' Reply in Support of Partial Motion for Judgment on the Pleadings, filed June 10, 2016, 15 pages	☐
	24	Sonos, Inc. v. D&M Holdings Inc. et al., Exhibit A: Defendants' First Amended Answer to Plaintiffs' Third Amended Complaint, provided August 1, 2016, 26 pages.	☐
	25	Sonos, Inc. v. D&M Holdings Inc. et al., Exhibit A: Defendants' Second Amended Answer to Plaintiffs' Third Amended Complaint, filed September 9, 2016, 43 pages	☐
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	27	Sonos, Inc. v. D&M Holdings Inc. et al., First Amended Complaint for Patent Infringement, filed December 17, 2014, 26 pages	☐
	28	Sonos, Inc. v. D&M Holdings Inc. et al., Joint Claim Construction Chart, Volume 1 of 3 with Exhibits A-O, filed August 17, 2016, 30 pages	☐
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	34	Sonos, Inc. v. D&M Holdings Inc. et al., Sonos's Opposition to Defendants' Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided October 31, 2016, 26 pages.	☐
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	37	Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 226, Opinion Denying Inequitable Conduct Defenses, Feb. 6, 2017, updated, 5 pages.	☐
	38	Sonos, Inc. v. D&M Holdings (No. 14-1330-RGA), DI 242, US District Judge Andrews 101 Opinion, Mar. 13, 2017, 16 pages.	☐
	39	Sonos, Inc. v D&M Holdings, Sonos Supp Opening Markman Brief including Exhibits, 3 March 2017, 17 pages	☐
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	42	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 1: Defendants' Invalidity Contentions for U.S. Patent No. 7,571,014 filed September 16, 2016, 270 pages.	☐
	43	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 10: Defendants' Invalidity Contentions for U.S. Patent No. 9,219,959 filed September 27, 2016, 236 pages.	☐
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	45	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 2: Defendants' Invalidity Contentions for U.S. Patent No. 8,588,949 filed September 27, 2016, 224 pages.	☐
	46	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 3: Defendants' Invalidity Contentions for U.S. Patent No. 8,843,224 filed September 27, 2016, 147 pages.	☐
	47	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 4: Defendants' Invalidity Contentions for U.S. Patent No. 8,938,312 filed September 27, 2016, 229 pages.	☐
	48	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 5: Defendants' Invalidity Contentions for U.S. Patent No. 8,938,637 filed September 27, 2016, 213 pages.	☐
	49	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 6: Defendants' Invalidity Contentions for U.S. Patent No. 9,042,556 filed September 27, 2016, 162 pages.	☐
	50	Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 7: Defendants' Invalidity Contentions for U.S. Patent No. 9,195,258 filed September 27, 2016, 418 pages.	☐

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	90013959
	Filing Date	2017-06-16
	First Named Inventor	
	Art Unit	3992
	Examiner Name	ENGLAND, David E.
	Attorney Docket Number	04-0401-REEXAM

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Jeffrey P. Armstrong/	Date (YYYY-MM-DD)	2017-08-31
Name/Print	Jeffrey P. Armstrong	Registration Number	54,967

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Electronic Acknowledgement Receipt

EFS ID:	30241976
Application Number:	90013959
International Application Number:	
Confirmation Number:	9548
Title of Invention:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK
First Named Inventor/Applicant Name:	9213357
Customer Number:	107361
Filer:	John Gerrard Tolomei/Jeffrey P. Armstrong
Filer Authorized By:	John Gerrard Tolomei
Attorney Docket Number:	04-0401-REEXAM (14-1800-R
Receipt Date:	31-AUG-2017
Filing Date:	16-JUN-2017
Time Stamp:	18:47:34
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	IVIE_TECHSAUTOMIXERCONTROL.PDF	6456932 b011b7a1890fbde3ecb5e965161a3b76c8e37513	no	4

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2	Non Patent Literature	ADVANCED_DRIVER_AGERE_AVAGO0009_V2.PDF	184275 d4a2b4bcc5e62edc8e25778bff9fe32082a2e476	no	4
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3	Non Patent Literature	13848921_AA_02-02-2016.PDF	345491 c960c063c131d2874c5edfb7a394722c330dd8c4	no	8
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4	Non Patent Literature	10816217-ADVISORYACTION-09-18-08_V2.PDF	312553 a3d31f840a78967f505f43f514e5126e531e074c	no	8
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5	Non Patent Literature	13864247_AA_02-01-2016.PDF	310173 a08773d30b80582719051c41d8cec943960ff7e5	no	6
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6	Non Patent Literature	14516867_ADVISORY_ACTION_6-1-15.PDF	616982 3050ba39fb3247f76c85a3bd34cf48d66e7055ba	no	11
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7	Non Patent Literature	13618829_ADVISORY_ACTION_11-1-13.PDF	172491 f1f2c70079699792306d90b45658ad8fc48a352d	no	3
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8	Non Patent Literature	12035112_ADVISORY_ACTION_1-5-12.PDF	140953 8bc47a9d37f6102d0b6b51005c7ae0cd0bb0df0f	no	3
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9	Non Patent Literature	13907666_ADVISORY_ACTION_9-5-14.PDF	152557 6365891123eb2f0138159fc6ca78bb2f396239f8	no	3
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11	Non Patent Literature	13864250_AA_13-0403_8-10-17_3PAGES.PDF	200033 4bdf2115c6a25076ae8b9c01aff4c357c6cad78b	no	3
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12	Non Patent Literature	13871795_AA_02-10-2016.PDF	199493 eff127b44da2d4c0ad3ae2167a6d29dc0fd0f1bd	no	3
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Information:					
13	Non Patent Literature	13907666_ADVISORY_ACTION_11-12-14.PDF	254022 aa1d551f2e8767f3e9e1184ed8407caec3fbc7f4	no	6
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14	Non Patent Literature	14184526_ADVISORY_ACTION_4-15-15.PDF	516345 0f04480f282fda55714f524181d3c36b64569268	no	9
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15	Non Patent Literature	14184935_ADVISORY_ACTION_4-15-15.PDF	525787 ee0e8a368b1e5b3aae869a8dd938e0bef9550e7a	no	9
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Information:					

16	Non Patent Literature	13864248_AA_13-0401_8-16-17_5PAGES.PDF	200531 cebfa0bb60d3e31f83d4d0fefdb3f814cdb33960	no	5
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17	Non Patent Literature	15243355_AA_04-0601-CON0816_6-20-17_5PAGES.PDF	253308 46a7469cee2cdae956d4f5475e8aa366ec13e07c	no	5
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18	Non Patent Literature	13864249_AA_13-0402_8-22-17_3PAGES.PDF	144348 8f5a8dba21c3c344cb273d8080dfa14e6334bba0	no	3
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19	Non Patent Literature	13533105_ADVISORY_ACTION_3-25-15.PDF	217946 fa6ae97a319b18e494666b5e68939544780c2342	no	5
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22	Non Patent Literature	13705176_AA_12-28-2016.PDF	159018 e0feb4cecc8243f00f6f8298ff3639632fd899a9	no	4
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Information:					

23	Non Patent Literature	10816217_ADVISORY_ACTION_09-28-2009.PDF	174667 3a5f804e29f38bea322ef41774b76c85b1e92c61	no	4
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Information:					
24	Non Patent Literature	AGERE_SYSTEMS_VOICE-OVER_AVAGO0015_V2.PDF	1176635 1f6d4f2c01c3d9ac34eefc74720d3ab8d2d89849	no	5
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25	Non Patent Literature	AKYILDIZ_1996.PDF	2499003 8a869e3c78f04f744bf3557381be46aff2d3ceb0	no	12
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26	Non Patent Literature	AUDIO_AUTHORITY_SIGNAL_SENSING_2002.PDF	4041798 dff7784296ed6d4488429d3af294fef3dcb6b555	no	4
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27	Non Patent Literature	AUDIO_AUTHORITY_HIGH_DEFINITION_2008.PDF	8015872 f64dcc70241558ecb971c3de2aefd2845f431eaa	no	8
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Information:					
28	Non Patent Literature	AUDIO_SOURCE_AMP_100.PDF	4906940 11dc6df5b0df5330bd7c06a1fb3e52037e5e621a	no	4
Warnings:					
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29	Non Patent Literature	AUDIOTRONQUICKSTARTGUIDE_V2.PDF	8003306 68d18f702aa02a5d9705c13ea29cbf74d0ef40ca	no	24
Warnings:					
Information:					

30	Non Patent Literature	AUDIOTRONREFERENCEMANUAL_V2.PDF	13501686 0a1073485e8dcd1da2d5986a3ccb6c2df69c28d7	no	70
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31	Non Patent Literature	AUDIOTRONSETUPGUIDE_V2.PDF	11297159 9b29308bcec2143809f7700841126c88fde3def5	no	38
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32	Non Patent Literature	AUTOMATIC_PROFILE_AGERE_AVAGO0013_V2.PDF	124603 663ce3417ade29bfbfa0c399c438a5088d88eeea	no	2
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33	Non Patent Literature	DENON_AVR-5800.PDF	3223291 8e5b26fd3cec9ea4211230e16f2faa5d29840578	no	2
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34	Non Patent Literature	BK_COMPONENTS.PDF	3579168 128cb78d1a7bd2a55c2f74c41e97cf5cc07cadcc	no	52
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35	Non Patent Literature	AVTRANSPORT_V1_2002_66PAGES.PDF	438810 5b3625001968f78015af1f092e04310895b192b3	no	66
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36	Non Patent Literature	AXIS_P8221_USER_MANUAL.PDF	1617965 e36f6b1a94da0269a2e216c77c7236c2a20613ea	no	41
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37	Non Patent Literature	BALDWIN_2009_REFERENCE.PDF	903362 8422d4841e69a7c92fd17aabe0be48a687b08db3	no	4
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Information:					
38	Non Patent Literature	BALFANZ_NETWORK-IN-A-BOX_2002.PDF	20050777 8555b764fc5668318395a210ed17da20b1b9b052	no	23
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Information:					
39	Non Patent Literature	BALFANZ_TALKING-TO-STRANGERS_2002.PDF	23823515 73dcb39daca45ca0b57755da29a2904ca62a7ac1	no	13
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Information:					
40	Non Patent Literature	BARHAM_1995.PDF	2208674 fa895d0cb313307a4264db86d14ef40d6a1e8d2a	no	5
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41	Non Patent Literature	BAUDISCH_2004.PDF	1634079 7dc98c02c560a3fe87bfb8baef36ba2a88a2a33f	no	8
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Information:					
42	Non Patent Literature	BENSLIMANE_PROC26THEUROMICROCONF_2000_1_456.PDF	533608 9b35b33e251fc13b275748400f7086bdcd2d43b6	no	8
Warnings:					
Information:					
43	Non Patent Literature	BIERSACK_IEEEINTLCONFERENCE_MULTIMEDIACOMPUTINGSYSTEMS_1996_372.PDF	57025 2464b953323718a2934be59ef3f5cea322b4858f	no	10
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44	Non Patent Literature	BLAKOWSKI_1996.PDF	2310647 226342aece1f214bdefb9b4b5dce0891c63b7159	no	32
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45	Non Patent Literature	BLUETOOTH_SPEC_JUL_1999-1 OF4_REDUCED.PDF	9230492 704feaed331f111655dabf79deec3ff58eb7b8c6	no	267
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46	Non Patent Literature	BLUETOOTH_SPEC_JUL_1999-2 OF4REDUCED.PDF	8213582 fadaa488127eb675b2089d3626d4c59f5e1f505b	no	267
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47	Non Patent Literature	BLUETOOTH_SPEC_JUL_1999-3 OF4_REDUCED.PDF	7213842 bb03829ee6722aa7a842c7875071815e06778dab	no	267
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Warnings:					
Information:					
49	Non Patent Literature	BLUETOOTH_SPEC_DEC1999_1 OF4REDUCED.PDF	7900586 50bb8fc96a35a1105d091d01fbbe8520da434274	no	270
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50	Non Patent Literature	BLUETOOTH_SPEC_DEC1999_2 OF4REDUCED.PDF	7169931 af2a72ef0d7e7438c59b6fb36c97c710904261d8	no	270
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51	Non Patent Literature	BLUETOOTH_SPEC_DEC1999_3OF4REDUCED.PDF	6803902 7d59cf98fb14c2afdae792ce7d960a839b3cf0fc	no	270
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52	Non Patent Literature	BLUETOOTH_SPEC_DEC1999_4OF4REDUCED.PDF	5975381 17371b72a7d9b4fa69df7a5727ca5405ebb04077	no	266
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53	Non Patent Literature	BOGEN_PROMATRIX_1996_2PAGES.PDF	226066 400105c8759d301bccbf89f6b2039e9468791417	no	2
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54	Non Patent Literature	BRASSIL.PDF	17621943 959cbf02429ee61057d4ee676d7f99e3c63b2005	no	9
Warnings:					
Information:					
55	Non Patent Literature	BREEBAART_2006.PDF	19712856 0cec0c4ed22dad00dea591e00c890b11dc5d0585	no	13
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Information:					
56	Non Patent Literature	BRETL_MPEG2TUTORIAL_2000_23PAGES.PDF	662571 58a615e8df2f1074850b766a23f4971051bd8b54	no	23
Warnings:					
Information:					
		Total Files Size (in bytes):	223977023		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,959	06/16/2017	9213357	04-0401-REEXAM (14-1800-R	9548

107361 7590 08/09/2017

McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

EXAMINER	
ENGLAND, DAVID E	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
08/09/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

MR. CHRISTOPHER JOHN ROURK

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DALLAS, TX 75201

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/013,959*.

PATENT NO. *9213357*.

ART UNIT *3992*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

PTOL-465 (Rev.07-04)

David E. England

Primary Examiner

Art Unit: 3992

DECISION GRANTING EX PARTE REEXAMINATION

A substantial new question, hereinafter "SNQ", of patentability affecting claims 9, 10, 11, and 19 of United States Patent Number 9,213,357 to Millington, (hereafter "the '357 Patent"), is presented by the request for *ex parte* reexamination submitted on 05/22/2017.

The present application is being examined under the pre-AIA first to invent provisions.

Prosecution History

The '357 Patent, entitled "Obtaining Content From Remote Source For Playback" was issued on December 15th, 2015 from application 14/516,867, hereinafter "the '867 Application", filed on October 17th, 2014 which is a continuation of application No. US 13/297,000, filed on November 15, 2011, which is a continuation of application No. US 10/816,217, filed on April 1, 2004, now Patent No. 8,234,395, which claims priority to provisional application No. US 60/490,768, filed on July 28, 2003.

The prosecution history of the '357 Patent starts with the filing of the '867 Application on 10/17/2014, which includes a preliminary amendment that canceled claims 1 – 20 and added claims 21 – 40. A Non-Final Office Action, dated 12/01/2014, rejected claims 21, 22, 30 – 34 and 40 over Goldberg 2007/0142944 in view of Alexander 2005/0027821 and claims 23-29 and 35-39 over Goldberg and Alexander in further view of Meade 20030073432. The Applicant and Examiner then conducted an Interview, dated 12/18/2014, discussing proposed claim amendments regarding claim 21. It was agreed that the reference of Alexander fails to disclose

control information pertaining to a second playback device. Applicant responded with an amendment on 01/19/2015. The Examiner responded by rejecting claims 21-40 over Goldberg and Meade in a Final Rejection dated 03/09/2015. Applicant responded with an After Final Consideration Pilot Program 2.0 with more amendments to the claims dated 05/11/2015. An Interview was conducted 05/27/2015 discussing the new amendments and interpretation of the claims. Accompanied with this Interview was an Advisory Action that did **not** enter the newly amended claims and maintaining the rejection. The Applicant responded with an RCE dated 07/07/2015, amending the claims with similar limitations as proposed in the After Final Consideration Pilot Program 2.0 with other added amendments. Applicant stated in their remarks that Goldberg, Meade, and Sinha (the "cited references"), do not teach at least

> "play[ing] back the audio information in synchrony with the second playback device by using the playback timing information associated with the audio information and the clock information of the first playback device to play back the audio information, wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information" in combination with the other elements recited in independent claims 21, 33, and 40.
>
> Applicant has amended independent claims 21, 33, and 40 to recite "play[ing] back the audio information in synchrony with the second playback device by using the playback timing information associated with the audio information and the clock information of the first playback device to play back the audio information," based on the Examiner Interview of May 27, 2015. Applicant has also amended independent claims 21, 33, and 40 to recite "wherein the first and second playback devices remain

independently clocked during synchronous playback of the audio information" as yet a further distinction over the cited references.

The Examiner subsequently sent out a Notice of Allowance with Examiner's amendments, dated 08/04/2015, and an Interview Summary. In the Interview Summary, the Examiner explained that 35 U.S.C. 112 second paragraph issues were the only thing preventing a Notice of allowance and an Examiner's amendment would remedy this. Applicant's Attorney agreed to the Examiner's amendment. In the Examiner's Amendment, the Examiner stated that, on pp. 2 & 3, "Applicants argue at page 10 of Remarks as filed that none of Goldberg, Meade, and Sinha teaches the newly added subject matter. Examiner generally agrees." The Examiner then goes into depth as to what specifically is the Reasons for Allowance.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

none of the qualifying prior art references of record, taken alone or in combination, disclose or reasonably suggest: a combination of elements as claimed in independent claim 33, wherein after receiving the control information (i) obtaining, by the first playback device from the audio information source outside of the LAN, the audio information; (ii) transmitting, by the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock time information of the first playback device; and (iii) playing back, by the first playback device, the audio information in synchrony with the second playback device by using the timing information associated with the audio information and the device clock time information of the first playback device to play back the audio information, wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information. Independent claims 21 and 40 contain similar limitations.

, see the '867 Application, Notice of Allowance, p. 5.

Therefore, since the Examiner elaborated on what specifically was the reasons for allowance, those reasons cited above, from page 5 of the Notice of Allowance, are the basis for the SNQ.

Analysis of Substantial New Question of Patentability

A SNQ of patentability is raised by a cited patent or printed publication when there is a substantial likelihood that a reasonable examiner would consider the prior art patent or printed publication important in deciding whether or not the claim is patentable. A SNQ of patentability is not raised by prior art presented in a reexamination request if the Office has previously considered (in an earlier examination of the patent) the same question of patentability as to a patent claim favorable to the patent owner based on the same prior art patents or printed publications. In re Recreative Technologies, 83 F.3d 1394, 38 USPQ2d 1776 (Fed. Cir. 1996). The substantial new question of patentability may be based on art previously considered by the Office if the reference is presented in a new light or a different way that escaped review during earlier examination. MPEP §2216.

It is not sufficient that a request for reexamination merely proposes one or more rejections of a patent claim or claims as a basis for reexamination. It must first be demonstrated that a patent or printed publication that is relied upon in a proposed rejection presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during the prosecution of any other prior proceeding involving the patent for which reexamination is requested. MPEP §2216.

Basis of SNQ

The '357 Patent was issued on December 15th, 2015, allowing claims 21 - 40, which are now renumbered as 1 – 20, from the '867 Application, filed on October 17th, 2014. The '867 Application's Reasons for Allowance, dated August 4th, 2015, was necessitated by the Applicant's Amendments, as stated above. Third Party Requester, hereinafter "3PR", proposes a SNQ with regards to claims 9, 10, 12, and 19 of the '357 Patent, with claim 9 being the only independent claim brought into question. As seen in the amendment made by the Applicant, which lead to the subsequent Notice of Allowance, as stated above:

> "wherein after receiving the control information (i) obtaining, by the first playback device from the audio information source outside of the LAN, the audio information; (ii) transmitting, by the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock time information of the first playback device; and (iii) playing back, by the first playback device, the audio information in synchrony with the second playback device by using the timing information associated with the audio information and the device clock time information of the first playback device to play back the audio information, wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information."

Therefore, the basis for SNQ will be the limitation stated above.

Proposed Substantial New Question of Patentability

3PR identifies the following printed publications as forming the basis for the SNQ in the Request or supporting the main references in the proposed rejections, see the Request pp. 18-19.

a) U.S. 9,195,258 to Nicholas A. J. Millington, filed February 20, 2014, issued November 24, 2015 ("the '258 Patent");

b) * U.S. 6,611,537 to Edens et al., filed May 15, 1998, issued August 26, 2003 ("Edens");

c) * U.S. 2004/0252400 to Blank et al., filed June 13, 2003, published December 16, 2004 ("Blank");

d) U.S. 2002/015003 to Gray et al., filed April 17, 2001, published October 17, 2002 ("Gray");

e) "File and Printer Sharing with Microsoft Windows," Microsoft Corporation, published November 2003 ("Microsoft File Sharing");

f) "Symantec pcAnywhere User's Guide," copyright 1995-2002, Symantec Corporation ("pcAnywhere")

g) RFC 1305, Network Time Protocol (Version 3) Specification, Implementation and Analysis, March, 1992 ("RFC 1305")

h) SMPTE Made Simple, TimeLine Vista, Inc., 1996 ("SMPTE Made Easy");

i) The MP3 and Internet Audio Handbook, Bruce Fries and Marty Fries, TeamCom Books (2000) (the "Handbook");

j) Admitted Prior Art (APA) in the '357 Patent and other related Sonos patents (the SONOS APA),

k) * U.S. Patent application publication 2007/0142944 to Goldberg et al. ("Goldberg");

l) * U.S. Patent application publication 2003/0073432 to Meade ("Meade");

m) "Web Design in a Nutshell," O'Reilly & Associates, Inc. (2001) ("Nutshell");

n) RFC 2326, Real Time Streaming Protocol (RTSP) (April 1998) ("RTSP")

o) RFC 1889, RTP: A Transport Protocol for Real-Time Applications (January 1996) ("RTP")

*=cited during prosecution.

3PR has alleged a SNQ of patentability with regards to claims 9, 10, 12, and 19 in light of the prior art utilized in these proposed rejections which are stated below and in the corresponding tables of the Request for Reexamination:

1. Claims 9, 10, 12 and 19 are invalid under the judicially-created doctrine of obviousness-type double patenting over the '258 Patent (Table 1

2. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 102(b) over Edens (Table 2);

3. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 102(e)(1) over Blank (Table 4);

4. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Edens, the Handbook and the Sonos APA (Table 3);

5. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Blank, Gray, SMPTE, RFC 1305, Microsoft File Sharing, pcAnywhere, the Handbook and the Sonos APA (Table 5);

6. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Meade, Goldberg and the Sonos APA (Table 6); and

7. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Meade, Goldberg, Blank, Gray, Edens, SMPTE, RFC 1305, Microsoft File Sharing, pcAnywhere, the Handbook, the Sonos APA, Nutshell, RTSP and RIP (Table 7)

Claim interpretation

It is noted that the 3PR makes specific mention of two specific limitations, within the limitation which is the basis of the SNQ, which require attention in determining what their BRI encompasses, pp. 24 - 28 of the Request, limitations "independently clocked" and "playback timing information".

"independently clocked"

The 3PR has pointed out that the limitation of "independently clocked" could have multiple meanings, and because of the PO's concurrent litigation, could also encompass syncronized clocks, see p. 26 of the Request. When reviewing the IDS for this information one sees "Potter Aderson & Corroon LLP, Suplemental opening Breif on Claims Construction, 3/3/2017". When looking for this document, it is not found within the submission of the IDS and therefore can not be specifically considered. However, under further envestegation, the Examiner has come across how the Courts have construde the limitation as found in the Litigation Search acompanied with this action. The courts have stated that the limitation "independently clocked", under BRI, is interpreted as "operating in accordance with their own respective clocks during synchronous playback.", see page 9-10. Therefore, this interpretation will be utilized in determining the SNQ and in examination.

"playback timing information"

As pointed out by the 3PR, there appear to be two specific contructions for this limitation. It is said that Sonos proposed a contructions for "playback timing information" of "information indicating when the audio information [content] is to be played back", (construction

1). D&M in the Concurrent Litigation was said to construde the claims under BRI to mean "a series of time values, associated with an audio work divided into blocks of information, each indicating when one of the clocks of audio information should be played by the device", (construction 2). It would appear that "construction 1" is the broadest of the two specifically stated. It is said that Figures 2- 4 depict playback timing information. Though these figures depict more than what is claimed, it is seen multiple times thoughtout the specification that the device "provide audio and playback timing information for the synchrony group to enable a master device and slave devices to play the audio program synchronously", (e.g., Col. 8, lines 61-66). As stated in column 11, lines 15 et seq., "FIG. 4, the audio and playback timing information is in the form of a series of frames, **with each frame having a time stamp**." Therefore, the BRI of "playback timing information" is merely a type of time stamp.

Alleged SNQ based upon Obviousness-type Double patenting over the '285 Patent

The '285 Patent was not previously considered or even cited in the prosecution of the '867 Application, later the '357 Patent. As pointed out by 3PR, in Table 1 of the Request, it would appear that similar limitations and teachings are claimed which are the basis for the SNQ. The '285 Patent teaches technological features that a reasonable Examiner would consider important in deciding whether or not the subject claims are patentable.

Accordingly, these teachings would be important to a reasonable examiner in deciding patentability as to at least independent claim 9 the '357 Patent. Further, The '285 Patent teachings are new and non-cumulative. Accordingly, The '285 Patent raises a substantial new question of patentability as to at least independent claim 9 of the '357 Patent that have not been decided in a previous examination. Claims 10, 12, and 19 are brought in at least due to their dependency on independent claim 9.

Alleged SNQ based upon Edens alone or in combination with Handbook and/or Sonos APA

Edens is presented to determine if a SNQ of patentability regarding claims 9, 10, 12, and 19 of the '357 Patent is raised. Edens was present as prior art in prior prosecutions of the application which became the '357 Patent **but** was not used in rejecting the claims and not discussed in the prosecution. Edens teaches technological features that a reasonable Examiner would consider important in deciding whether or not the subject claims are patentable. Edens discloses a protocol and architecture for the synchronous logical ring network that synchronizes all network devices to a single reference clock of a network clock device, which can be any of the networked audio devices on the network of Edens, and which provides for fixed frames of information propagating around the network at consistent time intervals. The synchronous data can include digital stereo audio having left channel and right channel data, which can be routed to one or more of the audio devices on the network. See Edens at; 24:57-25:2 ("As noted above, and as will be explained in greater detail below, network devices on a logical ring network of the present invention are synchronized to one another. . . As will

be explained below, this **low level** device **synchronization** greatly **facilitates** the **synchronization** of audio and video sources, audio sources received by multiple speakers, and many other media synchronization requirements."); 31:22-36, 52:66-53:10 ("As each frame propagates around the default network path (or alternate path) of the logic ring networks, the CD player would overwrite nibbles 10-15 and 74-79 with the respective (left and right channel) source digital audio streams. Edens appears to not disclose the limitation of "wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information". Edens discloses a "network clock" which all devices that are "clock-Capable" network devices, could be selected to become the "network clock", See 48:66 et seq. As seen in different areas of Edens, once a device becomes the "network clock" all other devices synchronize to that clock, e.g., 66:37 et seq., Abstract, and 10:8 – 22, "An arbitration process occurs automatically upon network **initialization, and one of the competing devices** is elected the **network clock device to which all other devices are then synchronized**. By **synchronizing all network devices to a single reference clock**, and providing fixed frames of information propagating around the network at consistent time intervals (44.1 kHz "frame rates" in one embodiment, to enable device synchronization to the CD audio sample rate), the logical ring network ensures that information always will propagate from one device to another at consistent time intervals. In other words, information will propagate consistently around the logical ring network at the frame rate; and the time required for information to propagate between any two particular devices will remain fixed." It appears that the network clock is in reference to the devices specific clock. If not, then there is no mention of the devices having a clock for playback and processing, which would be interpreted as "their own respective clocks".

3PR attempts to equat the section of 48:66-49:12 has "independent clocking" yet this section discussed the process of finding a device to be the "network clock" when each device has an "independent clock". This process is not done while the devices are playingback audio information.

Edens does not disclose "wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information".

When reviewing the SNQs presented by the 3PR, one sees that Edens is combine with the Handbook and Sonos APA. Therefore, one must review if an SNQ is raised alone and in combination with these references. When reviewing the proposed rejection, one sees Sonos APA is relied upon to disclose the some of the limitations which are the basis of the SNQ and more specifically the limitation of, "wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information", which is lacking in Edens. The whole section which 3PR relies upon is reads,

> "Another problem arises from the following. When an audio playback device converts the digital audio information from digital to analog form, it does so using a clock that provides timing information. Generally, the audio playback devices that are being developed have independent clocks, and, if they are not clocking at precisely the same rate, the audio playback provided by the various devices can get out of synchronization.", 2:21-27.

As clearly seen, the clocks are independent but are not playing back the audio in synchronization. This would mean that the combination of Sonos APA with Edens would raise a SNQ.

Accordingly, these teachings would be important to a reasonable examiner in deciding patentability as to at least independent claim 9 the '357 Patent. Further, Edens' teachings are new and non-cumulative. Accordingly, Edens in combination with Sonos APA raises a substantial new question of patentability as to at least independent claim 9 of the '357 Patent that have not been decided in a previous examination. Claims 10, 12, and 19are brought in at least due to their dependency on independent claim 9.

Alleged SNQ based upon Blank alone or in combination with Gray, SMPTE, RFC 1305, Microsoft file sharing, pcAnywhere, the Handbook and Sonos APA

Blank is presented to determine if a SNQ of patentability regarding claims 9, 10, 12, and 19 of the '357 Patent is raised. Blank was present as prior art in prior prosecutions of the application which became the '357 Patent but was submitted in a very large IDS and was not specifically mentioned in a rejection nor Reasons for Allowance. Blank teaches technological features that a reasonable Examiner would consider important in deciding whether or not the subject claims are patentable.

As seen in the proposed rejection, that Blank and Gray are more heavily discussed in the limitations which are the basis of the SNQ, with the other for mentioned prior art used as further explanation of the prior art to support or define what is well known. Therefore, Blanks and Gray will be reviewed in light of the other prior art to determine if an SNQ has been raised.

Blank discloses a system for synchronous playback between media synch players 110, which use a time server 120 to coordinate synchronous playback between the media synch players (1) through (N), See Blank at [0029] ("In operation, the media synch players 110 each generate a content stream such as video or audiovisual data in synchrony at the behest of the live playback system control console 125. Synchronism is derived from the time server 120, facilitating orchestration of the content provided by the media synch players 110. The system control console 125 and the media synch players 110 are slaved to the time server 120. As such, the system control console 125 can transmit a start time t+d for the media synch players 110 to start providing content from media files 210 (FIG. 2), and the media synch players 110 are synchronized with respect to this start time " Blank discloses in Figure 1 the media synch players 110 form a synchrony group for the playback of audio information that is provided over a network.

Blank incorporates U.S. patent application No. 09/836,834 (Published Application No. 2002/0150053 to Gray et a., hereinafter "Gray") by reference at [0042] and [0045]. Gray discloses communication of multimedia packets 304 from a multimedia source 301 to a multimedia sink 302 over heterogeneous networks 303, which inherently requires an address identifying a network location of audio information outside of a LAN for a multimedia sink 302 on a local area network 313. A person having skill in the art would recognize that all network communications between networked audio devices require the use of network addresses. Figure 3 of Gray is shown below and demonstrates that the multimedia source 301 is accessible through a network connection and is outside of the local area network of the multimedia sink 302.

Gray also discloses that this time stamping procedure can be implemented at the application layer, and that "the application layer itself may maintain the common time reckoning across the devices, calculate the appropriate time stamp, and/or include the time stamp in the multimedia packet. Which of these tasks the application layer performs may depend on the capabilities of the link layer that the application layer uses to forward multimedia packets through the gateway." [0069]. In combination, the time stamped packets of Gray allow synchronized playback at a plurality of media synch players 110 of the system of Blank, for content that is provided from a source outside of the LAN on which the media synch players 110 of Blank are operating. Furthermore, while Blank discloses that time server 120 can be separate from the media synch players 110, a person having ordinary skill in the art would recognize that it could also be included in one of media synch players 110, so as to reduce the number of devices required for synchronized playback.

When reviewing the proposed rejection, one sees Sonos APA is relied upon to disclose the some of the limitations which are the basis of the SNQ and more specifically the limitation of, "wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information", which is lacking in Blank and Gray. The whole section which 3PR relies upon is reads,

> "Another problem arises from the following. When an audio playback device converts the digital audio information from digital to analog form, it does so using a clock that provides timing information. Generally, the audio playback devices that are being developed have independent clocks, and, if they are not clocking at precisely the

same rate, the audio playback provided by the various devices can get out of synchronization.", 2:21-27.

As clearly seen, the clocks are independent but are not playing back the audio in synchronization. This would mean that the combination of Sonos APA with Blank and Gray would raise a SNQ.

Accordingly, these teachings would be important to a reasonable examiner in deciding patentability as to at least independent claim 9 the '357 Patent. Further, Blank and Gray teachings are new and non-cumulative. Accordingly, Blank and Gray in combination with at least Sonos APA raises a substantial new question of patentability as to at least independent claim 9 of the '357 Patent that have not been decided in a previous examination. Claims 10, 12, and 19 are brought in at least due to their dependency on independent claim 9.

Alleged SNQ based upon Meade, Goldberg and Sonos APA and/or Edens, Blank, SMPTE, NTP, Nutshell, RTF and RTSP

Meade and Goldberg are presented to determine if a SNQ of patentability regarding claims 9, 10, 12, and 19 of the '357 Patent is raised. Meade and Goldberg were present as prior art in prior prosecutions and utilized in rejecting claims of the application which became the '357 Patent. Meade and Goldberg teach technological features that a reasonable Examiner would consider important in deciding whether or not the subject claims are patentable.

As seen in the history of the prosecution, Meade and Goldberg were previously used in the rejection of the claims and specifically overcome by the amendments to the claims. Further, the Examiner stated that Meade and Goldberg did not teach those claim limitations which are the

basis for the SNQ. In this case, for old prior art that was previously considered to be reconsidered, the art must be presented in a new light by the 3PR. When reviewing the proposed rejection and explanation of the prior art, Meade and Goldberg are utilized in a similar manner as previously stated in the rejection which was overcome by amendments, i.e., 3PR cites the same paragraphs as was cited in the previously rejections.

Therefore, Meade and Goldberg are **not** presented in a new light and since the previous Examiner agreed that the application's claims were allowable over Meade and Goldberg, Meade and Goldberg do **not** raise a substantial **new** question (SNQ) regarding claims 9, 10, 12, and 19 of the '357 Patent alone or in combination with the other prior art listed.

Conclusion

A Request for *ex parte* reexamination of United States Patent Number 9,213,357 is Ordered.

A substantial new question of patentability affecting at least claim 9 of United States Patent Number 9,213,357 is raised by the Request for *ex parte* reexamination based on the '258 Patent, the Edens in combination with at least Sonos APA, and Blank in combination with at least Gray and Sonos APA cited areas supplied by the Requester.

Therefore, claims 9, 10, 12, and 19 will be reexamined.

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination

proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 CFR 1.985 to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the '357 Patent throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

CORRESPONDENCE

All correspondence relating to this ex parte reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://sportal.uspto.gov/authenticate/authenticateuserlocalepf.html.

By Mail to: Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:

/David E. England/
Primary Examiner, Art Unit 3992

Conferees: /Roland Foster/, Primary Examiner, CRU 3992

/MICHAEL FUELLING/

Supervisory Patent Examiner, Art Unit 3992

Order Granting Request For Ex Parte Reexamination	Control No. 90/013,959	Patent Under Reexamination 9213357
	Examiner DAVID ENGLAND	Art Unit 3992

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed *16 June 2017* has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☐ PTO/SB/08, c)☒ Other: *PTO/SB/42*

1. ☒ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

/DAVID ENGLAND/ Primary Examiner, Art Unit 3992		

cc:Requester (if third party requester)

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BIB DATA SHEET

CONFIRMATION NO. 9548

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/013,959	06/16/2017	709	3992	04-0401-REEXAM (14-1800-R

APPLICANTS

INVENTORS

9213357, Residence Not Provided;
SONOS, INC., SANTA BARBARA, CA;
BAL SEAL ENGINEERING, INC (PATENT OWNER), Irvine, CA;
BAL SEAL ENGINEERING INC, Foothill Ranch, CA

**** CONTINUING DATA **************************

This application is a REX of 14/516,867 10/17/2014 PAT 9213357
which is a CON of 13/297,000 11/15/2011 PAT 9182777
which is a CON of 10/816,217 04/01/2004 PAT 8234395
which claims benefit of 60/490,768 07/28/2003

**** FOREIGN APPLICATIONS **************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /DAVID E ENGLAND/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
				20	3

ADDRESS

McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606
UNITED STATES

TITLE

OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK

FILING FEE RECEIVED		
12000	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90013959	9213357
	Examiner	Art Unit
	DAVID ENGLAND	3992

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
searched prior art from IDS	7/17/17	/DE/

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/DAVID ENGLAND/ Primary Examiner.Art Unit 3992

Reexamination	**Application/Control No.** 90013959	**Applicant(s)/Patent Under Reexamination** 9213357
	Certificate Date	**Certificate Number**

Requester Correspondence Address: ☐ **Patent Owner** ☒ **Third Party**
MR. CHRISTOPHER JOHN ROURK JACKSON WALKER LLP 2323 ROSS AVENUE SUITE 600 DALLAS, TX 75201

LITIGATION REVIEW ☐	/DE/ (examiner initials)	07/17/2017 (date)
Case Name		Director Initials
Sonos Inc. v. D&MHoldings, Inc., United States District Court		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	**NUMBER**

	/DAVID ENGLAND/ Primary Examiner.Art Unit 3992

Doc Code: IDS

Document Description: Information Disclosure Statement filed

PTO/SB/42 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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37 CFR 1.501
INFORMATION DISCLOSURE CITATION IN A PATENT
(Sheet 1 of 2)

Docket Number (Optional)	Patent Number
131131.00049.005	9,213,357
Applicant: Sonos, Inc.	
Issue Date: December 15, 2015	Art Unit: 2442

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	9,213,357	2015/1	Millington			
	9,195,258	2015/1	Millington			
	6,611,537	2003/8	Edens et al.			
	2004/0252400	2004/1	Blank et al.			
	2002/0150053	2002/1	Gray, III et al.			
	2003/0073432	2003/0	Meade, II.			
	2007/0142944	2007/6	Goldberg et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		Potter Anderson & Corroon LLP, First set of interrogatories(Nos. 1-11) to plaintiff, 10/10/2016
		Microsoft Corporation, File and Printer Sharing with Microsoft Windows, 11/2003
		Symantec, Symantec pcAnywhere User's Guide, 1/15/2002
		~~MILLS, Network Time Protocol (Version 3) Specification, Implementation and Analysis, 3/1992~~
		TimeLine Vista, Inc., Time coder Tutor, 1996
		~~FRIES et al., MP3 and Internet Audio Handbook, 2000~~

EXAMINER	DATE CONSIDERED

This collection of information is required by 37 CFR 1.501. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.E.E/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /D.E.E/

PTO/SB/42 (07-09)
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U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

37 CFR 1.501
INFORMATION DISCLOSURE CITATION IN A PATENT
(Sheet 2 of 2)

Docket Number (Optional)	Patent Number
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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		Niederst, Web Design in a Nutshell, 9/2001
		Schulzrinne et al., Real Time Streaming Protocol (RTSP), 4/1998
		Schulzrinne et al., RTP: A Transport Protocol for Real-Time Applications. 1/1996
		Potter Anderson & Corroon LLP, Supplemental Opening Brief on Claims Construction, 3/3/2017

EXAMINER	DATE CONSIDERED
/DAVID E ENGLAND/	07/19/2017

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REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/013,959	06/16/2017	9213357

CONFIRMATION NO. 9548

MR. CHRISTOPHER JOHN ROURK JACKSON WALKER LLP
2323 ROSS AVENUE
SUITE 600
DALLAS, TX 75201

REEXAMINATION REQUEST NOTICE

OC000000093208623

Date Mailed: 08/03/2017

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Third Party Requester)

Requester is hereby notified that the filing date of the request for reexamination is 06/16/2017, the date that the filing requirements of 37 CFR § 1.510 were received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner
107361
McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

/vdrogers/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

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REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/013,959	06/16/2017	9213357

CONFIRMATION NO. 9548

REEXAM ASSIGNMENT NOTICE

107361
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Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

OC000000093208625

Date Mailed: 08/03/2017

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3992. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

NOTICE OF USPTO EX PARTE REEXAMINATION PATENT OWNER STATEMENT WAIVER PROGRAM

The USPTO has implemented a pilot program where, after a reexamination proceeding has been granted a filing date and before the examiner begins his or her review, the patent owner may orally waive the right to file a patent owner's statement. See *"Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings,"* 75 FR 47269 (August 5, 2010). One goal of the pilot program is to reduce the pendency of reexamination proceedings and improve the efficiency of the reexamination process.

Ordinarily when ex parte reexamination is ordered, the USPTO must wait until after the receipt of the patent owner's statement and the third party requester's reply, or after the expiration of the time period for filing the statement and reply (a period that can be as long as 5 to 6 months), before mailing a first determination of patentability. The USPTO's first determination of patentability is usually a first Office action on the merits or a Notice of Intent to Issue Reexamination Certificate (NIRC).

Under the pilot program, the patent owner's oral waiver allows the USPTO to act on the first determination of patentability immediately after determining that reexamination will be ordered, and in a suitable case issue the reexamination order and the first determination of patentability (which could be a NIRC if the claims under reexamination are confirmed) at the same time.

Benefits to the Patent Owner for participating in this pilot program include reduction in pendency.

To participate in this pilot program, Patent Owners may contact the USPTO's Central Reexamination Unit (CRU) at 571-272-7705. The USPTO will make the oral waiver of record in the reexamination file in an interview summary and a copy will be mailed to the patent owner and any third party requester.

cc: Third Party Requester(if any)
MR. CHRISTOPHER JOHN ROURK JACKSON WALKER LLP
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Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

Litigation Search Report CRU 3999

Ex Parte Reexamination: 90/013,959

TO: David England **Location: CRU** **Art Unit: 3992** **Date: 07/17/2017**	**From: Patricia Volpe** **Location: MDE 4B21** **Phone: (571) 272-6825** **patricia.volpe@uspto.gov**

Search Notes

Litigation search for U.S. Patent Number**: 9,213,357**

OPEN- *Sonos Inc. v. D&M Holdings, Inc.*, United States District Court, District of Delaware, C.A. NO. 14-1330 (RGA)

1) I performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.

2) I performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.

3) I performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.

4) I performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.

5) I performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14–cv–01330–RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

Go to Markman Construed Terms

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

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mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

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a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

Slip Copy, 2017 WL 123456, 2017 Markman 123456

Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

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v.
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+M Group, D&M Holdings U.S. Inc., and
Denon Electronics (USA), LLC, Defendants.

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MEMORANDUM OPINION

ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is Defendants' Partial Motion for Judgment on the Pleadings for Lack of Patent-Eligible Subject Matter. (D.I. 116). The issues have been fully briefed. (D.I. 117, 119, 124). The Court held oral argument on November 14, 2016. (D.I. 206) ("Hr'g Tr."). For the reasons that follow, the Court will deny Defendants' motion.

I. BACKGROUND

Plaintiff filed this patent infringement lawsuit against Defendant on October 14, 2014. (D.I. 1). Plaintiff has asserted a total of twelve patents in this suit. (D.I. 102). Defendants have moved for partial judgment on the pleadings with respect to four of the asserted patents, alleging that the patents are directed to ineligible subject matter. (D.I. 117). The patents at issue in this motion are U.S. Patent Nos. 8,588,949 ("the '949 patent"), 7,571,014 ("the '014 patent"), 9,202,509 ("the '509 patent"), and 9,219,959 ("the '959 patent").

The parties refer to the '949 and '014 patents collectively as the Volume patents. The '949 patent is directed to a multimedia controller and method for adjusting volume levels in a multi-zone system through the use of a user interface. The summary of the invention section of the specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups. According to one aspect of the present invention, a mechanism is provided to allow a user to group some of the players according to a theme or scene, where each of the players is located in a zone. When the scene is activated, the players in the scene react in a synchronized manner.

('949 patent at 2:28-34). The '014 patent is similarly directed to a method and apparatus for controlling multimedia players in a multi-zone system. The invention is described in the specification as follows:

> In general, the present invention pertains to control of audio characteristics of a plurality of multimedia players, or simply players, from a controller. The characteristics include, but are not limited to, an audio source and

> an audio volume being played in each of the players. In particular, the present invention enables the user to remotely control the audio characteristics of the players either as a group or as an individual player.

('014 patent at 2:24-31).

The parties refer to the '509 and '959 patents collectively as the Pairing patents. The '509 patent is directed to methods for grouping and pairing networked audio players. The specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups.... [I]ndividual players may be paired or grouped to stimulate [sic] a multi-channel listening environment. In [sic] instead of grouping selected players to play back an audio item, a user is allowed to activate one of the players to process the data of the audio item, essentially separating the data into individual streams, each of the streams representing a single-sound track and being played back in one of the players, thus creating a multi-channel listening environment with the selected players.

***2** ('509 patent at 2:26-27, 2:59-67). The '959 patent is similarly directed to devices and methods for grouping, consolidating, and pairing networked audio players. The invention is described in the specification as follows:

> In brief summary, the embodiments described herein provide technology for grouping, consolidating, and pairing individual playback devices to create or enhance a multi-channel listening environment. Particularly, the embodiments described herein enable two or more playback devices to be paired, such that multi-channel audio is achieved or enhanced. Such embodiments may be used to produce stereo sound or other audio environments suitable for audio content encoded with more than two channels, such as for certain kinds of television, movies, and music.

('959 patent at 2:54-63).

II. LEGAL STANDARD

Section 101 of the Patent Act defines patent-eligible subject matter. It provides: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101. The Supreme Court has recognized an implicit exception for three categories of subject matter not eligible for patentability—laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). The purpose of these carve outs is to protect the "basic tools of scientific and technological work." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012). "[A] process is not unpatentable simply because it contains a law of nature or a mathematical algorithm," as "an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Id.* at 1293-94 (internal quotation marks and emphasis omitted). In order "to transform an unpatentable law of nature into a patent-eligible application of such a law, one must do more than simply state the law of nature while adding the words 'apply it.' " *Id.* at 1294 (emphasis omitted).

The Supreme Court recently reaffirmed the framework laid out in *Mayo* "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S. Ct. at 2355. First, the court must determine whether the claims are drawn to a patent-ineligible concept. *Id.* If the answer is yes, the court must look to "the elements of the claim both individually and as an 'ordered combination' " to see if there is an " 'inventive concept'—*i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.' " *Id.* (alteration in original). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].' " *Id.* at 2357

(alterations in original) (quoting *Mayo*, 132 S. Ct. at 1297). "[S]imply appending conventional steps, specified at a high level of generality, to ... abstract ideas cannot make those ... ideas patentable." *Mayo*, 132 S. Ct. at 1300. Further, "the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment." *Alice*, 134 S. Ct. at 2358 (quoting *Bilski v. Kappos*, 561 U.S. 593, 610-11 (2010)). Thus, "the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *Id.* For this second step, the machine-or-transformation test can be a "useful clue," although it is not determinative. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014), *cert. denied*, 135 S. Ct. 2907 (2015).

***3** Patent eligibility under § 101 is a question of law suitable for resolution on a motion for judgment on the pleadings. *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1293 (Fed. Cir. 2016). The Federal Circuit follows regional circuit law for motions for judgment on the pleadings. *Id.* Under Third Circuit law, a Rule 12(c) motion for judgment on the pleadings is reviewed under the same standard as a Rule 12(b)(6) motion to dismiss when the Rule 12(c) motion alleges that the plaintiff failed to state a claim upon which relief can be granted. *Revell v. Port Auth.*, 598 F.3d 128, 134 (3d Cir. 2010); *Turbe v. Gov't of the Virgin Islands*, 938 F.2d 427, 428 (3d Cir. 1991). The court must accept the factual allegations in the complaint and take them in the light most favorable to the non-moving party. *Erickson v. Pardus*, 551 U.S. 89, 94 (2007); *Christopher v. Harbury*, 536 U.S. 403, 406 (2002).

The Federal Circuit has held that the district court is not required to individually address claims not asserted or identified by the non-moving party, so long as the court identifies a representative claim and "all the claims are substantially similar and linked to the same abstract idea." *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat. Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (internal quotation marks omitted).

III. DISCUSSION

A. The Volume Patents

The '949 patent contains three independent claims: claim 1, claim 8, and claim 15. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[1] Claim 1 reads:

> 1. A multimedia controller including a processor, the controller configured to:
>
> provide a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is an independent playback device configured to playback a multimedia output from multimedia source;
>
> accept via the user interface an input to facilitate formation of the player group, wherein the input to facilitate formation of the player group indicates that at least two of the plurality of players in the local area network are to be included in the player group for synchronized playback of a multimedia output from the same multimedia source;
>
> for any individual player in the player group, accept via the user interface a player-specific input to adjust a volume of that individual player, wherein the player-specific input to adjust the volume of that individual player causes that individual player to adjust its volume; and
>
> accept via the user interface a group-level input to adjust a volume associated with the player group, wherein the group-level input to adjust the volume associated with the player group causes each of the players in the player group to adjust its respective volume.

('949 patent, claim 1).

The '014 patent contains four independent claims, three of which have been asserted: claim 1, claim 16, and claim 38. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9). Claim 1 reads:

> ***4** 1. A method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players;
>
> displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and

> synchronizing all players in the zone group;
>
> adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1).

"First, we determine whether the claims at issue are directed to [an abstract idea]." *Alice*, 134 S. Ct. at 2355. "The 'abstract ideas' category embodies 'the longstanding rule that an idea of itself is not patentable.' " *Id.* (internal quotation marks omitted) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). "The Supreme Court has not established a definitive rule to determine what constitutes an 'abstract idea' sufficient to satisfy the first step of the *Mayo/Alice* inquiry." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016). The Supreme Court has recognized, however, that "fundamental economic practice[s]," *Bilski*, 561 U.S. at 611, "method[s] of organizing human activity," *Alice*, 134 S. Ct. at 2356, and mathematical algorithms, *Benson*, 409 U.S. at 64, are abstract ideas. In navigating the parameters of such categories, courts have generally sought to "compare claims at issue to those claims already found to be directed to an abstract idea in previous cases." *Enfish*, 822 F.3d at 1334. "But in determining whether the claims are directed to an abstract idea, we must be careful to avoid oversimplifying the claims because '[a]t some level, all inventions ... embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.' " *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016) (alterations in original) (quoting *Alice*, 134 S. Ct. at 2354).

Defendants assert that the "Volume patents are directed to the abstract idea of 'controlling audio settings for multiple audio devices.' " (D.I. 117 at 13). Defendants contend that, like the concept of collecting and storing data in *Content Extraction*, the Volume patents seek to claim a concept that is "very basic" and "fundamental to the entire technological field described in the Asserted Patents." (*Id.* at 14). According to Defendants, the claimed method "can be manually performed by a human." (*Id.*). Defendants also argue that the asserted claims of the '014 patent encompass prior art devices because the claims are not limited to wirelessly networked audio players. (*Id.* at 15).

Plaintiff counters that Defendants are oversimplifying in characterizing the invention. (D.I. 126 at 12). Plaintiff asserts that the invention embodies "a concrete and tangible concept limited to a specific technological field and it is tethered to specific devices." (*Id.* at 13). Plaintiff further asserts that the invention discloses new functionality and is not simply an automation of steps previously performed by humans. (*Id.*) Finally, Plaintiff objects to Defendants' characterization of the "network" as encompassing prior art hardwired audio systems. (*Id.* at 10). Plaintiff contends, rather, that the claims are limited to audio players on a data network. (*Id.*).

***5** I agree with Plaintiff that Defendants have advanced an oversimplified characterization of the allegedly abstract idea. "Under step one of *Mayo/Alice*, the claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject malter." *Internet Patents*, 790 F.3d at 1346. As the Federal Circuit has cautioned, "courts 'must be careful to avoid oversimplifying the claims' by looking at them generally and failing to account for the specific requirements of the claims." *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016) (quoting *TLI Commc'ns*, 823 F.3d at 611).

As support for their proposed characterization, Defendants cite to several cases they claim are similar to this one. Many of these cases are inapplicable, however, as they are directed to the abstract idea of collecting, organizing, and storing data. *See TLI Commc'ns*, 823 F.3d at 613 ("claims directed to abstract idea of classifying, organizing, and storing digital images"); *Content Extraction*, 776 F.3d at 1347 (claims drawn to abstract idea of collecting, recognizing, and storing data); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014) (claims drawn to abstract idea of "organizing information through mathematical correlations" where claims "not tied to a specific structure or machine"); *Visual Memory LLC v. NVIDIA Corp.*, 2016 WL 3041847, at *4 (D. Del. May 27, 2016), *appeal docketed*, No. 16-2254 (Fed. Cir. June 28, 2016) (claims drawn to "abstract idea of categorical data storage"). In order to make the argument that these cases are similar to this one, Defendants offer additional alternative characterizations

of the alleged abstract idea, arguing the Volume patents are directed to "organizing and manipulating electronic information" (D.I. 117 at 15) or, alternatively, "organizing and distributing information." (*Id.* at 16). These alternative characterizations are a far cry from, and oversimplified to a greater degree than, "controlling audio settings for multiple audio devices." (*Id.* at 13).

I think these claims are far more specific and limited than Defendants argue. For example, claim 1 of the '014 patent could only be considered to encompass collecting and organizing information if I were to restrict my analysis to the first two limitations involving displaying lists of available players. This is inappropriate. Considering the claim in its entirety reveals that there is more to the claim than organizing information. Rather, the third limitation calls for "forming a zone group," an action that involves controlling actual devices and effecting a fundamental alteration in how the plurality of zone players are networked together. The remaining limitations involve controlling the zone players that have been grouped together, also actions that are not accurately characterized as organizing information. Similarly, claim 1 of the '949 patent claims a controller that provides a user interface allowing for the formation of groups of zone players and control of these players. To characterize this claim as being drawn to "organizing and distributing information" is a gross oversimplification. Defendants' arguments ignore tangible limitations that are tied to specific devices. I am not persuaded.

For similar reasons, I reject Defendants' argument that the concept claimed is fundamental to the entire field. The claims of both Volume patents relate not to the field of audio devices generally, but only to methods and devices for controlling the specific "players" referenced in the claims. I have already construed the term "player" to mean "data network device configured to process and output audio." (D.I. 219 at 9). Claim 1 of each of the Volume Patents, therefore, requires concrete, tangible components, specifically a "plurality of players," where the players are the specific devices described in the patents. Only under Defendants' oversimplified characterization of these patents could the claimed concept be considered fundamental to the technological field.

***6** Defendants further argue that these patents are similar to those invalidated in *TLI Commc'ns*. (Hr'g Tr. at 5:21-6:10). In *TLI*, the claims were found to be abstract at step one because they were "directed to the use of conventional or generic technology in a nascent but well-known environment, without any claim that the invention reflects an inventive solution to any problem presented by combining the two" rather than being directed to "a specific improvement to computer functionality." *TLI Commc'ns*, 823 F.3d at 612. Importantly, however, the specification of the patent at issue in *TLI* did not "provide any technical details for the tangible components." *Id.* In contrast, the claims of the Volume patents are not directed to "generic technology." They are directed to controllers and networked audio players that are described in detail in the specifications. ('014 patent at 6:18-8:49; '959 patent at 7:8-13:10). Furthermore, the specifications of both Volume patents describe the problems presented and solved by these inventions as "dynamically managing the ad hoc creation and deletion of groups" of audio players and "control of the audio players as a group." ('014 patent at 2:3-6; '949 patent at 2:10-13). Although Defendants attempt to argue that this is a "manufactured problem," I do not think *TLI* is analogous to this case both because the Volume patents are directed to specific rather than generic technology and present a specific improvement to the existing technology.

Defendants next argue that "each of the recited steps can be manually performed by a human." (D.I. 117 at 14). However, Defendants do not explain how a human could manually accomplish this feat. Nor could they. Performing the method of claim 1 of the '014 patent requires the following steps: 1) displaying a list of available players on a screen; 2) if one of the players is a zone head, displaying on the screen a second list of players that could be grouped with the zone head; 3) forming a group by selecting some of the players to group with the zone head; 4) synchronizing the players in the group; and 5) using the controller to synchronously adjust the volume of all of the grouped players. Even setting aside the steps involving displaying lists on a screen, it seems clear that in order to form a group in step 3 in a hard wired system contemplated by Defendants, a user would need to re-wire the audio system each time a new group is formed. Forming and changing the composition of player groups in real time simply by making a few selections on the screen of a device is not something a human could do manually in a hard wired system.

Similarly, claim 1 of the '949 patent is a device claim for a controller used to form and control groups of

audio players. Defendants' arguments that a human could perform the actions the device is said to perform is at best illogical. Defendants "provided no evidence that the process previously used [to group audio speakers] is the same as the process required by the claims." *McRO, Inc.*, 837 F.3d at 1314. As in *McRO*, the prior art method of grouping and controlling audio devices (*i.e.* by hardwiring them into the desired configuration) "would not be within the scope of the claims" because it does not involving using a controller with a user interface to view lists of available devices on the data network that are then grouped and controlled synchronously. Furthermore, unlike in *McRO*, the method is not implemented on a general purpose computer. Rather, as discussed above, the method is directed to specific devices that are described and claimed in the patents.

It seems to me that the invention as claimed in each of the Volume patents represents a substantial improvement over the existing technology—the invention described in the patents allows for the audio devices to be grouped and regrouped in real time simply using a user interface to select the desired members of the groups without the need for altering any hard wiring in the physical system. This is not simply a "more efficient" method of doing something already done by humans. It is a method that provides for capabilities far beyond what a traditional hardwired system offers. Plaintiff does not contend that audio speakers are a new technology. What is claimed, however, is not a traditional speaker; rather, the claims are directed to an improvement to the existing technology for grouping and controlling audio speakers. Furthermore, the claims are grounded in a specific device—the player/zone player/playback device that is described in the patent and that I previously construed to mean "data network device configured to process and output audio." (D.I. 219 at 9).

***7** Finally, Defendants argue that the claims of the '014 patent "encompass the admitted prior art of hard-wired traditional multi-zone systems." (D.I. 117 at 15). I am not persuaded that this is true for many of the same reasons I have already explained above. Whether it is true or not, however, is irrelevant in the context of this motion because "section 101 eligibility should not become a substitute for a patentability analysis related to prior art, adequate disclosure, or the other conditions and requirements of Title 35." *Research Corp. Tech., Inc. v. Microsoft Corp.*, 627 F.3d 859, 868 (Fed. Cir. 2010).

For the reasons given above, I find that the Volume patents claim patent-eligible subject matter under § 101. Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

B. The Pairing Patents

The '509 patent contains three independent claims: claim 1, claim 11, and claim 23. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[2] Claim 1 reads:

> 1. A method comprising:
>
> identifying, via a controller, a plurality of playback devices on a local area network (LAN), wherein at least one of the plurality of playback devices is configured to request an audio data stream from a source device in response to receipt of a command via the controller over the LAN;
>
> instructing, via the controller over the LAN, at least one of the plurality of playback devices to process the requested audio data stream into at least one of a first and a second channel of the requested audio data stream and to reproduce a respective one of the first and the second channel, wherein the plurality of playback devices, when grouped, provide multi-channel sound, such that a first playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the first channel of the requested audio data stream for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested audio data stream for the group; and
>
> displaying, via the controller, an indication that each of the plurality of playback devices is configured to reproduce a respective channel.

('509 patent, claim 1). The '959 patent contains two independent claims. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 14 is representative. (Hr'g Tr. at 61:6-9). Claim 14 reads:

> 14. A method for outputting audio in a multi-channel listening environment, wherein the method is performed by a playback device, the method comprising:

receiving audio data over a network;

processing the audio data before the playback device outputs audio from a plurality of speaker drivers based on the audio data;

when the playback device is configured for a first type of pairing, performing a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers;

when the playback device is configured for a second type of pairing, performing a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers.

('959 patent, claim 14).

***8** Defendants argue that the claims of the '509 patent are directed to the abstract idea of "grouping and controlling audio players." (D.I. 117 at 19). According to Defendants, the method described in claim 1 forms "the very foundation of any audio system with more than one speaker." (*Id.*). As to the '959 patent, Defendants argue that the claims are directed to the abstract idea of "changing audio settings based on programmed instructions." (*Id.* at 23). Defendants further allege that the claims of this patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (*Id.*). As with the other patents at issue in this motion, Defendants argue that the claimed methods from both of the Pairing patents "can be performed entirely by humans." (*Id.*).

Plaintiff respond that the claims of both of the Pairing patents "are directed to several specific improvements in existing audio system technology." (D.I. 126 at 17, 21). Plaintiff also takes issue with Defendants' contention that the claimed methods can be performed by humans. (*Id.* at 19, 22). Plaintiff further argues, as with the Volume patents, that Defendants have advanced an oversimplified characterization of the claims. (*Id.* at 19).

Defendants make the same arguments here as they did for the Volume patents. I again reject those arguments. As with the Volume patents, I agree with Plaintiff that Defendants' characterization of the purportedly abstract idea is oversimplified. Just as with the Volume patents, the Pairing patents claim methods that involve specific devices (playback devices and controllers) that are described in detail in the specifications. ('509 patent at 5:63-8:50; '959 patent at 7:8-13:10). Furthermore, as with the Volume patents, the claimed methods do not represent simply an automation of something done manually. Rather, the method of claim 1 the '509 patent requires using a controller to identify the playback devices on a local area network, instruct some of the devices to each output different channels of audio data, and display on the controller's screen which device is outputting which channel. In order to perform this method manually, leaving aside the steps involving using a controller or displaying on the screen of the controller, a person would have to manually rewire the devices each time a new selection is made for which devices are to output which channels. Similarly, the method of claim 14 of the '959 patent is performed by the playback device and involves receiving and then processing audio data, recognizing the type of pairing that has been selected for that playback devices, performing an equalization previously specified for that type of pairing, and then outputting audio. This simply is not the kind of method that could be performed manually and, even if it were, automating the method as claimed represents a substantial improvement to the functionality of a specific device. I also reject Defendants' argument that the claims of the '959 patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (D.I. 117 at 23). It seems clear to me that the two patents claim substantially different methods even if it could also be said they address "the same general idea."

At oral argument, Defendants drew an analogy between this case and the claims at issue in *Personalized Media*. (Hr'g Tr. at 12:16-13:2). *Personalized Media* involved a claim "directed to the abstract idea of using personal information to create a customized presentation." *Personalized Media Commc'ns, LLC v. Amazon.com, Inc.*, 161 F. Supp. 3d 325, 330 (D. Del. 2015), *aff'd*, 2016 WL 7118532 (Fed. Cir. Dec. 7, 2016). The claim in *Personalized Media*, however, is not analogous to the claims of the Pairing patents. These patents, like the Volume patents, are not about organizing, manipulating, or distributing information. Rather, these patents claim improvements to specific devices, not generic technology, and the methods involve controlling the devices to effect tangible changes in their configurations. For these reasons, I find that the Pairing patents claim patent-eligible subject matter under § 101.

*9 Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

IV. CONCLUSION

For the reasons set forth above, the motion for judgment on the pleadings for lack of patentable subject matter (D.I. 116) will be denied. An appropriate order will be entered.

All Citations

Slip Copy, 2017 WL 971700

Footnotes

1 At oral argument on November 14, 2016, the parties were directed to submit additional briefing to the extent that they felt claim 1 of each of these patents was not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that claim 1 of each patent is not representative. (D.I. 225).

2 At oral argument, the parties were directed to submit additional briefing to the extent that they felt claim 1 of the '509 patent and claim 14 of the '959 patent were not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that these claims are not representative. (D.I. 225).

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2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14-cv-01330-RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

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mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

Slip Copy, 2017 WL 123456, 2017 Markman 123456

Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

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United States District Court,
D. Delaware.

SONOS, INC., Plaintiff,
v.
D&M HOLDINGS INC. d/b/a the D
+M Group, D&M Holdings U.S. Inc., and
Denon Electronics (USA), LLC, Defendants.

Civil Action No. 14-1330-RGA
|
Filed 03/13/2017

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MEMORANDUM OPINION

ANDREWS, U.S. DISTRICT JUDGE

*1 Presently before the Court is Defendants' Partial Motion for Judgment on the Pleadings for Lack of Patent-Eligible Subject Matter. (D.I. 116). The issues have been fully briefed. (D.I. 117, 119, 124). The Court held oral argument on November 14, 2016. (D.I. 206) ("Hr'g Tr."). For the reasons that follow, the Court will deny Defendants' motion.

I. BACKGROUND

Plaintiff filed this patent infringement lawsuit against Defendant on October 14, 2014. (D.I. 1). Plaintiff has asserted a total of twelve patents in this suit. (D.I. 102). Defendants have moved for partial judgment on the pleadings with respect to four of the asserted patents, alleging that the patents are directed to ineligible subject matter. (D.I. 117). The patents at issue in this motion are U.S. Patent Nos. 8,588,949 ("the '949 patent"), 7,571,014 ("the '014 patent"), 9,202,509 ("the '509 patent"), and 9,219,959 ("the '959 patent").

The parties refer to the '949 and '014 patents collectively as the Volume patents. The '949 patent is directed to a multimedia controller and method for adjusting volume levels in a multi-zone system through the use of a user interface. The summary of the invention section of the specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups. According to one aspect of the present invention, a mechanism is provided to allow a user to group some of the players according to a theme or scene, where each of the players is located in a zone. When the scene is activated, the players in the scene react in a synchronized manner.

('949 patent at 2:28-34). The '014 patent is similarly directed to a method and apparatus for controlling multimedia players in a multi-zone system. The invention is described in the specification as follows:

> In general, the present invention pertains to control of audio characteristics of a plurality of multimedia players, or simply players, from a controller. The characteristics include, but are not limited to, an audio source and

> an audio volume being played in each of the players. In particular, the present invention enables the user to remotely control the audio characteristics of the players either as a group or as an individual player.

('014 patent at 2:24-31).

The parties refer to the '509 and '959 patents collectively as the Pairing patents. The '509 patent is directed to methods for grouping and pairing networked audio players. The specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups.... [I]ndividual players may be paired or grouped to stimulate [sic] a multi-channel listening environment. In [sic] instead of grouping selected players to play back an audio item, a user is allowed to activate one of the players to process the data of the audio item, essentially separating the data into individual streams, each of the streams representing a single-sound track and being played back in one of the players, thus creating a multi-channel listening environment with the selected players.

***2** ('509 patent at 2:26-27, 2:59-67). The '959 patent is similarly directed to devices and methods for grouping, consolidating, and pairing networked audio players. The invention is described in the specification as follows:

> In brief summary, the embodiments described herein provide technology for grouping, consolidating, and pairing individual playback devices to create or enhance a multi-channel listening environment. Particularly, the embodiments described herein enable two or more playback devices to be paired, such that multi-channel audio is achieved or enhanced. Such embodiments may be used to produce stereo sound or other audio environments suitable for audio content encoded with more than two channels, such as for certain kinds of television, movies, and music.

('959 patent at 2:54-63).

II. LEGAL STANDARD

Section 101 of the Patent Act defines patent-eligible subject matter. It provides: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101. The Supreme Court has recognized an implicit exception for three categories of subject matter not eligible for patentability—laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). The purpose of these carve outs is to protect the "basic tools of scientific and technological work." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012). "[A] process is not unpatentable simply because it contains a law of nature or a mathematical algorithm," as "an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Id.* at 1293-94 (internal quotation marks and emphasis omitted). In order "to transform an unpatentable law of nature into a patent-eligible application of such a law, one must do more than simply state the law of nature while adding the words 'apply it.' " *Id.* at 1294 (emphasis omitted).

The Supreme Court recently reaffirmed the framework laid out in *Mayo* "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S. Ct. at 2355. First, the court must determine whether the claims are drawn to a patent-ineligible concept. *Id.* If the answer is yes, the court must look to "the elements of the claim both individually and as an 'ordered combination' " to see if there is an " 'inventive concept'—*i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.' " *Id.* (alteration in original). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].' " *Id.* at 2357

(alterations in original) (quoting *Mayo*, 132 S. Ct. at 1297). "[S]imply appending conventional steps, specified at a high level of generality, to ... abstract ideas cannot make those ... ideas patentable." *Mayo*, 132 S. Ct. at 1300. Further, "the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment." *Alice*, 134 S. Ct. at 2358 (quoting *Bilski v. Kappos*, 561 U.S. 593, 610-11 (2010)). Thus, "the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *Id.* For this second step, the machine-or-transformation test can be a "useful clue," although it is not determinative. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014), *cert. denied*, 135 S. Ct. 2907 (2015).

***3** Patent eligibility under § 101 is a question of law suitable for resolution on a motion for judgment on the pleadings. *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1293 (Fed. Cir. 2016). The Federal Circuit follows regional circuit law for motions for judgment on the pleadings. *Id.* Under Third Circuit law, a Rule 12(c) motion for judgment on the pleadings is reviewed under the same standard as a Rule 12(b)(6) motion to dismiss when the Rule 12(c) motion alleges that the plaintiff failed to state a claim upon which relief can be granted. *Revell v. Port Auth.*, 598 F.3d 128, 134 (3d Cir. 2010); *Turbe v. Gov't of the Virgin Islands*, 938 F.2d 427, 428 (3d Cir. 1991). The court must accept the factual allegations in the complaint and take them in the light most favorable to the non-moving party. *Erickson v. Pardus*, 551 U.S. 89, 94 (2007); *Christopher v. Harbury*, 536 U.S. 403, 406 (2002).

The Federal Circuit has held that the district court is not required to individually address claims not asserted or identified by the non-moving party, so long as the court identifies a representative claim and "all the claims are substantially similar and linked to the same abstract idea." *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat. Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (internal quotation marks omitted).

III. DISCUSSION

A. The Volume Patents

The '949 patent contains three independent claims: claim 1, claim 8, and claim 15. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[1] Claim 1 reads:

> 1. A multimedia controller including a processor, the controller configured to:
>
> provide a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is an independent playback device configured to playback a multimedia output from multimedia source;
>
> accept via the user interface an input to facilitate formation of the player group, wherein the input to facilitate formation of the player group indicates that at least two of the plurality of players in the local area network are to be included in the player group for synchronized playback of a multimedia output from the same multimedia source;
>
> for any individual player in the player group, accept via the user interface a player-specific input to adjust a volume of that individual player, wherein the player-specific input to adjust the volume of that individual player causes that individual player to adjust its volume; and
>
> accept via the user interface a group-level input to adjust a volume associated with the player group, wherein the group-level input to adjust the volume associated with the player group causes each of the players in the player group to adjust its respective volume.

('949 patent, claim 1).

The '014 patent contains four independent claims, three of which have been asserted: claim 1, claim 16, and claim 38. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9). Claim 1 reads:

> ***4** 1. A method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players;
>
> displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and

> synchronizing all players in the zone group;
>
> adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1).

"First, we determine whether the claims at issue are directed to [an abstract idea]." *Alice*, 134 S. Ct. at 2355. "The 'abstract ideas' category embodies 'the longstanding rule that an idea of itself is not patentable.' " *Id.* (internal quotation marks omitted) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). "The Supreme Court has not established a definitive rule to determine what constitutes an 'abstract idea' sufficient to satisfy the first step of the *Mayo/Alice* inquiry." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016). The Supreme Court has recognized, however, that "fundamental economic practice[s]," *Bilski*, 561 U.S. at 611, "method[s] of organizing human activity," *Alice*, 134 S. Ct. at 2356, and mathematical algorithms, *Benson*, 409 U.S. at 64, are abstract ideas. In navigating the parameters of such categories, courts have generally sought to "compare claims at issue to those claims already found to be directed to an abstract idea in previous cases." *Enfish*, 822 F.3d at 1334. "But in determining whether the claims are directed to an abstract idea, we must be careful to avoid oversimplifying the claims because '[a]t some level, all inventions ... embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.' " *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016) (alterations in original) (quoting *Alice*, 134 S. Ct. at 2354).

Defendants assert that the "Volume patents are directed to the abstract idea of 'controlling audio settings for multiple audio devices.' " (D.I. 117 at 13). Defendants contend that, like the concept of collecting and storing data in *Content Extraction*, the Volume patents seek to claim a concept that is "very basic" and "fundamental to the entire technological field described in the Asserted Patents." (*Id.* at 14). According to Defendants, the claimed method "can be manually performed by a human." (*Id.*). Defendants also argue that the asserted claims of the '014 patent encompass prior art devices because the claims are not limited to wirelessly networked audio players. (*Id.* at 15).

Plaintiff counters that Defendants are oversimplifying in characterizing the invention. (D.I. 126 at 12). Plaintiff asserts that the invention embodies "a concrete and tangible concept limited to a specific technological field and it is tethered to specific devices." (*Id.* at 13). Plaintiff further asserts that the invention discloses new functionality and is not simply an automation of steps previously performed by humans. (*Id.*) Finally, Plaintiff objects to Defendants' characterization of the "network" as encompassing prior art hardwired audio systems. (*Id.* at 10). Plaintiff contends, rather, that the claims are limited to audio players on a data network. (*Id.*).

***5** I agree with Plaintiff that Defendants have advanced an oversimplified characterization of the allegedly abstract idea. "Under step one of *Mayo/Alice*, the claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject malter." *Internet Patents*, 790 F.3d at 1346. As the Federal Circuit has cautioned, "courts 'must be careful to avoid oversimplifying the claims' by looking at them generally and failing to account for the specific requirements of the claims." *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016) (quoting *TLI Commc'ns*, 823 F.3d at 611).

As support for their proposed characterization, Defendants cite to several cases they claim are similar to this one. Many of these cases are inapplicable, however, as they are directed to the abstract idea of collecting, organizing, and storing data. *See TLI Commc'ns*, 823 F.3d at 613 ("claims directed to abstract idea of classifying, organizing, and storing digital images"); *Content Extraction*, 776 F.3d at 1347 (claims drawn to abstract idea of collecting, recognizing, and storing data); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014) (claims drawn to abstract idea of "organizing information through mathematical correlations" where claims "not tied to a specific structure or machine"); *Visual Memory LLC v. NVIDIA Corp.*, 2016 WL 3041847, at *4 (D. Del. May 27, 2016), *appeal docketed*, No. 16-2254 (Fed. Cir. June 28, 2016) (claims drawn to "abstract idea of categorical data storage"). In order to make the argument that these cases are similar to this one, Defendants offer additional alternative characterizations

of the alleged abstract idea, arguing the Volume patents are directed to "organizing and manipulating electronic information" (D.I. 117 at 15) or, alternatively, "organizing and distributing information." (*Id.* at 16). These alternative characterizations are a far cry from, and oversimplified to a greater degree than, "controlling audio settings for multiple audio devices." (*Id.* at 13).

I think these claims are far more specific and limited than Defendants argue. For example, claim 1 of the '014 patent could only be considered to encompass collecting and organizing information if I were to restrict my analysis to the first two limitations involving displaying lists of available players. This is inappropriate. Considering the claim in its entirety reveals that there is more to the claim than organizing information. Rather, the third limitation calls for "forming a zone group," an action that involves controlling actual devices and effecting a fundamental alteration in how the plurality of zone players are networked together. The remaining limitations involve controlling the zone players that have been grouped together, also actions that are not accurately characterized as organizing information. Similarly, claim 1 of the '949 patent claims a controller that provides a user interface allowing for the formation of groups of zone players and control of these players. To characterize this claim as being drawn to "organizing and distributing information" is a gross oversimplification. Defendants' arguments ignore tangible limitations that are tied to specific devices. I am not persuaded.

For similar reasons, I reject Defendants' argument that the concept claimed is fundamental to the entire field. The claims of both Volume patents relate not to the field of audio devices generally, but only to methods and devices for controlling the specific "players" referenced in the claims. I have already construed the term "player" to mean "data network device configured to process and output audio." (D.I. 219 at 9). Claim 1 of each of the Volume Patents, therefore, requires concrete, tangible components, specifically a "plurality of players," where the players are the specific devices described in the patents. Only under Defendants' oversimplified characterization of these patents could the claimed concept be considered fundamental to the technological field.

***6** Defendants further argue that these patents are similar to those invalidated in *TLI Commc'ns*. (Hr'g Tr. at 5:21-6:10). In *TLI*, the claims were found to be abstract at step one because they were "directed to the use of conventional or generic technology in a nascent but well-known environment, without any claim that the invention reflects an inventive solution to any problem presented by combining the two" rather than being directed to "a specific improvement to computer functionality." *TLI Commc'ns*, 823 F.3d at 612. Importantly, however, the specification of the patent at issue in *TLI* did not "provide any technical details for the tangible components." *Id.* In contrast, the claims of the Volume patents are not directed to "generic technology." They are directed to controllers and networked audio players that are described in detail in the specifications. ('014 patent at 6:18-8:49; '959 patent at 7:8-13:10). Furthermore, the specifications of both Volume patents describe the problems presented and solved by these inventions as "dynamically managing the ad hoc creation and deletion of groups" of audio players and "control of the audio players as a group." ('014 patent at 2:3-6; '949 patent at 2:10-13). Although Defendants attempt to argue that this is a "manufactured problem," I do not think *TLI* is analogous to this case both because the Volume patents are directed to specific rather than generic technology and present a specific improvement to the existing technology.

Defendants next argue that "each of the recited steps can be manually performed by a human." (D.I. 117 at 14). However, Defendants do not explain how a human could manually accomplish this feat. Nor could they. Performing the method of claim 1 of the '014 patent requires the following steps: 1) displaying a list of available players on a screen; 2) if one of the players is a zone head, displaying on the screen a second list of players that could be grouped with the zone head; 3) forming a group by selecting some of the players to group with the zone head; 4) synchronizing the players in the group; and 5) using the controller to synchronously adjust the volume of all of the grouped players. Even setting aside the steps involving displaying lists on a screen, it seems clear that in order to form a group in step 3 in a hard wired system contemplated by Defendants, a user would need to re-wire the audio system each time a new group is formed. Forming and changing the composition of player groups in real time simply by making a few selections on the screen of a device is not something a human could do manually in a hard wired system.

Similarly, claim 1 of the '949 patent is a device claim for a controller used to form and control groups of

audio players. Defendants' arguments that a human could perform the actions the device is said to perform is at best illogical. Defendants "provided no evidence that the process previously used [to group audio speakers] is the same as the process required by the claims." *McRO, Inc.*, 837 F.3d at 1314. As in *McRO*, the prior art method of grouping and controlling audio devices (*i.e.* by hardwiring them into the desired configuration) "would not be within the scope of the claims" because it does not involving using a controller with a user interface to view lists of available devices on the data network that are then grouped and controlled synchronously. Furthermore, unlike in *McRO*, the method is not implemented on a general purpose computer. Rather, as discussed above, the method is directed to specific devices that are described and claimed in the patents.

It seems to me that the invention as claimed in each of the Volume patents represents a substantial improvement over the existing technology—the invention described in the patents allows for the audio devices to be grouped and regrouped in real time simply using a user interface to select the desired members of the groups without the need for altering any hard wiring in the physical system. This is not simply a "more efficient" method of doing something already done by humans. It is a method that provides for capabilities far beyond what a traditional hardwired system offers. Plaintiff does not contend that audio speakers are a new technology. What is claimed, however, is not a traditional speaker; rather, the claims are directed to an improvement to the existing technology for grouping and controlling audio speakers. Furthermore, the claims are grounded in a specific device—the player/zone player/playback device that is described in the patent and that I previously construed to mean "data network device configured to process and output audio." (D.I. 219 at 9).

***7** Finally, Defendants argue that the claims of the '014 patent "encompass the admitted prior art of hard-wired traditional multi-zone systems." (D.I. 117 at 15). I am not persuaded that this is true for many of the same reasons I have already explained above. Whether it is true or not, however, is irrelevant in the context of this motion because "section 101 eligibility should not become a substitute for a patentability analysis related to prior art, adequate disclosure, or the other conditions and requirements of Title 35." *Research Corp. Tech., Inc. v. Microsoft Corp.*, 627 F.3d 859, 868 (Fed. Cir. 2010).

For the reasons given above, I find that the Volume patents claim patent-eligible subject matter under § 101. Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

B. The Pairing Patents

The '509 patent contains three independent claims: claim 1, claim 11, and claim 23. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[2] Claim 1 reads:

> 1. A method comprising:
>
> identifying, via a controller, a plurality of playback devices on a local area network (LAN), wherein at least one of the plurality of playback devices is configured to request an audio data stream from a source device in response to receipt of a command via the controller over the LAN;
>
> instructing, via the controller over the LAN, at least one of the plurality of playback devices to process the requested audio data stream into at least one of a first and a second channel of the requested audio data stream and to reproduce a respective one of the first and the second channel, wherein the plurality of playback devices, when grouped, provide multi-channel sound, such that a first playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the first channel of the requested audio data stream for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested audio data stream for the group; and
>
> displaying, via the controller, an indication that each of the plurality of playback devices is configured to reproduce a respective channel.

('509 patent, claim 1). The '959 patent contains two independent claims. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 14 is representative. (Hr'g Tr. at 61:6-9). Claim 14 reads:

> 14. A method for outputting audio in a multi-channel listening environment, wherein the method is performed by a playback device, the method comprising:

receiving audio data over a network;

processing the audio data before the playback device outputs audio from a plurality of speaker drivers based on the audio data;

when the playback device is configured for a first type of pairing, performing a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers;

when the playback device is configured for a second type of pairing, performing a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers.

('959 patent, claim 14).

***8** Defendants argue that the claims of the '509 patent are directed to the abstract idea of "grouping and controlling audio players." (D.I. 117 at 19). According to Defendants, the method described in claim 1 forms "the very foundation of any audio system with more than one speaker." (*Id.*). As to the '959 patent, Defendants argue that the claims are directed to the abstract idea of "changing audio settings based on programmed instructions." (*Id.* at 23). Defendants further allege that the claims of this patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (*Id.*). As with the other patents at issue in this motion, Defendants argue that the claimed methods from both of the Pairing patents "can be performed entirely by humans." (*Id.*).

Plaintiff respond that the claims of both of the Pairing patents "are directed to several specific improvements in existing audio system technology." (D.I. 126 at 17, 21). Plaintiff also takes issue with Defendants' contention that the claimed methods can be performed by humans. (*Id.* at 19, 22). Plaintiff further argues, as with the Volume patents, that Defendants have advanced an oversimplified characterization of the claims. (*Id.* at 19).

Defendants make the same arguments here as they did for the Volume patents. I again reject those arguments. As with the Volume patents, I agree with Plaintiff that Defendants' characterization of the purportedly abstract idea is oversimplified. Just as with the Volume patents, the Pairing patents claim methods that involve specific devices (playback devices and controllers) that are described in detail in the specifications. ('509 patent at 5:63-8:50; '959 patent at 7:8-13:10). Furthermore, as with the Volume patents, the claimed methods do not represent simply an automation of something done manually. Rather, the method of claim 1 the '509 patent requires using a controller to identify the playback devices on a local area network, instruct some of the devices to each output different channels of audio data, and display on the controller's screen which device is outputting which channel. In order to perform this method manually, leaving aside the steps involving using a controller or displaying on the screen of the controller, a person would have to manually rewire the devices each time a new selection is made for which devices are to output which channels. Similarly, the method of claim 14 of the '959 patent is performed by the playback device and involves receiving and then processing audio data, recognizing the type of pairing that has been selected for that playback devices, performing an equalization previously specified for that type of pairing, and then outputting audio. This simply is not the kind of method that could be performed manually and, even if it were, automating the method as claimed represents a substantial improvement to the functionality of a specific device. I also reject Defendants' argument that the claims of the '959 patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (D.I. 117 at 23). It seems clear to me that the two patents claim substantially different methods even if it could also be said they address "the same general idea."

At oral argument, Defendants drew an analogy between this case and the claims at issue in *Personalized Media*. (Hr'g Tr. at 12:16-13:2). *Personalized Media* involved a claim "directed to the abstract idea of using personal information to create a customized presentation." *Personalized Media Commc'ns, LLC v. Amazon.com, Inc.*, 161 F. Supp. 3d 325, 330 (D. Del. 2015), *aff'd*, 2016 WL 7118532 (Fed. Cir. Dec. 7, 2016). The claim in *Personalized Media*, however, is not analogous to the claims of the Pairing patents. These patents, like the Volume patents, are not about organizing, manipulating, or distributing information. Rather, these patents claim improvements to specific devices, not generic technology, and the methods involve controlling the devices to effect tangible changes in their configurations. For these reasons, I find that the Pairing patents claim patent-eligible subject matter under § 101.

*9 Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

IV. CONCLUSION

For the reasons set forth above, the motion for judgment on the pleadings for lack of patentable subject matter (D.I. 116) will be denied. An appropriate order will be entered.

All Citations

Slip Copy, 2017 WL 971700

Footnotes

1 At oral argument on November 14, 2016, the parties were directed to submit additional briefing to the extent that they felt claim 1 of each of these patents was not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that claim 1 of each patent is not representative. (D.I. 225).

2 At oral argument, the parties were directed to submit additional briefing to the extent that they felt claim 1 of the '509 patent and claim 14 of the '959 patent were not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that these claims are not representative. (D.I. 225).

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2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14-cv-01330-RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

Go to Markman Construed Terms

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

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mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

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a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

Slip Copy, 2017 WL 123456, 2017 Markman 123456

Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

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2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14-cv-01330-RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

Go to Markman Construed Terms

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

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mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

Slip Copy, 2017 WL 123456, 2017 Markman 123456

Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

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2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14-cv-01330-RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

Go to Markman Construed Terms

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

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a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

Slip Copy, 2017 WL 123456, 2017 Markman 123456

Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

End of Document

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2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14-cv-01330-RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

Go to Markman Construed Terms

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

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a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

Slip Copy, 2017 WL 123456, 2017 Markman 123456

Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

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2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14-cv-01330-RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

Go to Markman Construed Terms

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

Slip Copy, 2017 WL 123456, 2017 Markman 123456

Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

End of Document

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2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14-cv-01330-RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

Go to Markman Construed Terms

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

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a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

Slip Copy, 2017 WL 123456, 2017 Markman 123456

Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

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SONOS, INC., Plaintiff,
v.
D&M HOLDINGS INC. d/b/a the D
+M Group, D&M Holdings U.S. Inc., and
Denon Electronics (USA), LLC, Defendants.

Civil Action No. 14-1330-RGA
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MEMORANDUM OPINION

ANDREWS, U.S. DISTRICT JUDGE

*1 Presently before the Court is Defendants' Partial Motion for Judgment on the Pleadings for Lack of Patent-Eligible Subject Matter. (D.I. 116). The issues have been fully briefed. (D.I. 117, 119, 124). The Court held oral argument on November 14, 2016. (D.I. 206) ("Hr'g Tr."). For the reasons that follow, the Court will deny Defendants' motion.

I. BACKGROUND

Plaintiff filed this patent infringement lawsuit against Defendant on October 14, 2014. (D.I. 1). Plaintiff has asserted a total of twelve patents in this suit. (D.I. 102). Defendants have moved for partial judgment on the pleadings with respect to four of the asserted patents, alleging that the patents are directed to ineligible subject matter. (D.I. 117). The patents at issue in this motion are U.S. Patent Nos. 8,588,949 ("the '949 patent"), 7,571,014 ("the '014 patent"), 9,202,509 ("the '509 patent"), and 9,219,959 ("the '959 patent").

The parties refer to the '949 and '014 patents collectively as the Volume patents. The '949 patent is directed to a multimedia controller and method for adjusting volume levels in a multi-zone system through the use of a user interface. The summary of the invention section of the specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups. According to one aspect of the present invention, a mechanism is provided to allow a user to group some of the players according to a theme or scene, where each of the players is located in a zone. When the scene is activated, the players in the scene react in a synchronized manner.

('949 patent at 2:28-34). The '014 patent is similarly directed to a method and apparatus for controlling multimedia players in a multi-zone system. The invention is described in the specification as follows:

> In general, the present invention pertains to control of audio characteristics of a plurality of multimedia players, or simply players, from a controller. The characteristics include, but are not limited to, an audio source and

> an audio volume being played in each of the players. In particular, the present invention enables the user to remotely control the audio characteristics of the players either as a group or as an individual player.

('014 patent at 2:24-31).

The parties refer to the '509 and '959 patents collectively as the Pairing patents. The '509 patent is directed to methods for grouping and pairing networked audio players. The specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups.... [I]ndividual players may be paired or grouped to stimulate [sic] a multi-channel listening environment. In [sic] instead of grouping selected players to play back an audio item, a user is allowed to activate one of the players to process the data of the audio item, essentially separating the data into individual streams, each of the streams representing a single-sound track and being played back in one of the players, thus creating a multi-channel listening environment with the selected players.

***2** ('509 patent at 2:26-27, 2:59-67). The '959 patent is similarly directed to devices and methods for grouping, consolidating, and pairing networked audio players. The invention is described in the specification as follows:

> In brief summary, the embodiments described herein provide technology for grouping, consolidating, and pairing individual playback devices to create or enhance a multi-channel listening environment. Particularly, the embodiments described herein enable two or more playback devices to be paired, such that multi-channel audio is achieved or enhanced. Such embodiments may be used to produce stereo sound or other audio environments suitable for audio content encoded with more than two channels, such as for certain kinds of television, movies, and music.

('959 patent at 2:54-63).

II. LEGAL STANDARD

Section 101 of the Patent Act defines patent-eligible subject matter. It provides: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101. The Supreme Court has recognized an implicit exception for three categories of subject matter not eligible for patentability—laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). The purpose of these carve outs is to protect the "basic tools of scientific and technological work." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012). "[A] process is not unpatentable simply because it contains a law of nature or a mathematical algorithm," as "an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Id.* at 1293-94 (internal quotation marks and emphasis omitted). In order "to transform an unpatentable law of nature into a patent-eligible application of such a law, one must do more than simply state the law of nature while adding the words 'apply it.' " *Id.* at 1294 (emphasis omitted).

The Supreme Court recently reaffirmed the framework laid out in *Mayo* "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S. Ct. at 2355. First, the court must determine whether the claims are drawn to a patent-ineligible concept. *Id.* If the answer is yes, the court must look to "the elements of the claim both individually and as an 'ordered combination' " to see if there is an " 'inventive concept'—*i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.' " *Id.* (alteration in original). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].' " *Id.* at 2357

(alterations in original) (quoting *Mayo*, 132 S. Ct. at 1297). "[S]imply appending conventional steps, specified at a high level of generality, to ... abstract ideas cannot make those ... ideas patentable." *Mayo*, 132 S. Ct. at 1300. Further, "the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment." *Alice*, 134 S. Ct. at 2358 (quoting *Bilski v. Kappos*, 561 U.S. 593, 610-11 (2010)). Thus, "the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *Id.* For this second step, the machine-or-transformation test can be a "useful clue," although it is not determinative. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014), *cert. denied*, 135 S. Ct. 2907 (2015).

***3** Patent eligibility under § 101 is a question of law suitable for resolution on a motion for judgment on the pleadings. *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1293 (Fed. Cir. 2016). The Federal Circuit follows regional circuit law for motions for judgment on the pleadings. *Id.* Under Third Circuit law, a Rule 12(c) motion for judgment on the pleadings is reviewed under the same standard as a Rule 12(b)(6) motion to dismiss when the Rule 12(c) motion alleges that the plaintiff failed to state a claim upon which relief can be granted. *Revell v. Port Auth.*, 598 F.3d 128, 134 (3d Cir. 2010); *Turbe v. Gov't of the Virgin Islands*, 938 F.2d 427, 428 (3d Cir. 1991). The court must accept the factual allegations in the complaint and take them in the light most favorable to the non-moving party. *Erickson v. Pardus*, 551 U.S. 89, 94 (2007); *Christopher v. Harbury*, 536 U.S. 403, 406 (2002).

The Federal Circuit has held that the district court is not required to individually address claims not asserted or identified by the non-moving party, so long as the court identifies a representative claim and "all the claims are substantially similar and linked to the same abstract idea." *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat. Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (internal quotation marks omitted).

III. DISCUSSION

A. The Volume Patents

The '949 patent contains three independent claims: claim 1, claim 8, and claim 15. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[1] Claim 1 reads:

> 1. A multimedia controller including a processor, the controller configured to:
>
> provide a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is an independent playback device configured to playback a multimedia output from multimedia source;
>
> accept via the user interface an input to facilitate formation of the player group, wherein the input to facilitate formation of the player group indicates that at least two of the plurality of players in the local area network are to be included in the player group for synchronized playback of a multimedia output from the same multimedia source;
>
> for any individual player in the player group, accept via the user interface a player-specific input to adjust a volume of that individual player, wherein the player-specific input to adjust the volume of that individual player causes that individual player to adjust its volume; and
>
> accept via the user interface a group-level input to adjust a volume associated with the player group, wherein the group-level input to adjust the volume associated with the player group causes each of the players in the player group to adjust its respective volume.

('949 patent, claim 1).

The '014 patent contains four independent claims, three of which have been asserted: claim 1, claim 16, and claim 38. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9). Claim 1 reads:

> ***4** 1. A method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players;
>
> displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and

> synchronizing all players in the zone group;
>
> adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1).

"First, we determine whether the claims at issue are directed to [an abstract idea]." *Alice*, 134 S. Ct. at 2355. "The 'abstract ideas' category embodies 'the longstanding rule that an idea of itself is not patentable.' " *Id.* (internal quotation marks omitted) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). "The Supreme Court has not established a definitive rule to determine what constitutes an 'abstract idea' sufficient to satisfy the first step of the *Mayo/Alice* inquiry." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016). The Supreme Court has recognized, however, that "fundamental economic practice[s]," *Bilski*, 561 U.S. at 611, "method[s] of organizing human activity," *Alice*, 134 S. Ct. at 2356, and mathematical algorithms, *Benson*, 409 U.S. at 64, are abstract ideas. In navigating the parameters of such categories, courts have generally sought to "compare claims at issue to those claims already found to be directed to an abstract idea in previous cases." *Enfish*, 822 F.3d at 1334. "But in determining whether the claims are directed to an abstract idea, we must be careful to avoid oversimplifying the claims because '[a]t some level, all inventions ... embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.' " *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016) (alterations in original) (quoting *Alice*, 134 S. Ct. at 2354).

Defendants assert that the "Volume patents are directed to the abstract idea of 'controlling audio settings for multiple audio devices.' " (D.I. 117 at 13). Defendants contend that, like the concept of collecting and storing data in *Content Extraction*, the Volume patents seek to claim a concept that is "very basic" and "fundamental to the entire technological field described in the Asserted Patents." (*Id.* at 14). According to Defendants, the claimed method "can be manually performed by a human." (*Id.*). Defendants also argue that the asserted claims of the '014 patent encompass prior art devices because the claims are not limited to wirelessly networked audio players. (*Id.* at 15).

Plaintiff counters that Defendants are oversimplifying in characterizing the invention. (D.I. 126 at 12). Plaintiff asserts that the invention embodies "a concrete and tangible concept limited to a specific technological field and it is tethered to specific devices." (*Id.* at 13). Plaintiff further asserts that the invention discloses new functionality and is not simply an automation of steps previously performed by humans. (*Id.*) Finally, Plaintiff objects to Defendants' characterization of the "network" as encompassing prior art hardwired audio systems. (*Id.* at 10). Plaintiff contends, rather, that the claims are limited to audio players on a data network. (*Id.*).

***5** I agree with Plaintiff that Defendants have advanced an oversimplified characterization of the allegedly abstract idea. "Under step one of *Mayo/Alice*, the claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject malter." *Internet Patents*, 790 F.3d at 1346. As the Federal Circuit has cautioned, "courts 'must be careful to avoid oversimplifying the claims' by looking at them generally and failing to account for the specific requirements of the claims." *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016) (quoting *TLI Commc'ns*, 823 F.3d at 611).

As support for their proposed characterization, Defendants cite to several cases they claim are similar to this one. Many of these cases are inapplicable, however, as they are directed to the abstract idea of collecting, organizing, and storing data. *See TLI Commc'ns*, 823 F.3d at 613 ("claims directed to abstract idea of classifying, organizing, and storing digital images"); *Content Extraction*, 776 F.3d at 1347 (claims drawn to abstract idea of collecting, recognizing, and storing data); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014) (claims drawn to abstract idea of "organizing information through mathematical correlations" where claims "not tied to a specific structure or machine"); *Visual Memory LLC v. NVIDIA Corp.*, 2016 WL 3041847, at *4 (D. Del. May 27, 2016), *appeal docketed*, No. 16-2254 (Fed. Cir. June 28, 2016) (claims drawn to "abstract idea of categorical data storage"). In order to make the argument that these cases are similar to this one, Defendants offer additional alternative characterizations

of the alleged abstract idea, arguing the Volume patents are directed to "organizing and manipulating electronic information" (D.I. 117 at 15) or, alternatively, "organizing and distributing information." (*Id.* at 16). These alternative characterizations are a far cry from, and oversimplified to a greater degree than, "controlling audio settings for multiple audio devices." (*Id.* at 13).

I think these claims are far more specific and limited than Defendants argue. For example, claim 1 of the '014 patent could only be considered to encompass collecting and organizing information if I were to restrict my analysis to the first two limitations involving displaying lists of available players. This is inappropriate. Considering the claim in its entirety reveals that there is more to the claim than organizing information. Rather, the third limitation calls for "forming a zone group," an action that involves controlling actual devices and effecting a fundamental alteration in how the plurality of zone players are networked together. The remaining limitations involve controlling the zone players that have been grouped together, also actions that are not accurately characterized as organizing information. Similarly, claim 1 of the '949 patent claims a controller that provides a user interface allowing for the formation of groups of zone players and control of these players. To characterize this claim as being drawn to "organizing and distributing information" is a gross oversimplification. Defendants' arguments ignore tangible limitations that are tied to specific devices. I am not persuaded.

For similar reasons, I reject Defendants' argument that the concept claimed is fundamental to the entire field. The claims of both Volume patents relate not to the field of audio devices generally, but only to methods and devices for controlling the specific "players" referenced in the claims. I have already construed the term "player" to mean "data network device configured to process and output audio." (D.I. 219 at 9). Claim 1 of each of the Volume Patents, therefore, requires concrete, tangible components, specifically a "plurality of players," where the players are the specific devices described in the patents. Only under Defendants' oversimplified characterization of these patents could the claimed concept be considered fundamental to the technological field.

***6** Defendants further argue that these patents are similar to those invalidated in *TLI Commc'ns*. (Hr'g Tr. at 5:21-6:10). In *TLI*, the claims were found to be abstract at step one because they were "directed to the use of conventional or generic technology in a nascent but well-known environment, without any claim that the invention reflects an inventive solution to any problem presented by combining the two" rather than being directed to "a specific improvement to computer functionality." *TLI Commc'ns*, 823 F.3d at 612. Importantly, however, the specification of the patent at issue in *TLI* did not "provide any technical details for the tangible components." *Id.* In contrast, the claims of the Volume patents are not directed to "generic technology." They are directed to controllers and networked audio players that are described in detail in the specifications. ('014 patent at 6:18-8:49; '959 patent at 7:8-13:10). Furthermore, the specifications of both Volume patents describe the problems presented and solved by these inventions as "dynamically managing the ad hoc creation and deletion of groups" of audio players and "control of the audio players as a group." ('014 patent at 2:3-6; '949 patent at 2:10-13). Although Defendants attempt to argue that this is a "manufactured problem," I do not think *TLI* is analogous to this case both because the Volume patents are directed to specific rather than generic technology and present a specific improvement to the existing technology.

Defendants next argue that "each of the recited steps can be manually performed by a human." (D.I. 117 at 14). However, Defendants do not explain how a human could manually accomplish this feat. Nor could they. Performing the method of claim 1 of the '014 patent requires the following steps: 1) displaying a list of available players on a screen; 2) if one of the players is a zone head, displaying on the screen a second list of players that could be grouped with the zone head; 3) forming a group by selecting some of the players to group with the zone head; 4) synchronizing the players in the group; and 5) using the controller to synchronously adjust the volume of all of the grouped players. Even setting aside the steps involving displaying lists on a screen, it seems clear that in order to form a group in step 3 in a hard wired system contemplated by Defendants, a user would need to re-wire the audio system each time a new group is formed. Forming and changing the composition of player groups in real time simply by making a few selections on the screen of a device is not something a human could do manually in a hard wired system.

Similarly, claim 1 of the '949 patent is a device claim for a controller used to form and control groups of

audio players. Defendants' arguments that a human could perform the actions the device is said to perform is at best illogical. Defendants "provided no evidence that the process previously used [to group audio speakers] is the same as the process required by the claims." *McRO, Inc.*, 837 F.3d at 1314. As in *McRO*, the prior art method of grouping and controlling audio devices (*i.e.* by hardwiring them into the desired configuration) "would not be within the scope of the claims" because it does not involving using a controller with a user interface to view lists of available devices on the data network that are then grouped and controlled synchronously. Furthermore, unlike in *McRO*, the method is not implemented on a general purpose computer. Rather, as discussed above, the method is directed to specific devices that are described and claimed in the patents.

It seems to me that the invention as claimed in each of the Volume patents represents a substantial improvement over the existing technology—the invention described in the patents allows for the audio devices to be grouped and regrouped in real time simply using a user interface to select the desired members of the groups without the need for altering any hard wiring in the physical system. This is not simply a "more efficient" method of doing something already done by humans. It is a method that provides for capabilities far beyond what a traditional hardwired system offers. Plaintiff does not contend that audio speakers are a new technology. What is claimed, however, is not a traditional speaker; rather, the claims are directed to an improvement to the existing technology for grouping and controlling audio speakers. Furthermore, the claims are grounded in a specific device—the player/zone player/playback device that is described in the patent and that I previously construed to mean "data network device configured to process and output audio." (D.I. 219 at 9).

***7** Finally, Defendants argue that the claims of the '014 patent "encompass the admitted prior art of hard-wired traditional multi-zone systems." (D.I. 117 at 15). I am not persuaded that this is true for many of the same reasons I have already explained above. Whether it is true or not, however, is irrelevant in the context of this motion because "section 101 eligibility should not become a substitute for a patentability analysis related to prior art, adequate disclosure, or the other conditions and requirements of Title 35." *Research Corp. Tech., Inc. v. Microsoft Corp.*, 627 F.3d 859, 868 (Fed. Cir. 2010).

For the reasons given above, I find that the Volume patents claim patent-eligible subject matter under § 101. Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

B. The Pairing Patents

The '509 patent contains three independent claims: claim 1, claim 11, and claim 23. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[2] Claim 1 reads:

> 1. A method comprising:
>
> identifying, via a controller, a plurality of playback devices on a local area network (LAN), wherein at least one of the plurality of playback devices is configured to request an audio data stream from a source device in response to receipt of a command via the controller over the LAN;
>
> instructing, via the controller over the LAN, at least one of the plurality of playback devices to process the requested audio data stream into at least one of a first and a second channel of the requested audio data stream and to reproduce a respective one of the first and the second channel, wherein the plurality of playback devices, when grouped, provide multi-channel sound, such that a first playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the first channel of the requested audio data stream for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested audio data stream for the group; and
>
> displaying, via the controller, an indication that each of the plurality of playback devices is configured to reproduce a respective channel.

('509 patent, claim 1). The '959 patent contains two independent claims. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 14 is representative. (Hr'g Tr. at 61:6-9). Claim 14 reads:

> 14. A method for outputting audio in a multi-channel listening environment, wherein the method is performed by a playback device, the method comprising:

receiving audio data over a network;

processing the audio data before the playback device outputs audio from a plurality of speaker drivers based on the audio data;

when the playback device is configured for a first type of pairing, performing a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers;

when the playback device is configured for a second type of pairing, performing a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers.

('959 patent, claim 14).

***8** Defendants argue that the claims of the '509 patent are directed to the abstract idea of "grouping and controlling audio players." (D.I. 117 at 19). According to Defendants, the method described in claim 1 forms "the very foundation of any audio system with more than one speaker." (*Id.*). As to the '959 patent, Defendants argue that the claims are directed to the abstract idea of "changing audio settings based on programmed instructions." (*Id.* at 23). Defendants further allege that the claims of this patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (*Id.*). As with the other patents at issue in this motion, Defendants argue that the claimed methods from both of the Pairing patents "can be performed entirely by humans." (*Id.*).

Plaintiff respond that the claims of both of the Pairing patents "are directed to several specific improvements in existing audio system technology." (D.I. 126 at 17, 21). Plaintiff also takes issue with Defendants' contention that the claimed methods can be performed by humans. (*Id.* at 19, 22). Plaintiff further argues, as with the Volume patents, that Defendants have advanced an oversimplified characterization of the claims. (*Id.* at 19).

Defendants make the same arguments here as they did for the Volume patents. I again reject those arguments. As with the Volume patents, I agree with Plaintiff that Defendants' characterization of the purportedly abstract idea is oversimplified. Just as with the Volume patents, the Pairing patents claim methods that involve specific devices (playback devices and controllers) that are described in detail in the specifications. ('509 patent at 5:63-8:50; '959 patent at 7:8-13:10). Furthermore, as with the Volume patents, the claimed methods do not represent simply an automation of something done manually. Rather, the method of claim 1 the '509 patent requires using a controller to identify the playback devices on a local area network, instruct some of the devices to each output different channels of audio data, and display on the controller's screen which device is outputting which channel. In order to perform this method manually, leaving aside the steps involving using a controller or displaying on the screen of the controller, a person would have to manually rewire the devices each time a new selection is made for which devices are to output which channels. Similarly, the method of claim 14 of the '959 patent is performed by the playback device and involves receiving and then processing audio data, recognizing the type of pairing that has been selected for that playback devices, performing an equalization previously specified for that type of pairing, and then outputting audio. This simply is not the kind of method that could be performed manually and, even if it were, automating the method as claimed represents a substantial improvement to the functionality of a specific device. I also reject Defendants' argument that the claims of the '959 patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (D.I. 117 at 23). It seems clear to me that the two patents claim substantially different methods even if it could also be said they address "the same general idea."

At oral argument, Defendants drew an analogy between this case and the claims at issue in *Personalized Media*. (Hr'g Tr. at 12:16-13:2). *Personalized Media* involved a claim "directed to the abstract idea of using personal information to create a customized presentation." *Personalized Media Commc'ns, LLC v. Amazon.com, Inc.*, 161 F. Supp. 3d 325, 330 (D. Del. 2015), *aff'd*, 2016 WL 7118532 (Fed. Cir. Dec. 7, 2016). The claim in *Personalized Media*, however, is not analogous to the claims of the Pairing patents. These patents, like the Volume patents, are not about organizing, manipulating, or distributing information. Rather, these patents claim improvements to specific devices, not generic technology, and the methods involve controlling the devices to effect tangible changes in their configurations. For these reasons, I find that the Pairing patents claim patent-eligible subject matter under § 101.

*9 Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

IV. CONCLUSION

For the reasons set forth above, the motion for judgment on the pleadings for lack of patentable subject matter (D.I. 116) will be denied. An appropriate order will be entered.

All Citations

Slip Copy, 2017 WL 971700

Footnotes

1 At oral argument on November 14, 2016, the parties were directed to submit additional briefing to the extent that they felt claim 1 of each of these patents was not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that claim 1 of each patent is not representative. (D.I. 225).

2 At oral argument, the parties were directed to submit additional briefing to the extent that they felt claim 1 of the '509 patent and claim 14 of the '959 patent were not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that these claims are not representative. (D.I. 225).

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2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14-cv-01330-RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

Go to Markman Construed Terms

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

Slip Copy, 2017 WL 123456, 2017 Markman 123456

Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

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2017 WL 123456
United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings, Inc. d/b/a The D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendant.

Civil Action No. 1:14-cv-01330-RGA
|
Filed 01/12/2017

West Headnotes (3)

[1] **Patents**
In general;utility

US Patent 7,571,014, US Patent 8,588,949, US Patent 8,843,224, US Patent 8,938,312, US Patent 8,938,637, US Patent 9,042,556, US Patent 9,195,258, US Patent 9,202,509, US Patent 9,213,357, US Patent 9,219,959. Construed.

Cases that cite this headnote

[2] **Patents**
Design

US Patent D559,197. Cited.

Cases that cite this headnote

[3] **Patents**
In general;utility

US Patent 8,020,023, US Patent 8,234,395, US Patent 8,370,678, US Patent 8,689,036, US Patent 8,788,080, US Patent 9,187,777, US Patent 9,213,356. Cited.

Cases that cite this headnote

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MEMORANDUM OPINION

RICHARD G. ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,571,014 ("the '014 Patent"), 8,588,949 ("the '949 Patent"), 8,843,224 ("the '224 Patent"), 8,938,312 ("the '312 Patent"), 8,938,637 ("the '637 Patent"), 9,042,556 ("the '556 Patent"), 9,195,258 ("the '258 Patent"), 9,202,509 ("the '509 Patent"), 9,213,357 ("the '357 Patent"), 9,219,959 ("the '959 Patent"), and D559,197 ("the '197 Patent"). The Court has considered the Parties' Joint Claim Construction Brief. (D.I. 201). The Court heard oral argument on December 14, 2016. (D.I. 206) ("Hr'g Tr.").

I. BACKGROUND

Plaintiff filed these actions on October 21, 2014, alleging infringement of four patents. (D.I. 1). Plaintiff subsequently amended its complaint (D.I. 6, 31, 102) to assert a total of twelve patents. The parties stipulated to dismissal of one asserted patent with prejudice on August 25, 2016. (D.I. 150). The remaining patents-in-suit claim devices and methods for controlling audio devices. One of the asserted patents, the '197 Patent, is a design patent with a single claim for a control strip. The only claim of the '197 patent was rejected after completion of an *ex parte* re-examination on June 29, 2016. (D.I. 208).

II. LEGAL STANDARD

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). " '[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.' " *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning.... [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (citations and internal quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314.

***2** When a court relies solely upon the intrinsic evidence —the patent claims, the specification, and the prosecution history—the court's construction is a determination of law. *See ≠Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GMBH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

III. CONSTRUCTION OF DISPUTED TERMS

A. The Patents–In–Suit

The '014 patent is directed to a method and apparatus for controlling multimedia players in a multi-zone system. Claim 1 is representative and reads as follows:

> A method for controlling a plurality of *players*, the method comprising:
>
> displaying on a screen a first list showing at least available *players*;
>
> displaying, when at least one of the *players* is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more *players* from the at least some of the *players* are selected to join the zone group; and
>
> synchronizing all *players* in the zone group;

adjusting a volume meter represented by an averaged value of audio volumes of the *players* in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of *players* synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1) (disputed terms italicized).

The '949 patent is directed to a method and apparatus for adjusting volume levels in a multi-zone system. Claim 1 is representative and reads as follows:

A *multimedia* controller including a processor, the controller configured to:

provide a user interface for a *player* group, wherein the *player* group includes a plurality of *players* in a local area network, and wherein each *player* is an independent *playback device* configured to playback a *multimedia* output from a *multimedia* source;

accept via the user interface an input to facilitate formation of the *player* group, wherein the input to facilitate formation of the *player* group indicates that at least two of the plurality of *players* in the local area network are to be included in the *player* group;

for each of the plurality of *players* within the *player* group, accept via the user interface an input to adjust a volume associated with the *player*, wherein the input to adjust the volume associated with the *player* causes the corresponding independent *playback device* to adjust its volume; and

accept via the user interface an input to adjust a volume associated with the *player* group, wherein the input to adjust the volume associated with the group causes the corresponding independent *playback devices* in the *player* group to adjust their volumes.

('949 patent, claim 1) (disputed terms italicized).

The '224 patent is directed to a method and system for controlling amplifiers. Claim 1 is representative and reads as follows:

*3 A method for controlling an audio amplifier, the method comprising:

receiving, by a *network interface*, a data packet over a network;

determining by a control module whether the received data packet either consists of *non-audio data* or comprises *audio data*; and responsively

powering on the audio amplifier from a powered off state when the data packet is determined to comprise *audio data*; and

maintaining the audio amplifier in the powered off state when the data packet is determined to consist of *non-audio data*.

('224 patent, claim 1) (disputed terms italicized).

The '312 patent is directed to technology for smart line-in processing in an audio environment. Claim 1 is representative and reads as follows:

A *playback device* comprising:

a *line-in connector* for receiving a first audio signal;

a *network interface*;

a processor; and

a non-transitory computer readable storage medium having stored therein instructions executable by the processor to:

determine whether the first *audio signal* is present at the *line-in connector*;

in response to determining that the first *audio signal* is present at the *line-in connector*, (i) cease playback of a second *audio signal* being played by the *playback device*, wherein the second *audio signal* is not present at the *line-in connector*, and (ii) cause the *playback device* to play the first *audio signal*;

receive, via the *network interface*, a first instruction to stop the *playback device* from playing the first *audio signal* while the first *audio signal* is still present at the *line-in connector*;

determine that the first *audio signal* is no longer present at the *line-in connector*; and

in response to determining that the first *audio signal* is no longer present at the *line-in connector*, arm the *playback device* such that a subsequent presence of the first *audio signal* at the *line-in connector* causes the *playback device* to play the first *audio signal*.

('312 patent, claim 1) (disputed terms italicized).

The '637 patent is directed to systems and methods for synchronizing operations among independently clocked devices. Claim 1 is representative and reads as follows:

A digital data processing device comprising:

an interface to receive *multimedia* information arranged as a plurality of frames, each frame to include one or more samples and an *indication of when to play* the one or more samples in a frame;

an information buffer to store the plurality of frames for play back by the digital data processing device,

wherein the digital data processing device is to receive *clock information* from a source device and determine a time differential value between the received *clock information* and *clock information* associated with the digital data processing device, the time differential value to be applied with the *indication of when to play* each of the plurality of frames to store an updated *indication of when to play* each of the plurality of frames in the information buffer; and

an output to play back one or more samples in a frame from the information buffer according to the updated *indication of when to play* the frame,

wherein the digital data processing device is to adjust, based on a comparison between the updated *indication of when to play* the frame and a predicted time value for play back of the frame, a number of samples per frame that are to be played.

***4** ('637 patent, claim 1) (disputed terms italicized).

The '556 patent is directed to techniques for shaping sound based on speaker orientation. Claim 1 is representative and reads as follows:

A method for shaping sound, the method comprising:

receiving an *audio data stream* by a *playback device*;

determining an orientation and a configuration state of the *playback device*;

shaping sound output from a speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and

shaping sound output from the speaker transducer of the *playback device* using the *audio data stream* to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state,

wherein the configuration state comprises any of: not *paired*, not grouped, not consolidated, a *pairing* between the *playback device* and an additional *playback device*, a grouping of the *playback device* with an additional playback device, and a consolidation of the playback device with an additional playback device.

('556 patent, claim 1) (disputed terms italicized).

The '258 patent is directed to a system and method for synchronizing operations of independently clocked devices. Claim 1 is representative and reads as follows:

In a system comprising a plurality of controllers that are communicatively coupled via at least a local area network (LAN) with a plurality of *zone players* including a first *zone player* and a second *zone player*, a method comprising:

receiving, at the first *zone player*, control information from any one of the plurality of controllers via the LAN, wherein the received control information comprises a direction that instructs the first *zone player* to enter into a synchrony group with at least the second *zone player*;

in response to the direction, the first *zone player* entering into the synchrony group with the second *zone player*, wherein in the synchrony group, the first and second *zone players* are configured to play back audio in synchrony based at least in part on (i) *audio content*, (ii) *playback timing information* associated with the audio content that is generated by one of the first or second *zone players*, and (iii) *clock time information* for the one of the first or second *zone players*, and wherein the generated *playback timing information* and the *clock*

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time information are transmitted from the one of the first or second *zone players* to the other of the first or second *zone players*, wherein the first and second *zone players* remain *independently clocked* while playing back audio in synchrony; and

transmitting, by the first *zone player* to at least one of the plurality of controllers via the LAN, status information, wherein the status information comprises an indication of a status of the synchrony group.

('258 patent, claim 1) (disputed terms italicized).

The '509 patent is directed to a method for grouping or pairing networked audio devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

***5** A method comprising:

identifying, via a controller, a plurality of *playback devices* on a local area network (LAN), wherein at least one of the plurality of *playback devices* is configured to request an *audio data stream* from a source device in response to receipt of a command via the controller over the LAN;

instructing, via the controller over the LAN, at least one of the plurality of *playback devices* to process the requested *audio data stream* into at least one of a first and a second channel of the requested *audio data stream* and to reproduce a respective one of the first and the second channel, wherein the plurality of *playback devices*, when grouped, provide multi-channel sound, such that a first *playback device* in the group of the plurality of *playback devices* is configured as part of the group to reproduce the first channel of the requested *audio data stream* for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested *audio data stream* for the group; and

displaying, via the controller, an indication that each of the plurality of *playback devices* is configured to reproduce a respective channel.

('509 patent, claim 1) (disputed terms italicized).

The '357 patent is directed to a method for obtaining content from a remote source for playback. Claim 1 is representative and reads as follows:

A method comprising:

receiving, by a first *playback device* from a network device configured to control the first *playback device* and communicatively coupled to the first *playback device* over a local area network (LAN), control information comprising an address identifying a location of *audio information* available at an *audio information* source, wherein the *audio information* source is outside of the LAN; and

after receiving the control information (i) obtaining, by the first *playback device* from the *audio information* source outside of the LAN, the *audio information*; (ii) transmitting, by the first *playback device* to a second *playback device*, the *audio information*, *playback timing information* associated with the *audio information*, and device *clock information* of the first *playback device*; and (iii) playing back, by the first *playback device*, the *audio information* in synchrony with the second *playback device* by using the *playback timing information* associated with the *audio information* and the device *clock information* of the first *playback device* to play back the *audio information*, wherein the first and second *playback devices* remain *independently clocked* during synchronous playback of the *audio information*.

('357 patent, claim 1) (disputed terms italicized).

The '959 patent is directed to a method for grouping, consolidating, and pairing networked playback devices to simulate a multi-channel listening environment. Claim 1 is representative and reads as follows:

A *playback device* configured to output audio in a multi-channel listening environment, the *playback device* comprising:

a *network interface* configured to receive *audio data* over a network;

***6** a plurality of speaker drivers configured to output audio based on the *audio data*;

one or more processors; and

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 (i) process the *audio data* before the *playback device* outputs audio from the plurality of speaker drivers, (ii) 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*, (iii) 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 (iv) 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*.

('959 patent, claim 1) (disputed terms italicized).

B. Disputed Terms

1. "zone player"/"playback device"/"player"

   a. *Plaintiff's proposed construction*: "A data network device configured to process and output audio"

   b. *Defendants' proposed construction*: "A device configured to output sound waves"

   c. *Court's construction*: "data network device configured to process and output audio"

These three terms appear in asserted claims in nine of the asserted patents, the '014 ("player"), '258 ("zone player"), '357, '312, '637, '959, '949, '509, and '556 ("playback device") patents. The parties agree that the three terms should have the same construction and that the construction should be the same across all of the asserted patents. (D.I. 201 at 13).

As an initial matter, the parties dispute which of these patents may serve as intrinsic evidence to the other patents for the purposes of claim construction. Specifically, Defendants object to Plaintiff's reliance on the '258 patent, which was not filed until February 20, 2014, with respect to the earlier-filed patents, including the '014 patent, the earliest filed of the asserted patents. (D.I. 216–1 at 199). Plaintiff counters that the '258 patent shares a "formal familial relationship as 'sibling' " to the '014 patent and that both claim priority to U.S. Patent No. 8,234,395 (non-asserted) ("the '395 patent). [1] (D.I. 215 at 3). Plaintiff further asserts, and Defendants acknowledge, that the '258 patent and '395 patent share a common specification. (D.I. 215 at 4; D.I. 216–1 at 199). Defendants object in part on the basis that the '258 patent is the only patent that claims a "zone player," while the other patents, including the '395 patent, claim a "playback device" and a "player." (D.I. 216–1 at 199). It seems to me, however, that this objection is irrelevant since the parties agree that these three terms should have the same construction across all the asserted patents. (D.I. 201 at 13). Furthermore, although the claims of the '395 patent refer to a "playback device," the specification describes this device as a zone player. (*See, e.g.*, '395 patent at 3:9–15).

***7** The intrinsic evidence relevant for claim construction includes the prosecution history and prior art cited during prosecution, and this necessarily includes ancestor patents incorporated by reference on the face of the patent. *Phillips*, 415 F.3d at 1317. The children and grandchildren of the '395 patent all incorporate the '395 patent by reference. Therefore, the specification of the '395 patent is intrinsic evidence to all the asserted patents in that family. Furthermore, the '395 patent is listed as prior art on the face of the '509, '959, and '556 patents. Only the '312 and '224 patents lack any connection to the '395 patent. Since the specification of the '258 patent is identical to that of the '395 patent, the '258 patent's specification is intrinsic evidence to all of the patents at issue except the '312 and '224 patents.

The parties first disagree as to whether the zone player outputs "sound waves" as Defendants insist or "audio" as Plaintiff asserts. As an initial matter, I will reject Defendant's construction as unreasonably broad as it is not only divorced from the invention as described in the asserted claims and the specifications, but it would also encompass all devices that have speakers. Furthermore, Defendant's construction would require that the zone player, in all embodiments, have an integrated speaker. I find no support for such a limitation. In fact, notably missing from both the claims and the specifications of all but one of the asserted patents is any mention of an integrated speaker. For example, the '014 patent states, "The zone player 200 includes a network interface 202, a processor 204, a memory module 206, an audio processing circuit 210, a digital signal processing module 212, an audio amplifier 214 and a RF interface 216." ('014 patent at 6:20–24). A speaker or speaker transducer is never

mentioned in the descriptions of the device in this patent. In fact, the '395 patent, ancestor through continuation or continuation-in-part to five of the nine patents at issue in this construction, states that the zone player "may also be connected to ... one or more audio reproduction devices." ('395 patent at 3:15–18). Furthermore, the zone player as claimed in all but one of the patents does not expressly include integrated speakers.[2] (*See* ≠'258 patent, cl. 17; '312 patent, cl. 1; '357 patent, cl. 9; '959 patent, cl. 1; '637 patent, cl. 1). As to the '312 patent (the only patent for which the '395 patent is not intrinsic evidence), the specification clearly describes speakers as optional. ('312 patent at 7:28–35). The only asserted patent that claims a device that expressly includes a speaker transducer is the '556 patent, which does not share a familial relationship with any of the other asserted patents. ('556 patent, cl. 1). Defendants emphasized in their briefing and at oral argument Figure 1 from the '014 patent, which shows what they characterize as sound waves emanating from the zone player, as well as their understanding of the word "play" as requiring the production of sound waves. (D.I. 201 at 16, 22–23; Hr'g Tr. at 26:6–28:24). Given the intrinsic evidence discussed above, this evidence does not represent an unambiguous requirement that the zone player have an integrated speaker. While an integrated speaker is not excluded based on the claims and specifications of the various patents, it seems clear to me that one is not required and the claims of the patents clearly indicate when an integrated speaker is necessarily included as part of the zone player.

The parties further dispute whether the zone player is a network device that processes audio. The claims and specifications of the asserted patents substantially support Plaintiff's argument that the zone player is a network device that processes audio. The '395 patent describes the zone player in the context of a "network audio system". ('395 patent at 3:12). The same patent also characterizes the zone players as "digital data processing devices." (*Id.* at 2:1). The other patents in the '395 family characterize the zone player in a similar way. (*See, e.g.*, '014 patent at 4:19–20, 6:20–24). The '312 patent both claims and describes a zone player that includes a network interface and an audio processing circuit. ('312 patent at 7:30–32, cl. 1). Therefore, the intrinsic evidence indicates that the zone player claimed is a network device that processes audio. I will adopt Plaintiff's proposed construction.

***8** 2. "network interface"

a. *Plaintiff's proposed construction*: "A physical component of a device that provides an interconnection with a data network"

b. *Defendants' proposed construction*: "A system component operable to receive data and provide it to the system"

c. *Court's construction*: "physical component of a device that provides an interconnection with a data network"

This term appears in the '258, '357, '014, '959, '312, and '224 patents. As discussed above, the first three of these are part of the '395 patent family. The latter three do not share a familial relationship with any of the other patents that use this term, although the '959 patent lists the '395 patent as prior art on its face. Defendants' primary argument as to the construction of this term is that the network interface need not be a component of the device itself and that including this in the construction would be an improper limitation. (D.I. 201 at 29). As support for their argument, Defendants offer a single claim from the '224 patent. (*Id.*) This claim is a method claim that recites a "method comprising: receiving, by a network interface, a data packet over a network." ('224 patent, claim 1). This method claim, however, does not say anything about which components the device in question may or may not contain. Claim 11 of the same patent, on the other hand, claims an "apparatus comprising: a network interface." (*Id.* at claim 11). In other words, the claim itself unambiguously contemplates that the network interface is a component of the zone player device. The other patents at issue contain similar language in their claims and specifications. (*See* ≠ '258 patent, cl. 17; '357 patent, cl. 9; '014 patent at 6:20–21; '959 patent, cl. 1; '312 patent, cl. 1). Furthermore, the specification of the '224 patent provides that "[t]he zone player includes a network interface," which "facilitates a data flow between a data network ... and the zone player," which supports Plaintiff's position that the network interface allows for data flow between the device and the data network in both directions (*i.e.* both to and from the device) ('224 patent at 4:45–51). This construction is supported by the specifications of the other patents at issue. (*See, e.g.*, '312 patent at 3:24–25; '395 patent at 24:36–41). Therefore, I will adopt Plaintiff's construction.

3. "paired"/"pairing"

a. *Plaintiff's proposed construction*: "A group of two or more playback devices that have different playback roles"

b. *Defendants' proposed construction*: "plain and ordinary meaning"

c. *Court's construction*: "configuration involving two or more playback devices that have different playback roles"

These terms appear in the '959 and '556 patents. Defendants' primary objection to Plaintiff's proposed construction is the requirement that the devices in the pair have different playback roles. Defendants argue that this term should have its plain and ordinary meaning, citing a dictionary definition of "pair" as support for their contention that "pair," as commonly understood, does not require different roles. (D.I. 201 at 66). The definition Defendants cite, however, is completely divorced from the context of the patents. Furthermore, the definition fails to recognize that the individual items in many "pairs" of ordinary objects often do, in fact, have different roles. A pair of shoes or gloves is commonly understood to have two items that each have a different function (*i.e.* a left and a right). Certainly there are other ways to use "pair" that do not require this limitation, but this example illustrates that this term must be construed in the context of the patents. I find there is substantial support for Plaintiff's construction in the intrinsic evidence. Pairing is repeatedly described in the specifications as a configuration in which the paired playback devices have distinct roles (*e.g.*, left/right, left/right/subwoofer, etc.). (*See, e.g.*, '959 patent at 3:19–23, 6:32–34; '556 patent at 6:32, 16:30–32). Defendants would construe this term such that "group" and "pair" take the same meaning. (Hr'g Tr. at 116:19–22). However, the patents contemplate that "group" and "pair" refer to distinct configurations. ('556 patent at 6:64–66, cl. 1; '959 patent at 3:58–61). Therefore, I will adopt Plaintiff's proposed construction.

***9** 4. "multimedia"

a. *Plaintiff's proposed construction*: "Any type of media that comprises audio (including audio alone)"

b. *Defendants' proposed construction*: "More than one type of media content, such as music, photos, and video"

c. *Court's construction*: "Any type of media that comprises audio (including audio alone)"

This term appears in the '949 and '637 patents. These patents, as discussed above, bear no formal familial relationship. The '637 patent does list the '949 patent as prior art on its face, however.

The parties' dispute centers on whether multimedia can encompass audio alone. Defendants cite primarily to extrinsic evidence in the form of a dictionary definition in support of their proposed construction. I find it is unnecessary to resort to a dictionary definition in construing this term, however, since the specifications provide sufficient evidence as to the intended meaning of the term as used in these patents; it was intended to include media comprising only audio. For example, the specification of the '949 patent states, "There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices." ('949 patent at 4:60–63). Defendants' proposed construction would read out this preferred embodiment. Defendants attempt to counter this with a statement from the same specification: "Each zone player can play a type of media (such as music, photographs and video) independently." (*Id.* at 9:50–52). This statement, however, does not use the term "multimedia." Nor does it contradict the specification's earlier description of an audio device as a multimedia player. It seems clear to me from the specification that the applicant used the term "multimedia" to include a device that plays only audio and the applicant's understanding of the meaning of the term controls even if it is not consistent with Defendants' preferred dictionary definition. The '637 patent's specification does not contain this same statement, but it does describe the claimed "digital data processing devices" which "receive multimedia information" as "zone players" which are part of a "network audio system." ('637 patent at 2:35–36, cl. 1). Therefore, I will adopt Plaintiff's proposed construction.

5. "audio signal"/"audio data"/"audio content"/"audio data stream"/"audio information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "encoded sound and not the sound itself"

c. *Court's construction*: "no construction necessary"

These terms appear in claims in eight of the asserted patents. Defendants propose to limit the meaning of all of the listed terms to exclude sound waves, but they do not propose any actual construction of the individual terms beyond this limitation. Plaintiff argues that the terms are readily understandable by a jury by considering the context in which they are used. (D.I. 201 at 30). Plaintiff further argues that the patents do not support importing Defendants' proposed limitation for all of the terms. (*Id.* at 30–31). I agree with Plaintiff that some of the terms are used in such a way as to include sound waves. For example, in the '556 patent, claim 28 states that "the speaker transducer is to receive and output the audio data stream." Since a transducer outputs sound waves, this term as used necessarily encompasses sound wave. Furthermore, claim 1 of the '357 patent requires "playback of the audio information" by the playback device. I have already determined in construing the term "playback device" that the device may output audio either in the form of an audio signal to an external speaker or as sound waves from an integrated speaker. Therefore, I read this claim to indicate that "audio information" may take the form of either an electrical signal or sound waves. It seems to me that whether each of the terms encompasses actual sound waves can readily be deduced from the context of the claims and specification. Therefore, I reject Defendants' proposed construction and decline to construe any of these terms.

***10** 6. "independently clocked"

a. *Plaintiff's proposed construction*: "The phrases 'wherein the first and second zone players remain independently clocked while playing back audio in synchrony' and 'wherein the zone players in the synchrony group remain independently clocked while playing back audio in synchrony' mean that 'each zone player operates in accordance with its own respective clock during synchronous playback."

b. *Defendants' proposed construction*: "Operating autonomously to any external clock"

c. *Court's construction*: "operating in accordance with their own respective clocks during synchronous playback"

This term appears in asserted claims in the '258 and '357 patents. As discussed above, both of these patents trace direct lineage through straight continuations to the '395 patent. Both patents also share a common specification with the exception of the Incorporation by Reference section.

Defendants expend considerable effort to distinguish between the device clock and the digital-to-analog converter (DAC) clock, a distinction they consider "critical to the construction of the term." (D.I. 201 at 63). Defendants insist that the clock in the phrase "independently clocked" necessarily refers to the device clock. (*Id.* at 56). Defendants fail to cite to any intrinsic evidence supporting this position, however. I can find nothing in the claims or the specification that would indicate that "independently clocked" refers to the device clock. Rather, it is the DAC clock that is repeatedly referred to as being maintained independently by each device in the embodiments described in the specifications of these two patents. The device clock, on the other hand, never appears in the discussion of synchronous playback. For example, the specification of the '258 patent describes the DAC clock information from one player being transmitted to another player. ('258 patent at 23:8–9, 24:24–26). The second player calculates the difference between the reading of its own DAC clock and that of the first player and uses that time difference in synchronizing playback with the first player. (*Id.* at 24:27–31). In this embodiment, each player maintains its own independent DAC clock during synchronous playback. In another embodiment, the second player periodically adjusts its own DAC clock to match that of the first player. (*Id.* at 33:22–35). In this embodiment, the players are still independently clocked in that each player maintains its own independent DAC clock during synchronous playback. Construed in the context of the specification, therefore, I understand "independently clocked" to mean simply that the players in a synchrony group each operate (and play back audio) in accordance with their own internal DAC clocks even while receiving DAC clock information from other players (and possibly adjusting their own clocks according to that information).

In support of their proposed construction, Defendants cite to their preferred dictionary definition of "independent" to require "autonomous" operation. (D.I. 201 at 57). I reject this limitation as inconsistent with the intrinsic evidence. As discussed above, each player in the synchrony

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group uses clock information from another player in the synchrony group. This, it seems to me, is inconsistent with the notion of "operating autonomously to any external clock." Rather, as discussed above, the players use the clock information obtained from other players to ensure synchronous playback but each player uses its own clock (rather than that of another player) to control playback. Therefore, I will adopt Plaintiff's construction.

***11** 7. "clock information"/"clock time information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A time reference identifying a specific point in time at a minimum resolution of time"

c. *Court's construction:* decline to construe at this time.

"indication of when to play one or more samples in a frame"/"indication of when to play the frame"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Indication of a frame-specific minimum resolution of time"

c. *Court's construction*: decline to construe at this time.

As an initial matter, I will reject Defendants' constructions for both of these terms as they introduce limitations not supported by the patents, including words, such as "minimum resolution," that do not appear in any of the patents. It seems to me that Defendants' proposal introduces additional and unnecessary confusion as to the meaning of these terms. However, I do believe that these terms need to be construed, and "plain and ordinary" meaning would provide insufficient guidance for a jury. Therefore, I will not construe these terms at this time. Rather, I invite the parties to submit a proposed schedule for additional briefing on these terms.

8. "playback timing information"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "A clock time associated with a frame of audio data"

c. *Court's construction*: decline to construe at this time

As with the two previous terms, Defendants seek to import a limitation that is not supported by the intrinsic evidence. The limitation that the "playback timing information" is associated with a "frame" of data appears in dependent claim 10 in the '258 patent but not in independent claim 1 from which claim 10 depends. Because of the presence of this limitation in the dependent claim, I will presume that the independent claim is not so limited. *Phillips* 415 F.3d at 1315. Therefore, I will reject Defendants' proposed construction. As with the previous two terms, however, I do think this term should be construed, so I again invite the parties to submit a proposed schedule for additional briefing on these terms.

9. "line in connector"

a. *Plaintiff's proposed construction*: "plain and ordinary meaning/no construction necessary"

b. *Defendants' proposed construction*: "Analog TRS–type connector/socket"

c. *Court's construction*: "plain and ordinary meaning"

This term appears in the '312 patent. Defendants make two arguments in support of limiting a line in connector to an analog TRS–type connector. First, Defendants point to the specification, which lists this type of connector as an example of a line in connector. (D.I. 201 at 74). Second, Defendants argue that the applicant disclaimed any digital inputs as line in connectors during prosecution in order to overcome a prior art rejection. (*Id.* at 74–76). While Defendants are correct that the specification lists this type of connector as one example of a line in connector, there is no indication in the specification that this is the only type of line in connector contemplated by the patent. In fact, the specification states, "Other types of connectors may also be used depending on the application." ('312 patent at 22:67–23:2). As to the prosecution history disclaimer argument, I can find no clear indication that the applicant disclaimed digital inputs. Therefore, I will construe this term to have its plain and ordinary meaning and Defendants are prohibited from arguing that the term is limited to an analog TRS–type connector/socket.

***12** 11. "equalization"

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a. *Plaintiff's proposed construction*: "The phrase 'performing a first [second] equalization' means 'any of turning on or off (or effectively muting) one or more specific speaker drivers, changing the channel output of one or more speaker drivers, changing the frequency response of one or more specific speaker drivers, changing the amplifier gain of any particular speaker driver, and changing the amplifier gain of the playback device as a whole."

b. *Defendants' proposed construction*: "a set of frequency-dependent or speaker-driver dependent parameters that affect a range and/or power level of frequencies within a channel"

c. *Court's construction*: "modifying the output 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."

This term appears in the '959 patent. As an initial matter, I reject Defendants' proposed construction insofar as it attempts to equate equalization (a process) with a set of parameters (a thing). Plaintiff argues that the inventor defined equalization within the specification. (D.I. 201 at 70, 72). Plaintiff also complains that Defendants' proposed construction is too narrow and excludes some equalization methods disclosed in the patent. (*Id.* at 70). Defendants advocate for their preferred dictionary definition for the term "equalization," arguing that the specification discloses a meaning for "changing the equalization of the playback device" rather than what is claimed, "performing an equalization of the audio data." (*Id.* at 70). This seems to me to be a distinction without a difference. The inventor appears to consider performing an equalization of the audio data to be equivalent to performing an equalization of the playback device. For example, claim 2 of the '959 patent states, "wherein performing the first equalization comprises using a first type of pass filter to modify the audio data." The specification describes this same equalization by stating "a first equalization of a playback device might include using a first type of pass filter to modify the output." ('959 patent at 16:40–42). Based on the intrinsic evidence, it seems to me that equalization of the playback device necessarily means equalization of the audio data. This does not mean, however that the statement in the specification cited by Plaintiff constitutes lexicography. The specification provides that equalization "might include" the types of changes listed in Plaintiff's proposed construction. (*Id.* at 16:20–27). The specification also provides for additional adjustments that constitute equalization, including adjusting frequency strengths, phases, time delays, and the use of filters. (*Id.* at 16:28–47). For this reason, I will reject Defendants' proposed construction as too narrow. Plaintiff's proposed construction, however, simply parrots a portion of the specification and is also narrower than what is disclosed in the specification. Therefore, I will construe equalization to mean "modifying the output 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."

***13** 12 The scope of the design claimed in the '197 Patent

a. *Plaintiff's proposed construction*: "A design for a control strip comprising the following ornamental features: (1) a first button having (a) a substantially square shape with rounded corners and (b) indicia of an audio output state; (2) a second button having (a) a substantially non-square, rectangular shape with rounded corners and (b) indicia of an increase and decrease for volume; (3) wherein the first button and the second button (a) are oriented in a substantially up-and-down configuration, (b) are substantially aligned about the same axis, and (c) have substantially the same width; and (4) wherein the first button and the second button are set apart from any other buttons."

b. *Defendants' proposed construction*: "The ornamental design as shown in all of the drawings as a whole, excluding functional elements such as '+' '–' 'vol' and mute symbols"

c. *Court's construction*: decline to construe at this time.

In light of the final rejection issued in the *ex parte* reexamination of this patent, I decline to construe the scope of the design patent at this time.

IV. CONCLUSION

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Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.

All Citations

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Footnotes

1 The '949 patent is a continuation of the '014 patent which is a continuation-in-part of the '395 patent. The '357 patent is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '258 patent is a continuation of U.S. Patent Nos. 9,213,356 (not asserted), which is a continuation of U.S. Patent No. 9,187,777 (not asserted) which is a continuation of the '395 patent. The '637 patent is a continuation of U.S. Patent No. 8,689,036 (not asserted), which is a continuation of U.S. Patent No. 8,370,678 (not asserted), which is a continuation of U.S. Patent No. 8,020,023 (not asserted), which is a continuation-in-part of the '395 patent. The '959 patent is a continuation-in-part of U.S. Patent No. 8,788,080 (not asserted), which is a continuation of the '509 patent. Neither the '959 patent nor the '509 patent bear a familial relationship to the '395 patent. The '312, '556, and '224 patents have no familial relationship to any of the other patents at issue in the construction of these terms.

2 The '949 and '509 patents do not include device claims.

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United States District Court,
D. Delaware.

SONOS, INC., Plaintiff,
v.
D&M HOLDINGS INC. d/b/a the D
+M Group, D&M Holdings U.S. Inc., and
Denon Electronics (USA), LLC, Defendants.

Civil Action No. 14-1330-RGA
|
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MEMORANDUM OPINION

ANDREWS, U.S. DISTRICT JUDGE

***1** Presently before the Court is Defendants' Partial Motion for Judgment on the Pleadings for Lack of Patent-Eligible Subject Matter. (D.I. 116). The issues have been fully briefed. (D.I. 117, 119, 124). The Court held oral argument on November 14, 2016. (D.I. 206) ("Hr'g Tr."). For the reasons that follow, the Court will deny Defendants' motion.

I. BACKGROUND

Plaintiff filed this patent infringement lawsuit against Defendant on October 14, 2014. (D.I. 1). Plaintiff has asserted a total of twelve patents in this suit. (D.I. 102). Defendants have moved for partial judgment on the pleadings with respect to four of the asserted patents, alleging that the patents are directed to ineligible subject matter. (D.I. 117). The patents at issue in this motion are U.S. Patent Nos. 8,588,949 ("the '949 patent"), 7,571,014 ("the '014 patent"), 9,202,509 ("the '509 patent"), and 9,219,959 ("the '959 patent").

The parties refer to the '949 and '014 patents collectively as the Volume patents. The '949 patent is directed to a multimedia controller and method for adjusting volume levels in a multi-zone system through the use of a user interface. The summary of the invention section of the specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups. According to one aspect of the present invention, a mechanism is provided to allow a user to group some of the players according to a theme or scene, where each of the players is located in a zone. When the scene is activated, the players in the scene react in a synchronized manner.

('949 patent at 2:28-34). The '014 patent is similarly directed to a method and apparatus for controlling multimedia players in a multi-zone system. The invention is described in the specification as follows:

> In general, the present invention pertains to control of audio characteristics of a plurality of multimedia players, or simply players, from a controller. The characteristics include, but are not limited to, an audio source and

> an audio volume being played in each of the players. In particular, the present invention enables the user to remotely control the audio characteristics of the players either as a group or as an individual player.

('014 patent at 2:24-31).

The parties refer to the '509 and '959 patents collectively as the Pairing patents. The '509 patent is directed to methods for grouping and pairing networked audio players. The specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups.... [I]ndividual players may be paired or grouped to stimulate [sic] a multi-channel listening environment. In [sic] instead of grouping selected players to play back an audio item, a user is allowed to activate one of the players to process the data of the audio item, essentially separating the data into individual streams, each of the streams representing a single-sound track and being played back in one of the players, thus creating a multi-channel listening environment with the selected players.

***2** ('509 patent at 2:26-27, 2:59-67). The '959 patent is similarly directed to devices and methods for grouping, consolidating, and pairing networked audio players. The invention is described in the specification as follows:

> In brief summary, the embodiments described herein provide technology for grouping, consolidating, and pairing individual playback devices to create or enhance a multi-channel listening environment. Particularly, the embodiments described herein enable two or more playback devices to be paired, such that multi-channel audio is achieved or enhanced. Such embodiments may be used to produce stereo sound or other audio environments suitable for audio content encoded with more than two channels, such as for certain kinds of television, movies, and music.

('959 patent at 2:54-63).

II. LEGAL STANDARD

Section 101 of the Patent Act defines patent-eligible subject matter. It provides: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101. The Supreme Court has recognized an implicit exception for three categories of subject matter not eligible for patentability—laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). The purpose of these carve outs is to protect the "basic tools of scientific and technological work." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012). "[A] process is not unpatentable simply because it contains a law of nature or a mathematical algorithm," as "an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Id.* at 1293-94 (internal quotation marks and emphasis omitted). In order "to transform an unpatentable law of nature into a patent-eligible application of such a law, one must do more than simply state the law of nature while adding the words 'apply it.' " *Id.* at 1294 (emphasis omitted).

The Supreme Court recently reaffirmed the framework laid out in *Mayo* "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S. Ct. at 2355. First, the court must determine whether the claims are drawn to a patent-ineligible concept. *Id.* If the answer is yes, the court must look to "the elements of the claim both individually and as an 'ordered combination' " to see if there is an " 'inventive concept'—*i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.' " *Id.* (alteration in original). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].' " *Id.* at 2357

(alterations in original) (quoting *Mayo*, 132 S. Ct. at 1297). "[S]imply appending conventional steps, specified at a high level of generality, to ... abstract ideas cannot make those ... ideas patentable." *Mayo*, 132 S. Ct. at 1300. Further, "the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment." *Alice*, 134 S. Ct. at 2358 (quoting *Bilski v. Kappos*, 561 U.S. 593, 610-11 (2010)). Thus, "the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *Id.* For this second step, the machine-or-transformation test can be a "useful clue," although it is not determinative. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014), *cert. denied*, 135 S. Ct. 2907 (2015).

***3** Patent eligibility under § 101 is a question of law suitable for resolution on a motion for judgment on the pleadings. *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1293 (Fed. Cir. 2016). The Federal Circuit follows regional circuit law for motions for judgment on the pleadings. *Id.* Under Third Circuit law, a Rule 12(c) motion for judgment on the pleadings is reviewed under the same standard as a Rule 12(b)(6) motion to dismiss when the Rule 12(c) motion alleges that the plaintiff failed to state a claim upon which relief can be granted. *Revell v. Port Auth.*, 598 F.3d 128, 134 (3d Cir. 2010); *Turbe v. Gov't of the Virgin Islands*, 938 F.2d 427, 428 (3d Cir. 1991). The court must accept the factual allegations in the complaint and take them in the light most favorable to the non-moving party. *Erickson v. Pardus*, 551 U.S. 89, 94 (2007); *Christopher v. Harbury*, 536 U.S. 403, 406 (2002).

The Federal Circuit has held that the district court is not required to individually address claims not asserted or identified by the non-moving party, so long as the court identifies a representative claim and "all the claims are substantially similar and linked to the same abstract idea." *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat. Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (internal quotation marks omitted).

III. DISCUSSION

A. The Volume Patents

The '949 patent contains three independent claims: claim 1, claim 8, and claim 15. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[1] Claim 1 reads:

> 1. A multimedia controller including a processor, the controller configured to:
>
> provide a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is an independent playback device configured to playback a multimedia output from multimedia source;
>
> accept via the user interface an input to facilitate formation of the player group, wherein the input to facilitate formation of the player group indicates that at least two of the plurality of players in the local area network are to be included in the player group for synchronized playback of a multimedia output from the same multimedia source;
>
> for any individual player in the player group, accept via the user interface a player-specific input to adjust a volume of that individual player, wherein the player-specific input to adjust the volume of that individual player causes that individual player to adjust its volume; and
>
> accept via the user interface a group-level input to adjust a volume associated with the player group, wherein the group-level input to adjust the volume associated with the player group causes each of the players in the player group to adjust its respective volume.

('949 patent, claim 1).

The '014 patent contains four independent claims, three of which have been asserted: claim 1, claim 16, and claim 38. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9). Claim 1 reads:

> ***4** 1. A method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players;
>
> displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and

> synchronizing all players in the zone group;
>
> adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1).

"First, we determine whether the claims at issue are directed to [an abstract idea]." *Alice*, 134 S. Ct. at 2355. "The 'abstract ideas' category embodies 'the longstanding rule that an idea of itself is not patentable.' " *Id.* (internal quotation marks omitted) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). "The Supreme Court has not established a definitive rule to determine what constitutes an 'abstract idea' sufficient to satisfy the first step of the *Mayo/Alice* inquiry." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016). The Supreme Court has recognized, however, that "fundamental economic practice[s]," *Bilski*, 561 U.S. at 611, "method[s] of organizing human activity," *Alice*, 134 S. Ct. at 2356, and mathematical algorithms, *Benson*, 409 U.S. at 64, are abstract ideas. In navigating the parameters of such categories, courts have generally sought to "compare claims at issue to those claims already found to be directed to an abstract idea in previous cases." *Enfish*, 822 F.3d at 1334. "But in determining whether the claims are directed to an abstract idea, we must be careful to avoid oversimplifying the claims because '[a]t some level, all inventions ... embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.' " *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016) (alterations in original) (quoting *Alice*, 134 S. Ct. at 2354).

Defendants assert that the "Volume patents are directed to the abstract idea of 'controlling audio settings for multiple audio devices.' " (D.I. 117 at 13). Defendants contend that, like the concept of collecting and storing data in *Content Extraction*, the Volume patents seek to claim a concept that is "very basic" and "fundamental to the entire technological field described in the Asserted Patents." (*Id.* at 14). According to Defendants, the claimed method "can be manually performed by a human." (*Id.*). Defendants also argue that the asserted claims of the '014 patent encompass prior art devices because the claims are not limited to wirelessly networked audio players. (*Id.* at 15).

Plaintiff counters that Defendants are oversimplifying in characterizing the invention. (D.I. 126 at 12). Plaintiff asserts that the invention embodies "a concrete and tangible concept limited to a specific technological field and it is tethered to specific devices." (*Id.* at 13). Plaintiff further asserts that the invention discloses new functionality and is not simply an automation of steps previously performed by humans. (*Id.*) Finally, Plaintiff objects to Defendants' characterization of the "network" as encompassing prior art hardwired audio systems. (*Id.* at 10). Plaintiff contends, rather, that the claims are limited to audio players on a data network. (*Id.*).

***5** I agree with Plaintiff that Defendants have advanced an oversimplified characterization of the allegedly abstract idea. "Under step one of *Mayo/Alice*, the claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject malter." *Internet Patents*, 790 F.3d at 1346. As the Federal Circuit has cautioned, "courts 'must be careful to avoid oversimplifying the claims' by looking at them generally and failing to account for the specific requirements of the claims." *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016) (quoting *TLI Commc'ns*, 823 F.3d at 611).

As support for their proposed characterization, Defendants cite to several cases they claim are similar to this one. Many of these cases are inapplicable, however, as they are directed to the abstract idea of collecting, organizing, and storing data. *See TLI Commc'ns*, 823 F.3d at 613 ("claims directed to abstract idea of classifying, organizing, and storing digital images"); *Content Extraction*, 776 F.3d at 1347 (claims drawn to abstract idea of collecting, recognizing, and storing data); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014) (claims drawn to abstract idea of "organizing information through mathematical correlations" where claims "not tied to a specific structure or machine"); *Visual Memory LLC v. NVIDIA Corp.*, 2016 WL 3041847, at *4 (D. Del. May 27, 2016), *appeal docketed*, No. 16-2254 (Fed. Cir. June 28, 2016) (claims drawn to "abstract idea of categorical data storage"). In order to make the argument that these cases are similar to this one, Defendants offer additional alternative characterizations

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of the alleged abstract idea, arguing the Volume patents are directed to "organizing and manipulating electronic information" (D.I. 117 at 15) or, alternatively, "organizing and distributing information." (*Id.* at 16). These alternative characterizations are a far cry from, and oversimplified to a greater degree than, "controlling audio settings for multiple audio devices." (*Id.* at 13).

I think these claims are far more specific and limited than Defendants argue. For example, claim 1 of the '014 patent could only be considered to encompass collecting and organizing information if I were to restrict my analysis to the first two limitations involving displaying lists of available players. This is inappropriate. Considering the claim in its entirety reveals that there is more to the claim than organizing information. Rather, the third limitation calls for "forming a zone group," an action that involves controlling actual devices and effecting a fundamental alteration in how the plurality of zone players are networked together. The remaining limitations involve controlling the zone players that have been grouped together, also actions that are not accurately characterized as organizing information. Similarly, claim 1 of the '949 patent claims a controller that provides a user interface allowing for the formation of groups of zone players and control of these players. To characterize this claim as being drawn to "organizing and distributing information" is a gross oversimplification. Defendants' arguments ignore tangible limitations that are tied to specific devices. I am not persuaded.

For similar reasons, I reject Defendants' argument that the concept claimed is fundamental to the entire field. The claims of both Volume patents relate not to the field of audio devices generally, but only to methods and devices for controlling the specific "players" referenced in the claims. I have already construed the term "player" to mean "data network device configured to process and output audio." (D.I. 219 at 9). Claim 1 of each of the Volume Patents, therefore, requires concrete, tangible components, specifically a "plurality of players," where the players are the specific devices described in the patents. Only under Defendants' oversimplified characterization of these patents could the claimed concept be considered fundamental to the technological field.

***6** Defendants further argue that these patents are similar to those invalidated in *TLI Commc'ns*. (Hr'g Tr. at 5:21-6:10). In *TLI*, the claims were found to be abstract at step one because they were "directed to the use of conventional or generic technology in a nascent but well-known environment, without any claim that the invention reflects an inventive solution to any problem presented by combining the two" rather than being directed to "a specific improvement to computer functionality." *TLI Commc'ns*, 823 F.3d at 612. Importantly, however, the specification of the patent at issue in *TLI* did not "provide any technical details for the tangible components." *Id.* In contrast, the claims of the Volume patents are not directed to "generic technology." They are directed to controllers and networked audio players that are described in detail in the specifications. ('014 patent at 6:18-8:49; '959 patent at 7:8-13:10). Furthermore, the specifications of both Volume patents describe the problems presented and solved by these inventions as "dynamically managing the ad hoc creation and deletion of groups" of audio players and "control of the audio players as a group." ('014 patent at 2:3-6; '949 patent at 2:10-13). Although Defendants attempt to argue that this is a "manufactured problem," I do not think *TLI* is analogous to this case both because the Volume patents are directed to specific rather than generic technology and present a specific improvement to the existing technology.

Defendants next argue that "each of the recited steps can be manually performed by a human." (D.I. 117 at 14). However, Defendants do not explain how a human could manually accomplish this feat. Nor could they. Performing the method of claim 1 of the '014 patent requires the following steps: 1) displaying a list of available players on a screen; 2) if one of the players is a zone head, displaying on the screen a second list of players that could be grouped with the zone head; 3) forming a group by selecting some of the players to group with the zone head; 4) synchronizing the players in the group; and 5) using the controller to synchronously adjust the volume of all of the grouped players. Even setting aside the steps involving displaying lists on a screen, it seems clear that in order to form a group in step 3 in a hard wired system contemplated by Defendants, a user would need to re-wire the audio system each time a new group is formed. Forming and changing the composition of player groups in real time simply by making a few selections on the screen of a device is not something a human could do manually in a hard wired system.

Similarly, claim 1 of the '949 patent is a device claim for a controller used to form and control groups of

audio players. Defendants' arguments that a human could perform the actions the device is said to perform is at best illogical. Defendants "provided no evidence that the process previously used [to group audio speakers] is the same as the process required by the claims." *McRO, Inc.*, 837 F.3d at 1314. As in *McRO*, the prior art method of grouping and controlling audio devices (*i.e.* by hardwiring them into the desired configuration) "would not be within the scope of the claims" because it does not involving using a controller with a user interface to view lists of available devices on the data network that are then grouped and controlled synchronously. Furthermore, unlike in *McRO*, the method is not implemented on a general purpose computer. Rather, as discussed above, the method is directed to specific devices that are described and claimed in the patents.

It seems to me that the invention as claimed in each of the Volume patents represents a substantial improvement over the existing technology—the invention described in the patents allows for the audio devices to be grouped and regrouped in real time simply using a user interface to select the desired members of the groups without the need for altering any hard wiring in the physical system. This is not simply a "more efficient" method of doing something already done by humans. It is a method that provides for capabilities far beyond what a traditional hardwired system offers. Plaintiff does not contend that audio speakers are a new technology. What is claimed, however, is not a traditional speaker; rather, the claims are directed to an improvement to the existing technology for grouping and controlling audio speakers. Furthermore, the claims are grounded in a specific device—the player/zone player/playback device that is described in the patent and that I previously construed to mean "data network device configured to process and output audio." (D.I. 219 at 9).

***7** Finally, Defendants argue that the claims of the '014 patent "encompass the admitted prior art of hard-wired traditional multi-zone systems." (D.I. 117 at 15). I am not persuaded that this is true for many of the same reasons I have already explained above. Whether it is true or not, however, is irrelevant in the context of this motion because "section 101 eligibility should not become a substitute for a patentability analysis related to prior art, adequate disclosure, or the other conditions and requirements of Title 35." *Research Corp. Tech., Inc. v. Microsoft Corp.*, 627 F.3d 859, 868 (Fed. Cir. 2010).

For the reasons given above, I find that the Volume patents claim patent-eligible subject matter under § 101. Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

B. The Pairing Patents

The '509 patent contains three independent claims: claim 1, claim 11, and claim 23. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[2] Claim 1 reads:

> 1. A method comprising:
>
> identifying, via a controller, a plurality of playback devices on a local area network (LAN), wherein at least one of the plurality of playback devices is configured to request an audio data stream from a source device in response to receipt of a command via the controller over the LAN;
>
> instructing, via the controller over the LAN, at least one of the plurality of playback devices to process the requested audio data stream into at least one of a first and a second channel of the requested audio data stream and to reproduce a respective one of the first and the second channel, wherein the plurality of playback devices, when grouped, provide multi-channel sound, such that a first playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the first channel of the requested audio data stream for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested audio data stream for the group; and
>
> displaying, via the controller, an indication that each of the plurality of playback devices is configured to reproduce a respective channel.

('509 patent, claim 1). The '959 patent contains two independent claims. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 14 is representative. (Hr'g Tr. at 61:6-9). Claim 14 reads:

> 14. A method for outputting audio in a multi-channel listening environment, wherein the method is performed by a playback device, the method comprising:

receiving audio data over a network;

processing the audio data before the playback device outputs audio from a plurality of speaker drivers based on the audio data;

when the playback device is configured for a first type of pairing, performing a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers;

when the playback device is configured for a second type of pairing, performing a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers.

('959 patent, claim 14).

***8** Defendants argue that the claims of the '509 patent are directed to the abstract idea of "grouping and controlling audio players." (D.I. 117 at 19). According to Defendants, the method described in claim 1 forms "the very foundation of any audio system with more than one speaker." (*Id.*). As to the '959 patent, Defendants argue that the claims are directed to the abstract idea of "changing audio settings based on programmed instructions." (*Id.* at 23). Defendants further allege that the claims of this patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (*Id.*). As with the other patents at issue in this motion, Defendants argue that the claimed methods from both of the Pairing patents "can be performed entirely by humans." (*Id.*).

Plaintiff respond that the claims of both of the Pairing patents "are directed to several specific improvements in existing audio system technology." (D.I. 126 at 17, 21). Plaintiff also takes issue with Defendants' contention that the claimed methods can be performed by humans. (*Id.* at 19, 22). Plaintiff further argues, as with the Volume patents, that Defendants have advanced an oversimplified characterization of the claims. (*Id.* at 19).

Defendants make the same arguments here as they did for the Volume patents. I again reject those arguments. As with the Volume patents, I agree with Plaintiff that Defendants' characterization of the purportedly abstract idea is oversimplified. Just as with the Volume patents, the Pairing patents claim methods that involve specific devices (playback devices and controllers) that are described in detail in the specifications. ('509 patent at 5:63-8:50; '959 patent at 7:8-13:10). Furthermore, as with the Volume patents, the claimed methods do not represent simply an automation of something done manually. Rather, the method of claim 1 the '509 patent requires using a controller to identify the playback devices on a local area network, instruct some of the devices to each output different channels of audio data, and display on the controller's screen which device is outputting which channel. In order to perform this method manually, leaving aside the steps involving using a controller or displaying on the screen of the controller, a person would have to manually rewire the devices each time a new selection is made for which devices are to output which channels. Similarly, the method of claim 14 of the '959 patent is performed by the playback device and involves receiving and then processing audio data, recognizing the type of pairing that has been selected for that playback devices, performing an equalization previously specified for that type of pairing, and then outputting audio. This simply is not the kind of method that could be performed manually and, even if it were, automating the method as claimed represents a substantial improvement to the functionality of a specific device. I also reject Defendants' argument that the claims of the '959 patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (D.I. 117 at 23). It seems clear to me that the two patents claim substantially different methods even if it could also be said they address "the same general idea."

At oral argument, Defendants drew an analogy between this case and the claims at issue in *Personalized Media*. (Hr'g Tr. at 12:16-13:2). *Personalized Media* involved a claim "directed to the abstract idea of using personal information to create a customized presentation." *Personalized Media Commc'ns, LLC v. Amazon.com, Inc.*, 161 F. Supp. 3d 325, 330 (D. Del. 2015), *aff'd*, 2016 WL 7118532 (Fed. Cir. Dec. 7, 2016). The claim in *Personalized Media*, however, is not analogous to the claims of the Pairing patents. These patents, like the Volume patents, are not about organizing, manipulating, or distributing information. Rather, these patents claim improvements to specific devices, not generic technology, and the methods involve controlling the devices to effect tangible changes in their configurations. For these reasons, I find that the Pairing patents claim patent-eligible subject matter under § 101.

*9 Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

IV. CONCLUSION

For the reasons set forth above, the motion for judgment on the pleadings for lack of patentable subject matter (D.I. 116) will be denied. An appropriate order will be entered.

All Citations

Slip Copy, 2017 WL 971700

Footnotes

1 At oral argument on November 14, 2016, the parties were directed to submit additional briefing to the extent that they felt claim 1 of each of these patents was not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that claim 1 of each patent is not representative. (D.I. 225).

2 At oral argument, the parties were directed to submit additional briefing to the extent that they felt claim 1 of the '509 patent and claim 14 of the '959 patent were not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that these claims are not representative. (D.I. 225).

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United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff;
v.
D & M Holdings Inc. d/b/a the D + M Group., D & M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendants.

Civil Action No. 14–1330–RGA
|
Signed September 9, 2015

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MEMORANDUM OPINION

ANDREWS, U.S. District Judge

***1** Before the Court is Defendants' motion to disqualify the law firm of Lee, Sullivan, Shea & Smith ("Lee Sullivan"). (D.I.19). The matter has been fully briefed. (D.I.20, 28, 45). The Court held oral argument on June 19, 2015. (D.I.50). For the reasons set forth below, Defendants' motion is denied.

I. BACKGROUND

Plaintiff filed the present action for patent infringement against Defendants on October 21, 2014, alleging infringement of multiple patents relating to wireless audio technology. (D.I.1). Plaintiff accuses Defendants' home entertainment operating system (HEOS) of infringement. (*Id.*). At the time of the complaint, Plaintiff was represented by the law firm McDonnell, Boehnen, Hulbert & Berghoff LLP ("McDonnell Boehnen"). McDonnell Boehnen has since withdrawn as Plaintiff's counsel. (D.I.5). Plaintiff is now represented by Lee Sullivan. (D.I.15).

McDonnell Boehnen began representing Defendants in patent related matters in 2002. (D.I. 33 6). Mr. George Lee began working on patent litigation matters for Defendants in 2002 but stopped in March 2009. (*Id.* ¶ 8). Mr. Sean Sullivan worked on patent matters for Defendants between 2003 and mid–2007. (D.I. 36 ¶ 8). Mr. Rory Shea only worked on two assignments for Defendants, one as a summer associate in 2005 and another as an associate in September 2006. (D.I. 34 ¶ 8). Mr. Dan Smith never performed any work for Defendants. (D.I. 35 ¶ 8).

In early 2012, Mr. Lee began representing Plaintiff while he was still working at McDonnell Boehnen. (D.I. 33 ¶ 20). Defendants acquired the technology behind the accused HEOS product in the latter part of 2012. (D.I. 38–1 at 16 [Exh. C]). In June 2014, Defendants launched the accused product. (D.I.21 ¶ 11). Defendants issued a press release to this effect on June 2, 2014. (D.I. 38–1 at 2 [Exh. A]). On June 5, 2014, McDonnell Boehnen ended its attorney-client relationship with Defendants. (D.I. 23 ¶ 4; D.I. 33 ¶ 25). There is no allegation that any of the Lee Sullivan lawyers learned anything about HEOS from Defendants while at McDonnell Boehnen. (*See generally* D.I. 21).

Plaintiff asked McDonnell Boehnen to analyze Defendants' HEOS products for possible infringement in September 2014. (D.I. 33 ¶ 29). McDonnell Boehnen filed the complaint in the present case on behalf of Plaintiff in October 2014 (with Mr. Sullivan and Mr. Shea on the complaint (D.I. 1 at 20)). McDonnell Boehnen withdrew as Plaintiff's counsel on November 19, 2014. (D.I.5). In December 2014, Mr. Lee, Mr. Sullivan, Mr. Shea, and Mr. Smith left McDonnell Boehnen. (D.I. 33, 34, 35 & 36). They formed Lee Sullivan on January 1, 2015. (D.I. 33 ¶ 4). Lee Sullivan entered an appearance in the present case on behalf of Plaintiff on January 26, 2015. (D.I.15).

II. LEGAL STANDARD

This Court has summarized the relevant legal principles for determining a motion to disqualify:

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The Court has the inherent authority to supervise the professional conduct of attorneys appearing before it, including the power to disqualify an attorney from a representation. *See* United States v. Miller, 624 F.2d 1198, 1201 (3d Cir.1980). Motions to disqualify are "generally disfavored" and, therefore, require the moving party to show clearly that "continued representation would be impermissible." *Talecris Biotherapeutics, Inc. v. Baxter Int'l Inc.*, 491 F.Supp.2d 510, 513 (D.Del.2007) (internal quotation marks and citations omitted); *see also* Conley v. Chaffinch, 431 F. Supp.2d 494, 496 (D.Del.2006) (same). Because "[t]he maintenance of public confidence in the propriety of the conduct of those associated with the administration of justice is so important," however, a court may disqualify an attorney "for failing to avoid even the appearance of impropriety." *Kabi Pharmacia AB v. Alcon Surgical, Inc.*, 803 F.Supp. 957, 960 (D.Del.1992).

***2** Attorney conduct is governed by the ethical standards of the court before which the attorney appears. *See In re Com Derivatives Antitrust Litig.*, 748 F.2d 157, 160 (3d Cir.1984). The District of Delaware has adopted the Model Rules of Professional Conduct ("M.R.P.C."). *See* D. Del. LR 83.6(d)(2). M.R.P.C. Rule 1.9(a) provides:

> A lawyer who has formerly represented a client in a matter shall not thereafter represent another person in the same or a substantially related matter in which that person's interests are materially adverse to the interests of the former client unless the former client gives informed consent, confirmed in writing.

To establish that a representation violates Rule 1.9, four elements must be shown: "(1) the lawyer must have had an attorney-client relationship with the former client; (2) the present client's matter must either be the same as the matter the lawyer worked on for the first client, or a 'substantially related' matter; (3) the interests of the second client must be materially adverse to the interests of the former client; and (4) the former client must not have consented to the representation after consultation." *Apeldyn Corp. v. Samsung Elecs. Co., Ltd.*, 660 F.Supp.2d 557, 561 (D.Del.2009).

To determine whether a current matter is "substantially related" to a matter involved in a former representation, and, thus, whether disqualification under Rule 1.9 is appropriate, the Court must answer the following three questions: "(1) What is the nature and scope of the prior representation at issue? (2) What is the nature of the present lawsuit against the former client? (3) In the course of the prior representation, might the client have disclosed to his attorney confidences which could be relevant to the present action? In particular, could any such confidences be detrimental to the former client in the current litigation?" *Satellite Fin. Planning Corp. v. First Nat'l Bank of Wilmington*, 652 F.Supp. 1281, 1283 (D.Del.1987) (internal quotation marks and citations omitted); *see also Talecris*, 491 F.Supp.2d at 514.

As the Third Circuit has explained, M.R.P.C. 1.9 exists for the purpose of preventing "even the potential that a former client's confidences and secrets may be used against him," to maintain "public confidence in the integrity of the bar," and to fulfill a client's rightful expectation of "the loyalty of his attorney in the matter for which he is retained." *Corn Derivatives*, 748 F.2d at 162. Therefore, in attempting to determine whether a "substantial relationship" exists, "disqualification is proper when the similarity in the two representations is enough to raise a common-sense inference that what the lawyer learned from his former client will prove useful in his representation of another client whose interests are adverse to those of the former client." *Cardona v. General Motors Corp.*, 942 F.Supp. 968, 973 (D.N.J.1996) (internal quotation marks and citations omitted). While the party seeking disqualification bears the burden of establishing the existence of a substantial relationship, any doubts about whether disqualification is appropriate should be resolved in favor of the moving party, in order to ensure protection of client confidences. *See INA Underwriters v. Nalibotsky*, 594 F.Supp. 1199, 1207 (E.D.Pa.1984); *see also Buschmeier v. G & G Invs., Inc.*, 2007 WL4150408, at *7 (E.D.Pa. Nov. 19, 2007).

***3** To the extent that a motion to disqualify involves imputing an individual lawyer's representation to an entire firm, M.R.P.C. 1.10(a) is also relevant. Rule 1.10(a)(1) provides:

> While lawyers are associated in a firm, none of them shall knowingly represent a client when any one of them practicing alone would be prohibited from doing so by Rules 1.7 or 1.9, unless the prohibition is based on a personal interest of the prohibited lawyer and does not present a significant risk of

> materially limiting the representation of the client by the remaining lawyers in the firm.
>
> Rule 1.10(a)(2) applies in circumstances in which a firm is conflicted due to a prior representation undertaken by an attorney while the attorney was at a different law firm. Rule 1.10 "imputes one attorney's conflicts to all other attorneys in his firm." *United States v. McDade*, 404 Fed.Appx. 681, 683 (3d Cir. Dec. 22, 2010); *see also Exterior Sys. v. Noble Composites, Inc.*, 210 F.Supp.2d 1062, 1068 (N.D.Ind.2002) ("Rule 1.10 addresses situations where a conflict of interest may be imputed to other lawyers associated in the same firm with the tainted lawyer.").

Resolving the question of whether to disqualify counsel requires the Court to "carefully sift all the facts and circumstances." *Nemours Found. v. Gilbane, Aetna, Fed. Ins. Co.*, 632 F.Supp. 418, 428 (D.Del.1986) (internal citations and quotation marks omitted). Indeed, "whether disqualification is appropriate depends on the facts of the case and is never automatic." *Boston Scientific Corp. v. Johnson & Johnson, Inc.*, 647 F.Supp.2d 369, 374 n.7 (D.Del.2009). The required inquiry necessarily involves "a painstaking analysis of the facts." *Satellite Fin. Planning*, 652 F.Supp. at 1283 (internal quotation marks omitted); *see also Carlyle Towers Condo. Ass'n v. Crossland Sav., FSB*, 944 F.Supp. 341, 345 (D.N.J.1996) ("Disqualification questions are intensely fact-specific, and it is essential to approach such problems with a keen sense of practicality as well as a precise picture of the underlying facts."). Furthermore, the Court approaches motions to disqualify counsel with "cautious scrutiny," mindful of a litigant's right to the counsel of its choice. *Laker Airways, Ltd. v. Pan American World Airways*, 103 F.R.D. 22, 27–28 (D.D.C.1984).

Intellectual Ventures I LLC v. Checkpoint Software Techs. Ltd., 2011 WL 2692968, *4–6 (D. Del. June 22, 2011).

III. DISCUSSION

Defendants argue that Lee Sullivan should be disqualified under Rule 1.7, which pertains to concurrent conflicts of interest. (D.1.20 at 12). Rule 1.7 states:

> (a) Except as provided in paragraph (b), a lawyer shall not represent a client if the representation involves a concurrent conflict of interest. A concurrent conflict of interest exists if:
>
> (1) the representation of one client will be directly adverse to another client; or
>
> (2) there is a significant risk that the representation of one or more clients will be materially limited by the lawyer's responsibilities to another client, a former client or a third person or by a personal interest of the lawyer.

None of the Lee Sullivan lawyers has had an actual concurrent conflict of interest in the present case. Mr. Lee, who was the last of the Lee Sullivan lawyers to do any work for Defendants, stopped working on matters for Defendants in March 2009 and began representing Plaintiff in early 2012. (D.I..33). Defendants, however, were still clients of McDonnell Boehnen in 2012. I declined to take any *ex parte* submissions from Defendants (*see* D.I. 50 at 53), and thus it is possible that some of the patent applications that McDonnell Boehnen lawyers were pursuing on behalf of Plaintiff were "directly adverse" to the Defendants' interests. There is no evidence, however, that any of the Lee Sullivan lawyers, as prohibited by Rule 1.10(a)(1), "knowingly" represented Plaintiff at a time when they had any reason to believe (let alone knowledge) that there was a conflict with another client's interests. Plaintiff operates in the field of wireless audio technology, and Defendants did not publicly enter this field until they released their HEOS product in June 2014, Thus, when Mr. Lee began representing Plaintiff in litigation in 2012, he had no concurrent conflict, and during the entire time McDonnell Boehnen represented Defendants in 2012 to 2014, he had no actual concurrent conflict and did not violate any disciplinary rules. Therefore, Rule 1.7 does not apply. [1]

***4** Since I have not reviewed the proffered *ex parte* materials, I will assume without deciding that Rule 1.7(a) applied to the Lee Sullivan lawyers while at McDonnell Boehnen as imputed grounds for disqualification. *See* Rule 1.10(a)(1). I do not think this matters. When the Lee Sullivan lawyers left McDonnell Boehnen, they left any imputed disqualifications behind them. The rule of imputed disqualification applies "[w]hile lawyers are associated in a firm." *Id.* When lawyers are no longer associated in a firm, they are not subject to the imputed disqualifications they had while in the firm. Plaintiff raised this argument in its brief, citing multiple cases. (D.I.32,

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pp. 13–17). Defendants did not respond to it in their reply brief. (D.I.45). Plaintiff raised this argument again at oral argument. (D.I. 50 at 30–35). Defendants responded, but without disagreeing with Plaintiff that imputed disqualification would not follow the Lee Sullivan lawyers to their new firm. Rather, Defendants' position was that the Lee Sullivan lawyers had an actual conflict because two of them had signed the complaint in this case. (D.I. 50 at 48). Thus, Defendants do not contest Plaintiff's argument that imputed disqualification does not follow them to their new firm.

As for Defendants' position at oral argument, I disagree. When the two Lee Sullivan lawyers signed the complaint, Defendants had not been McDonnell Boehnen's client for about 4 1/2 months. An imputed conflict does not become an actual conflict just because it is not noticed.

Defendants also argue that Lee Sullivan should be disqualified under Rule 1.9, which pertains to conflicts of interest arising out of an attorney-client relationship with a former client. (D.I. 20 at 15). It is undisputed that Defendants are former clients of the Lee Sullivan attorneys and that Plaintiff's and Defendants' interests are materially adverse in the present case. The only issue is whether Lee Sullivan's current representation of Plaintiff is the "same" or "substantially related" to its attorneys' prior representation of Defendants while at McDonnell Boehnen. I find it is not.

Although the Lee Sullivan attorneys' prior representation of Defendants involved matters relating to patent litigation, it involved different patents and different products. Defendants were not operating in the field of wireless audio technology until Defendants launched their HEOS product in June 2014. At the time this occurred, McDonnell Boehnen ended its attorney-client relationship with Defendants. Thus, anything the Lee Sullivan attorneys worked on for Defendants prior to March 2009 (as they did no work for Defendants after then) is not substantially related to their representation of Plaintiff. The present litigation is solely related to the asserted patents and the accused HEOS technology. Any confidences that Defendants disclosed to the Lee Sullivan attorneys during their prior representation occurred before March 2009 and involved unrelated patents and technology. Thus, no confidential information disclosed in prior cases would be relevant to the patents or technology in suit. At most, Defendants disclosed their general strategy for handling patent litigation, which is not enough to warrant disqualification. Thus, I do not believe there is any evidence that the Lee Sullivan attorneys' representation of Plaintiff in this case is substantially related to any of the work previously performed for Defendants. Therefore, the Lee Sullivan attorneys have no actual or imputed conflicts of interest, and I will not disqualify them.

IV. CONCLUSION

For the reasons set forth herein, Defendants' motion is denied. A separate order will be entered.

ORDER

For the reasons stated in the accompanying Memorandum Opinion, this *9* day of September 2015, IT IS HEREBY ORDERED that Defendants' motion to disqualify (D.I.19) is **DENIED.**

All Citations

Not Reported in F.Supp.3d, 2015 WL 5277194

Footnotes

1 Defendants also rely on the so-called 'hot potato' doctrine for their Rule 1.7 argument. The Third Circuit, however, has not had occasion to adopt the hot potato doctrine. The evidence in the record is the decision to terminate the attorney-client relationship with Defendants was not made by any of the Lee Sullivan lawyers. Therefore, assuming the existence of the 'hot potato' doctrine, I do not find that it applies here to the Lee Sullivan lawyers.

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United States District Court,
D. Delaware.

Sonos, Inc., Plaintiff,
v.
D&M Holdings Inc. d/b/a D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendants.

C.A. No. 14-1330-RGA-MPT
|
Signed 08/10/2016

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REPORT and RECOMMENDATION

Mary Pat Thynge, Chief United States Magistrate Judge

I. INTRODUCTION

***1** On October 21, 2014, Sonos, Inc. ("Sonos") filed its original complaint for patent infringement against defendants, D&M Holdings Inc. d/b/a The D+M Group ("D&M Japan"), D&M Holdings U.S. Inc. ("D&M U.S."), and Denon Electronics (USA), LLC ("Denon U.S.") (collectively, "D&M").[1] Sonos then filed a first amended complaint on December 17, 2014 and a second amended complaint on March 9, 2015.[2]

On April 30, 2015, D&M filed its first answer in response to Sonos's second amended complaint.[3] On November 30, 2015, D&M moved for leave to amend its answer to Sonos's second amended complaint to add counterclaims accusing Sonos of infringing upon one D&M Japanese patent and eight D&M U.S. patents.[4] While D&M's motion for leave was pending, Sonos filed a motion for leave on January 29, 2016 to file a third amended complaint.[5]

On March 7, 2016, the court issued an Order that resolved both parties' pending motions.[6] In that Order, the court granted D&M's motion for leave to amend its answer to Sonos's second amended complaint, and severed D&M's infringement counterclaims into a new case (C.A. No. 16-141-RGA). Sonos's motion for leave to file its third amended complaint was also granted.

On March 28, 2016, D&M filed its answer to Sonos's third amended complaint, which includes eleven affirmative defenses.[7] Currently before the court is Sonos's motion to strike six of D&M's affirmative defenses, pursuant to FED. R. CIV. P. 12(f), due to their alleged facial insufficiency, lack of factual support, and bare bones conclusory nature.[8] The affirmative defenses which Sonos moves to strike are failure to state a claim (First); limitations on damages and costs (Fourth); unenforceability – estoppel, acquiescence, and waiver (Fifth); patent exhaustion, patent misuse, and first sale doctrine (Sixth); personal jurisdiction (Ninth); and prosecution laches (Tenth).[9] Specifically, Sonos maintains that these affirmative defenses are insufficient on their face and should be struck to "clean up the proceedings, streamline litigation, and avoid unnecessary forays into immaterial matters."[10]

D&M opposes Sonos's motion, but requests leave to amend its answer under FED. R. CIV. P. 15(a)(2), should the court strike any of its affirmative defenses.[11] Sonos does not object to D&M's request to address any possible pleading deficiencies, but reserves the right to challenge in the future D&M's amended defenses on similar grounds.[12]

II. BACKGROUND

Sonos, Inc. is a Delaware corporation with its principal place of business in Santa Barbara, California,[13] and represents itself to be an "innovator and industry leader in the field of wireless audio technology."[14] Sonos has been manufacturing, distributing, and selling wireless home audio products for roughly ten years and is acknowledged

by multiple media sources for its innovations in this area.[15] This matter focuses on Sonos's "PLAY:5" speakers, "PLAY:3" speakers, "PLAY:1" speakers, and the "CONNECT" pre-amplifier home audio system, which are controlled by a Sonos programmed application and allegedly covered by the patents-at-issue.[16]

*2 D&M Holdings Inc. d/b/a The D+M Group is a Japanese corporation with its principal place of business in Kanagawa, Japan.[17] It offers a similar line of wireless home audio equipment, specifically the "HEOS 7" speaker, "HEOS 3" speaker, "HEOS 1" speaker, "HEOS LINK" pre-amplifier, "HEOS AMP" amplifier, "HEOS DRIVE" multi-room amplifier, and the "HEOS HomeCinema" television sound system, all of which are controlled by a D&M programmed application.[18] D&M Holdings U.S. Inc. is a Delaware corporation with its principal place of business in Mahwah, New Jersey.[19] Denon Electronics (USA), LLC is a wholly-owned subsidiary of D&M Holdings U.S. Inc. and has its principal place of business in Mahwah, New Jersey.[20]

Sonos alleges that D&M's marketing of the HEOS system directly competes with Sonos's wireless audio system by copying Sonos's system, and infringing on its patents.[21] Sonos also contends D&M markets its products using substantially similar naming conventions as used by Sonos to market its line of home audio equipment.[22]

III. GOVERNING LAW

FED. R. CIV. P. 12(f) states in relevant part that "the court may strike from a pleading an insufficient defense or any redundant, immaterial, impertinent, or scandalous matter."[23] "Motions to strike serve to clean up the pleadings, streamline litigation, and avoid unnecessary forays into immaterial matters."[24] An immaterial matter is "that which has no essential important relationship to the claim for relief or the defenses being pleaded,"[25] while an impertinent matter "consists of statements that do not pertain, and are not necessary, to the issues in question."[26] "Motions to strike are generally disfavored and ordinarily denied unless the allegations have no possible relation to the controversy and may cause prejudice to one of the parties."[27] Motions to strike under Rule 12(f) "should not be granted unless the presence of the surplusage will prejudice the adverse party."[28] When deciding a motion to strike, "the court must construe all facts in favor of the nonmoving party and deny the motion if the defense is sufficient under law."[29] A court "should not strike a defense unless insufficiency is clearly apparent."[30] However, a "[c]ourt is not required to accept affirmative defenses that are mere "bare-bones conclusory allegations," and may strike such inadequately pleaded defenses."[31] " 'A motion to strike will not be granted where the sufficiency of the defense depends on disputed issues of facts or where it is used to determine disputed and substantial questions of law.' "[32]

An examination of FED. R. CIV. P. 8 is useful to determine the requirements of pleading affirmative defenses. An affirmative defense is "a pleading subject to Rule 8(a), and therefore must include a short and plain statement of the defense."[33] A defense may be deemed meritless because it is simply a conclusory allegation which fails to provide an appropriate statement of facts or to allege the necessary elements of the claims.[34] "The purpose of requiring the defendant to plead available affirmative defenses in his answer is to avoid surprise and undue prejudice by providing the plaintiff with notice and the opportunity to demonstrate why the affirmative defenses should not succeed."[35] "In responding to a pleading, a party must affirmatively state any avoidance or affirmative defense ...."[36]

IV. DISCUSSION

A. Application of LR 7.1.1/Timeliness of Sonos's Objections

*3 Before considering Sonos's motion to strike, the issues regarding LR 7.1.1, the statement required to be filed with nondispositive motions, and dispositive motions need to be addressed. D&M relies on LR 72.1 which is directed to the authority and duties of Magistrate Judges. It provides that a "Magistrate Judge is authorized to perform all judicial duties assigned by the Court ... which include, but are not limited to, the following described civil duties ...." D&M latches onto to LR 72.1(a)(3) as presumptive definition of dispositive motions, despite case law to the contrary in this jurisdiction before and after the issuance our Local Rules, and conflates that with 7.1.1. A motion to strike under Rule 12(f) is dispositive since it dismisses or strikes from a pleading the challenged

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defense.[37] Therefore, contrary to D&M's argument, a motion to strike is dispositive, and LR 7.1.1, which concerns nondispositive motions, is not applicable.

Regarding whether Sonos's objections are untimely, D&M represents the challenged defenses were initially raised on April 30,2015 in response to the second amended complaint.[38] Between then and the filing of the third amended complaint, Sonos failed to challenge any affirmative defense.[39] Sonos also never objected to these defenses in response to D&M's motion for leave to file an amended answer and counterclaims.[40] D&M further notes that no interrogatory was propounded by Sonos on the affirmative defenses until after the filing of this motion to strike.[41] D&M maintains since no timely objections were filed, they, rather than Sonos, are prejudiced since the deadline to amend pleadings has passed.[42]

Sonos counters that its objections are timely relying on Fed. R. Civ. P. 12(f) which allows a motion to strike "within 21 days after being served with the pleading." Since D&M's answer was filed on March 28, 2016 and the present motion to strike was filed on April 21, 2016, its motion is timely.[43] It points out that D&M's most recent answer included the two new defenses of prosecution laches and prosecution history estoppel.[44] Sonos further notes that discovery is in its early stages.[45]

The effect of the allowance by the court of the motion to amend for the third amended complaint means that the complaint is the operative document on which the Sonos's action is based. It raises infringement claims for seven additional patents. Although certain of D&M's defenses were raised in prior answers, these defenses and their two new defenses now relate to these additional patents and the facts related thereto. D&M's concern to challenge Sonos's third amended complaint is addressed by their request for leave to amend their pleadings which is granted.

Turning to the motion to dismiss, Sonos asserts that D&M's affirmative defenses are insufficiently pled and should be struck,[46] because they are conclusory and fail to provide sufficient notice of the bases for these defenses, thereby subjecting Sonos to surprise and undue prejudice.[47] Sonos further contends that D&M has no factual basis for its 35 U.S.C. § 288 defense.[48]

B. Motion to Strike Affirmative Defenses

i. Failure to State a Claim

***4** Sonos moves to strike D&M's first affirmative defense, failure to state a claim upon which relief may be granted, because D&M has provided "no notice whatsoever of the nature or basis for [this] defense."[49] D&M counters that FED. R. CIV. P. 12(h)(2) allows this defense to be raised in any pleading, by later motion, or at trial.[50] To survive a Rule 12(f) motion to strike, the affirmative defense must be pled in accordance with FED. R. CIV. P. 8(c).[51] D&M has met Rule 8(c) by affirmatively stating this defense in its answer in response to Sonos's third amended complaint.[52] Sonos has not demonstrated any prejudice.[53] Therefore, Sonos's motion to strike D&M's first affirmative defense under FED. R. CIV. P. 12(f) is denied.

ii. 35 U.S.C. § 288

Sonos avers that D&M has not pled any factual basis for their 35 U.S.C. § 288 affirmative defense, which should be struck pursuant to Rule 12(f).[54] Specifically, Sonos emphasizes that none of the "asserted patents has ever been found invalid."[55] Sonos concludes that, consistent with the language of § 288, there is "no possible factual basis for D&M's § 288 defense,"[56] and the mere possibility of one of the patents being determined invalid is purely hypothetical, without any factual support.[57]

35 U.S.C. § 288 provides:

> Whenever a claim of a patent is invalid, an action may be maintained for the infringement of a claim of the patent which may be valid. The patentee shall recover no costs unless a disclaimer of the invalid claim has been entered at the

> Patent and Trademark Office *before the commencement of the suit.* [58]

D&M counters that "[a] motion to strike is not the appropriate vehicle to resolve this disputed question of law." [59] However, D&M ignores the plain language of the statute and has not shown that any asserted Sonos patent has been found invalid before the commencement of the present action. Rather, D&M surmises that one or more of Sonos's patents will be found invalid. Lastly, D&M argues that the cases relied on by Sonos are non-precedential and mere dicta. [60] This court held in *Cordance Corp. v. Amazon.com, Inc.*, that § 288 precludes recovering costs where a claim is found invalid *before* commencement of the action. [61] Under 35 U.S.C. § 282, an issued patent is presumed valid. [62] Since no determination has occurred regarding validity of any asserted claim and D&M's answer merely alleges the possibility of invalidity, D&M's Fourth affirmative defense is struck.

iii. Equitable Defenses

Sonos submits that its motion to strike D&M's Fifth affirmative defense, Unenforceability – Estoppel; Acquiescence; Waiver; and Unclean Hands, should be granted because this defense is insufficiently pled and does not meet FED. R. CIV. P. 9(a) pleading standards of fair notice and particularity for equitable defenses. [63] D&M asserts that numerous courts have ruled these affirmative defenses, similarly pled, were sufficient to withstand a motion to strike. [64] D&M further argues that "[Sonos] is on fair notice of the nature of these defenses" and "[t]he discovery process, and not endless pleading, is the appropriate forum for [Sonos] to seek additional information concerning these defenses." [65]

***5** D&M has pled insufficient facts in support of their estoppel defense. Estoppel, an equitable defense, requires the showing of three elements:

> (1) The patentee, through misleading conduct, leads the alleged infringer to reasonably infer that the patentee does not intend to enforce its patent against the alleged infringer ...
>
> (2) The alleged infringer relies on that conduct.
>
> (3) Due to its reliance, the alleged infringer will be materially prejudiced if the patentee is allowed to proceed with its claim. [66]

An element of estoppel is fraud or misrepresentation, which requires the defense to be pled with particularity under FED. R. CIV. P. 9(b). [67] D&M has not pled any of the circumstances giving rise to the alleged wrongful conduct with particularity. [68] Here, D&M alleges only that "Sonos is barred in part or whole by the doctrine of equitable estoppel ...." [69] Considering the answer and this affirmative defense in their entirety, D&M's conclusory allegation provides no basis for any misleading conduct. [70] This defense, as presently pled, should be struck. [71]

D&M has pled insufficient facts in support of its unclean hands defense. Unclean hands is an equitable defense requiring the showing of five elements:

> (1) the party seeking affirmative relief (2) is guilty of conduct involving fraud, deceit, unconscionability, or bad faith (3) directly related to matter in issue (4) that injures other party (5) and affects balance of equities between litigants. [72]

Because an element of unclean hands is based in fraud, the defense must be pled with particularity under FED. R. CIV. P. 9(b). [73] Unlike *Sun Microsystems, Inc.*, D&M has not pled any facts to suggest misconduct by Sonos. [74] Therefore, Sonos's motion to strike is granted.

Similarly, D&M has not pled adequate information tending to show the elements of the equitable defense of waiver: (1) an existing right; (2) knowledge of the right; (3) and an actual intention to relinquish the right. [75] No allegations suggest Sonos's actual intent to relinquish its patent rights. [76] Sonos's motion to strike should be granted.

Finally, with respect to its acquiescence defense, D&M maintains it applies "in circumstances where a patentee asserts claim scope or validity during litigation over

matters which were acquiesced during the prosecution of the patents."[77] Sonos rebuts that this defense is no different from a prosecution history estoppel defense, which D&M has pled separately as its eleventh affirmative defense.[78] A party is deemed to have acquiesced when it:

> *6 has full knowledge of his rights and the material facts and (1) remains inactive for a considerable time; or (2) freely does what amounts to recognition of the complained of act; or (3) acts in a manner inconsistent with the subsequent repudiation, which leads the other party to believe the act has been approved.[79]

For this defense to apply, the narrow question is whether Sonos's conduct amounted to recognition and acceptance.[80] D&M has not pled sufficient facts to demonstrate either. As a result, D&M's acquiescence defense should be struck.

iv. Unenforceability Defenses

Sonos also moves to strike D&M's sixth affirmative defense, patent exhaustion, patent misuse, and first sale doctrine, because it is conclusory, provides no notice of the nature or the basis of these defenses and subjects Sonos to the risk of surprise and undue prejudice.[81] Sonos further alleges that D&M fails to adequately provide notice as to the alleged actions that form the basis of its patent misuse defense.[82] In its answering brief, D&M maintains that Sonos has engaged in *per se* patent misuse by tying "the narrow patented features of its products to the unpatented staple features ... in an attempt to monopolize an entire section of the market using its collection of patents on narrow technologies."[83]

Patent misuse is:

> an affirmative defense to an accusation of patent infringement, ... which requires that the alleged infringer show that the patentee has impermissibly broadened the physical or temporal scope of the patent grant with anticompetitive effect.[84]

Since a successful claim of patent misuse requires the infringer to show that the patentee has impermissibly broadened the scope of the patent, resulting in an anticompetitive effect, D&M is required to assert a basis showing an anticompetitive effect in its pleadings; delegating this in its answering brief is not sufficient.[85] Therefore, Sonos's motion to strike should be granted.

D&M's defense of patent exhaustion and first sale doctrine survive the motion to strike. Patent exhaustion "provides that the initial authorized sale of a patented item terminates all patent rights to that item"[86] which the asserting party must prove at trial.[87] Unlike the equitable defenses, neither patent exhaustion nor first sale doctrine require the element of fraud, misconduct or misrepresentation. Despite Sonos's argument that patent exhaustion and first sale doctrine are the same defense, the first sale doctrine is just one way patent rights may be exhausted. Although related, they are not the same defense. D&M alleges Sonos has exhausted its patent rights by the first sale doctrine, licensing the manufacture and/or use of their products, or a combination of both.[88] For example, if sale of a patented item by Sonos was unconditional, its patent rights would be exhausted via the first sale doctrine. Similarly, if any licensing agreements authorized D&M to produce the accused products, Sonos's patent rights would also be exhausted. At this stage, D&M notes they have insufficient information.[89] Such information would likely be within the control of Sonos. Discovery for both sides, rather than a motion to strike, is the more appropriate route to learn further information on these affirmative defenses.

*7 On the affirmative defenses of patent exhaustion and first sale doctrine, Sonos's motion to strike should be denied.

v. Prosecution Laches

Prosecution laches is an "equitable defense to a charge of patent infringement."[90] An unreasonable and inexcusable delay is required to successfully assert a defense of prosecution laches.[91] D&M avers, based on

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information and belief, that Sonos's claims are barred in whole or in part by the doctrine of prosecution laches.[92] Sonos asks the court to strike this affirmative defense because it is "insufficient [and] unduly prejudicial."[93] Additionally, Sonos contends D&M has not identified or alleged any facts supporting the elements of a prosecution laches defense: prejudice, intervening rights, or unreasonable and unexpected delay.[94] D&M responds that Sonos has 25 issued patents, of which 23 include the word "clock" in its claims.[95] D&M argues Sonos attempted to "cover the concept of using a clock in a wireless audio device" with 24 patents and 640 claims, thereby illustrating a pattern of unduly and repetitive filings which creates an overall delay in the issuance of claims.[96]

D&M's assertion of prosecution latches is limited to a one sentence conclusory statement,[97] containing no information to support the elements of unreasonable and inexcusable delay.[98] They attempt to supplement this single comment by detailing certain facts in their answering brief, which is insufficient to plead the affirmative defense of prosecution laches.[99] Therefore, Sonos's motion to strike D&M's defense of prosecution laches is granted.

As granted previously in this Report and Recommendation, the court will allow D&M's request for leave to amend its pleading to remedy the deficiencies noted.

V. CONCLUSION

For the foregoing reasons, it is recommended that:

(1) Sonos's motion to strike (D.I. 111) be GRANTED as to D&M's Fourth, Fifth, Tenth, and Patent Misuse (Sixth) defenses and DENIED as to D&M's First affirmative defense and Patent Exhaustion/First Sale Doctrine (Sixth) defenses;

(2) D&M's request for leave to amend their answer be GRANTED. D&M's amended answer shall be due on or before September 7, 2016.

This Report and Recommendation is filed pursuant to 28 U.S.C. § 636(b)(1)(B), FED. R. CIV. P. 72(b)(1), and D. DEL. LR 72.1. The parties may serve and file specific written objections within ten (10) days after being served with a copy of this Report and Recommendation.

The parties are directed to the Court's Standing Order in Non-Pro Se matters for Objections Filed under FED. R. CIV. P. 72, dated October 9, 2013, a copy of which is available on the Court's website, www.ded.uscourts.gov.

All Citations

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Footnotes

1 D.I. 1.
2 D.I. 6; D.I. 31.
3 D.I. 48.
4 D.I. 81.
5 D.I. 93; D.I. 94.
6 D.I. 100.
7 D.I. 106.
8 D.I. 112 at 4.
9 D.I. 112 at 2. D&M has since withdrawn its claim of lack of personal jurisdiction. As a result, this Report & Recommendation will not address the ninth affirmative defense.
10 D.I. 112 at 2.
11 D.I. 119 at 14.
12 D.I. 124 at 10.
13 D.I. 102 at 1.
14 *Id.* at 3.
15 *Id.*

16 *Id.*
17 *Id.* at 1.
18 D.I. 102 at 4.
19 *Id.* at 2.
20 *Id.*
21 *Id.* at
22 D.I. 102 at 5.
23 FED. R. CIV. P. 12(f).
24 *Sun Microsystems, Inc. v. Versata Enterprises, Inc.*, 630 F. Supp. 2d 395, 402 (D. Del. 2009).
25 *Delaware Health Care, Inc. v. MCD Holding Co.*, 893 F. Supp. 1279, 1292 (D. Del. 1995).
26 *Id.*
27 *Sun Microsystems, Inc.*, 630 F. Supp. 2d at 402.
28 *Symbol Techs., Inc.*, 609 F. Supp. 2d 353, 359 (D. Del. 2009).
29 *Procter & Gamble Co. v. Nabisco Brands, Inc.*, 697 F. Supp. 1361, 1362 (D. Del. 1988).
30 *Fesnak & Assocs., LLP v. U.S. Bank Nat. Ass'n*, 722 F. Supp. 2d 496, 502(D. Del. 2010).
31 *Sun Microsystems, Inc.*, 630 F. Supp. 2d at 408.
32 *Gross v. Weinstein, Weinburg & Fox, LLC*, 123 F. Supp. 3d 575, 580 (D. Del. 2015)(quoting *Cadence Pharm., Inc. v. Paddock Labs, Inc.*, 2012 WL 4565013, at *1 (D. Del. Oct. 1, 2012)).
33 *See, e.g., Do It Best Corp. v. Heinen Hardware, LLC*, No. 13-69, 2013 WL 3421924, at *3 (N.D. Ind. July 8, 2013). *See also* 8(b) which requires when "responding to a pleading, a party must state in short and plain terms its defenses to each claim asserted."
34 *Heller Fin., Inc. v. Midwhey Powder Co., Inc.*, 883 F.2d 1286, 1294 (7th Cir. 1989).
35 *In re Sterten*, 546 F.3d 278, 285(3d. Cir. 2008).
36 FED. R. CIV. P. 8(c)(1).
37 *See StairMaster Sports/Med. Products, Inc. v. Groupe Procycle, Inc.*, 182 F.R.D.117, 120 (D. Del. 1998) (confirming that a motion to strike affirmative defenses is issue dispositive, and regarding plaintiff's motion to strike stated "... the Court is hard pressed to devise a more issue dispositive motion ...."). *See also*, *Chase Bank USA N.A. v. Hess*, C.A. No. 08-121-LPS, 2013 WL 5314706, at *1 (D. Del. Sept. 20, 2013) (noting that a motion to strike defendant's answer presents a case dispositive issue); *United States v. Parcel of Land in Town of Middletown, New Castle Cty.*, 32 F. Supp. 718, 721 (D. Del. 1940) (commenting that a motion to strike is "equivalent to a motion to dismiss.").
38 D.I. 119 at 4. D&M claims the only affirmative defense not previously asserted was prosecution laches.
39 *Id.*
40 *Id.*
41 *Id.*
42 *Id.*
43 D.I. 124 at 2.
44 *Id.*
45 *Id.* at 3.
46 D.I. 112 at 2.
47 *Id.* The prejudice alleged includes modification by D&M of its defense theories without having to request leave of the court or provide timely notice; obtaining the details regarding the nature and bases of the defenses via discovery; and potentially subjecting Sonos to unnecessary discovery and/or motion practice of non-viable defenses. *See* D.I. 124 at 4.
48 *Id.*
49 D.I. 124 at 9.
50 D.I. 119 at 12; *see also* FED. R. CIV. P. 12(h)(2).
51 FED. R. CIV. P. 8(c).
52 D.I. 106 at 16.
53 D.I. 112 at 9-10.
54 *Id.* at 10.
55 D.I. 124 at 9. Sonos does not challenge D&M's claim that Sonos's recovery is limited by 35 U.S.C. §§ 286 and 287.

56 D.I. 124 at 9.
57 *Id.*
58 35 U.S.C. § 288 (emphasis added).
59 D.I. 119 at 13 (*quoting Cadence Pharm., Inc. v. Paddock Labs., Inc.*, C.A. No. 11-733-LPS, 2012 WL 4565013, at *3 (D. Del. Oct. 1, 2012)).
60 D.I. 119 at 13.
61 *Cordance Corp. v. Amazon.com, Inc.*, 631 F. Supp 2d 484, 503 (D. Del. 2009). (emphasis added).
62 35 U.S.C. § 282.
63 D.I. 112 at 5-6.
64 D.I. 119 at 7.
65 *Id.*
66 *Phillips Electronics North America Corp. v. Contec Corp.*, 312 F. Supp. 2d 639, 641 (D. Del. 2004) (*citing A.C. Aukerman Co. v. R.L. Chaides Construction Co.*, 960 F.2d 1020, 1041 (Fed. Cir. 1992)).
67 FED. R. CIV. P. 9(b).
68 *See* D.I. 106 at 17; D.I. 119 at 11-13.
69 D.I. 106 at 17.
70 *See Sun Microsystems, Inc. v. Versata Enterprises, Inc.*, 630 F. Supp. 2d 395, 409 (D. Del. 2009)
71 Unlike the defendant in *Symbol Technologies, Inc. v. Aruba Networks, Inc.*, 609 F. Supp 2d 353, 356 (D. Del. 2009), D&M has alleged no bases for equitable estoppel.
72 *Id.* at 410 (*citing Castle v. Cohen*, 676 F. Supp 620, 627 (E.D. Pa. 1987)).
73 FED. R. CIV. P. 9(b).
74 *Compare* D.I. 106 at 17 *with Sun Microsystems, Inc.*, 630 F. Supp. 2d at 410.
75 *Sun Microsystems, Inc.*, 630 F. Supp. 2d at 409.
76 D.I. 106 at 7; *see Sun Microsystems, Inc.*, 630 F. Supp. 2d at 410.
77 D.I. 119 at 8.
78 D.I. 124 at 6.
79 *Klassen v. Allegro Development Corp.*, 106 A3d. 1035, 1047 (Del. 2014).
80 *Id.*
81 D.I. 112 at 7.
82 D.I. 112 at 8.
83 D.I. 119 at 9-10.
84 *Intellectual Ventures I LLC v. Symantec Corp.*, C.A. No. 13-1440-LPS, 2014 WL 4773954 (D. Del. Sept. 24, 2014) (citing *VA Panel Corp. v. MAC Panel Co.*, 133 F.3d 860, 868 (Fed. Cir. 1997)).
85 *Id.*
86 *Quanta Computer, Inc. v. LG Electronics, Inc.*, 553 U.S. 617, 625 (2008).
87 *Intel Corp. v. Broadcom Corp.*, 173 F. Supp. 2d 201, 206 (D. Del. 2001).
88 D.I. 119 at 10-11.
89 *Id.*
90 *Cancer Research Tech. Ltd. v. Barr Labs., Inc.*, 625 F.3d 724, 729 (Fed. Cir. 2010).
91 *Id.*; *Cordance Corp. v. Amazon.com, Inc.*, 631 F. Supp. 2d 484, 489 (D. Del. Jun. 30, 2009).
92 D.I. 106 at 18.
93 D.I. 112 at 9; D.I. 124 at 8.
94 *Id.* at 9. *See Cancer Research Tech.* 625 F.3d at 729.
95 D.I. 119 at 11-12.
96 *Id.*
97 D.I. 106 at 18. *See Symbol Techs., Inc. v. Aruba Networks, Inc.*, 609 F. Supp. 2d 353, 359 (D. Del. 2009).
98 D.I. 106 at 18 ("Based on information and belief, Sonos is barred in whole or in part by the doctrine of prosecution laches from enforcing the Patents-in-Suit against Defendants.").
99 D.I. 119 at 16-17.

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ORDER

Richard G. Andrews, United States District Judge

***1** This 31 day of August 2016, upon consideration of the Magistrate Judge's Report and Recommendation dated August 10, 2016, and no objections to the Report and Recommendation having been received, and the Court having reviewed the Magistrate Judge's Report and Recommendation, IT IS HEREBY ORDERED:

1. The Report and Recommendation (D.I. 143) is **ADOPTED.**

2. Plaintiff's Motion to Strike (D.I. 111) is **GRANTED in part and DENIED in part** as set forth in the Report and Recommendation.

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Denon Electronics (USA), LLC, Defendants.

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MEMORANDUM OPINION

Richard G. Andrews, United States District Judge

***1** Presently before the Court is Defendants' Motion for Leave to Amend Their Answer to Add the Defense of Inequitable Conduct. (D.I. 176). The issues have been fully briefed. (D.I. 177, 189, 192). For the reasons that follow, the Court will deny Defendant's motion.

I. BACKGROUND

Plaintiff filed this patent infringement lawsuit against Defendants on October 14, 2014. (D.I. 1). On August 25, 2015, the Court issued a Scheduling Order specifying that amendments to the pleadings to assert the defense of inequitable conduct must be filed on or before August 1, 2016. (D.I. 65). On August 1, 2016, Defendants filed a Motion for Leave to Amend Answer to Add the Defense of Inequitable Conduct. (D.I. 141). At that time, Defendants filed their proposed First Amended Answer. (D.I. 141–2). Plaintiff opposed Defendants' motion, arguing that Defendants proposed First Amended Answer did not meet the heightened pleading standard required for inequitable conduct. (D.I. 152 at 8). On September 9, 2016, Defendants filed their reply brief, including a proposed Second Amended Answer containing substantially more material related to their inequitable conduct defense. (D.I. 160). Unsurprisingly, Plaintiff filed a Motion to Strike Defendants' New Amended Answer Submitted with Their Reply Brief. (D.I. 161). On October 7, 2016, the Court issued an Order directing Defendants to advise the Court by October 12, 2016 as to whether they intended to rely on the First Amended Answer or the Second Amended Answer. (D.I. 172). The Court further advised that if Defendants intended to rely on the Second Amended Answer, they would need to file a new motion to amend. (*Id.*). On October 12, 2016, Defendants filed the instant Motion to Amend in which they indicated that they elected the proposed Second Amended Answer. (D.I. 177 at 8). In light of this election, the Court dismissed Defendants' first Motion to Amend as moot. (D.I. 180).

II. LEGAL STANDARD

Rule 15(a) of the Federal Rules of Civil Procedure provides that "[a] party may amend its pleading once as a matter of course within 21 days after serving it." A party seeking to amend after this deadline or more than once may only do so "with the opposing party's written consent or the court's leave." Fed. R. Civ. P. 15(a)(2). Leave to amend "should [be] freely give[n] ... when justice so requires." *Id.* The decision to grant or deny leave to amend lies within the discretion of the court. *Foman v. Davis*, 371 U.S. 178, 182 (1962); *In re Burlington Coat*

Factory Secs. Litig., 114 F.3d 1410, 1434 (3d Cir. 1997). The Third Circuit has adopted a liberal approach to the amendment of pleadings. *Dole v. Arco*, 921 F.2d 484, 487 (3d Cir. 1990). In the absence of undue delay, bad faith, or dilatory motives on the part of the moving party, the amendment should be freely granted, unless it is futile or unfairly prejudicial to the non-moving party. *Foman*, 371 U.S. at 182; *In re Burlington*, 114 F.3d at 1434.

When a pleading deadline imposed by a scheduling order has passed, however, a party seeking to amend must, as a threshold matter, show "good cause" to modify the deadlines. Fed. R. Civ. P. 16(b)(4); *E. Minerals & Chemicals Co. v. Mahan*, 225 F.3d 330, 340 (3d Cir. 2000). Good cause is found when, despite diligence on the part of the party seeking to amend, the deadline in the scheduling order "cannot reasonably be met." Fed. R. Civ. P. 16 Advisory Committee's Notes (1983 amendments). The focus of the "good cause" inquiry is, therefore, on diligence of the moving party, rather than on prejudice, futility, bad faith, or any of the other Rule 15 factors. *Glaxosmithkline LLC v. Glenmark Pharm. Inc.*, 2016 WL 7319670, at *1 (D. Del. Dec. 15, 2016).

III. DISCUSSION

***2** As an initial matter, I reject Defendants' assertions that the current motion is not subject to the more stringent "good cause" standard of Rule 16(b). Defendants argue that because they "openly disclosed their legally sufficient theories of inequitable conduct" prior to the deadline, the current proposed amendment should not be subject to the "good cause" standard. (D.I. 177 at 17–18, n.5). This is incorrect. Disclosing a legal theory is not the equivalent of substantively amending a pleading. Defendants' proposed Second Amended Answer is substantially and materially different from their First Amended Answer.[1] If Defendants wanted their motion to be considered under the more lenient standard of Rule 15, they should have elected to rely on their proposed First Amended Answer, which was filed by the deadline imposed by the Court's Scheduling Order. Since Defendants elected their proposed Second Amended Answer with its much more extensive allegations, they must, as a threshold matter, meet the more stringent "good cause" standard.

Defendants have not shown good cause for this belated amendment. In fact, Defendants focus in their briefing primarily on why they should not have to meet the good cause standard and why they believe they meet the lesser Rule 15 standard. The only argument Defendants make in support of diligence, the only factor important in the Rule 16 analysis, is that they "have diligently pursued their request for leave since August 1, 2016." (D.I. 177 at 18). This is the wrong time frame for the diligence analysis, however. To show good cause, Defendants must show diligence in pursuing their inequitable conduct defense prior to the deadline for amendments; whether Defendants acted diligently, after the deadline, in addressing the deficiencies Plaintiff identified in their First Amended Answer is simply irrelevant. Furthermore, Defendants have not argued that their defense is based on newly disclosed evidence that could not have been obtained prior to the deadline. Nor could they. The inequitable conduct allegations in the proposed Second Amended Answer rest entirely on information that was publicly available months or even years before the deadline for amendments.

Because Defendants have failed to show good cause for allowing this belated amendment, I decline to address the parties' arguments regarding prejudice and futility.[2]

IV. CONCLUSION

***3** For the reasons set forth herein, Defendants' Motion for Leave to Amend Their Answer to Add the Defense of Inequitable Conduct is **DENIED.**

An appropriate order will be entered.

ORDER

For the reasons set forth in the accompanying memorandum, **IT IS HEREBY ORDERED** that Defendants' Motion for Leave to Amend Their Answer to Add the Defense of Inequitable Conduct (D.I. 176) is **DENIED.**

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Footnotes

1 Defendants' Second Amended Answer includes an additional thirty-six paragraphs and fourteen pages of allegations in the Inequitable Conduct section not present in their First Amended Answer. (D.I. 142–1, 177–1).

2 Even if I were to find some hint of good cause for this amendment, I am dubious about whether Defendants' pleading is sufficient. In order "to plead the 'circumstances' of inequitable conduct with the requisite 'particularity' under Rule 9(b), the pleading must identify the specific who, what, when, where, and how of the material misrepresentation or omission committed before the PTO." *Exergen Corp. v. Wal–Mart Stores, Inc.*, 575 F.3d 1312, 1328 (Fed. Cir. 2009). Furthermore, the pleading "must include sufficient allegations of underlying facts from which a court may reasonably infer that a specific individual (1) knew of the withheld material information or of the falsity of the material misrepresentation, and (2) withheld or misrepresented this information with a specific intent to deceive the PTO." *Id.* at 1328–29. Defendants' identification of the required "who" is murky at best, with most allegations centering on Sonos's current in-house counsel, an attorney who was not even employed by Sonos until March 2014, years after the occurrence of much of the alleged misconduct. (D.I. 189 at 16). In addition, Defendants' allegations of intent revolve around Sonos's attorneys' knowledge of the existence of prior art references cited during prosecution of some patents, but not others. (D.I. 177–1 at ¶¶44, 52). This alone is insufficient. "The mere fact that an applicant disclosed a reference during prosecution of one application, but did not disclose it during prosecution of a related application, is insufficient to meet the threshold level of deceptive intent required to support an allegation of inequitable conduct." *Exergen*, 575 F.3d at 1331.

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United States District Court,
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SONOS, INC., Plaintiff,
v.
D&M HOLDINGS INC. d/b/a the D
+M Group, D&M Holdings U.S. Inc., and
Denon Electronics (USA), LLC, Defendants.

Civil Action No. 14-1330-RGA
|
Filed 03/13/2017

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MEMORANDUM OPINION

ANDREWS, U.S. DISTRICT JUDGE

*1 Presently before the Court is Defendants' Partial Motion for Judgment on the Pleadings for Lack of Patent-Eligible Subject Matter. (D.I. 116). The issues have been fully briefed. (D.I. 117, 119, 124). The Court held oral argument on November 14, 2016. (D.I. 206) ("Hr'g Tr."). For the reasons that follow, the Court will deny Defendants' motion.

I. BACKGROUND

Plaintiff filed this patent infringement lawsuit against Defendant on October 14, 2014. (D.I. 1). Plaintiff has asserted a total of twelve patents in this suit. (D.I. 102). Defendants have moved for partial judgment on the pleadings with respect to four of the asserted patents, alleging that the patents are directed to ineligible subject matter. (D.I. 117). The patents at issue in this motion are U.S. Patent Nos. 8,588,949 ("the '949 patent"), 7,571,014 ("the '014 patent"), 9,202,509 ("the '509 patent"), and 9,219,959 ("the '959 patent").

The parties refer to the '949 and '014 patents collectively as the Volume patents. The '949 patent is directed to a multimedia controller and method for adjusting volume levels in a multi-zone system through the use of a user interface. The summary of the invention section of the specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups. According to one aspect of the present invention, a mechanism is provided to allow a user to group some of the players according to a theme or scene, where each of the players is located in a zone. When the scene is activated, the players in the scene react in a synchronized manner.

('949 patent at 2:28-34). The '014 patent is similarly directed to a method and apparatus for controlling multimedia players in a multi-zone system. The invention is described in the specification as follows:

> In general, the present invention pertains to control of audio characteristics of a plurality of multimedia players, or simply players, from a controller. The characteristics include, but are not limited to, an audio source and

> an audio volume being played in each of the players. In particular, the present invention enables the user to remotely control the audio characteristics of the players either as a group or as an individual player.

('014 patent at 2:24-31).

The parties refer to the '509 and '959 patents collectively as the Pairing patents. The '509 patent is directed to methods for grouping and pairing networked audio players. The specification describes the invention as follows:

> In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups.... [I]ndividual players may be paired or grouped to stimulate [sic] a multi-channel listening environment. In [sic] instead of grouping selected players to play back an audio item, a user is allowed to activate one of the players to process the data of the audio item, essentially separating the data into individual streams, each of the streams representing a single-sound track and being played back in one of the players, thus creating a multi-channel listening environment with the selected players.

***2** ('509 patent at 2:26-27, 2:59-67). The '959 patent is similarly directed to devices and methods for grouping, consolidating, and pairing networked audio players. The invention is described in the specification as follows:

> In brief summary, the embodiments described herein provide technology for grouping, consolidating, and pairing individual playback devices to create or enhance a multi-channel listening environment. Particularly, the embodiments described herein enable two or more playback devices to be paired, such that multi-channel audio is achieved or enhanced. Such embodiments may be used to produce stereo sound or other audio environments suitable for audio content encoded with more than two channels, such as for certain kinds of television, movies, and music.

('959 patent at 2:54-63).

II. LEGAL STANDARD

Section 101 of the Patent Act defines patent-eligible subject matter. It provides: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101. The Supreme Court has recognized an implicit exception for three categories of subject matter not eligible for patentability—laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). The purpose of these carve outs is to protect the "basic tools of scientific and technological work." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012). "[A] process is not unpatentable simply because it contains a law of nature or a mathematical algorithm," as "an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Id.* at 1293-94 (internal quotation marks and emphasis omitted). In order "to transform an unpatentable law of nature into a patent-eligible application of such a law, one must do more than simply state the law of nature while adding the words 'apply it.' " *Id.* at 1294 (emphasis omitted).

The Supreme Court recently reaffirmed the framework laid out in *Mayo* "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S. Ct. at 2355. First, the court must determine whether the claims are drawn to a patent-ineligible concept. *Id.* If the answer is yes, the court must look to "the elements of the claim both individually and as an 'ordered combination' " to see if there is an " 'inventive concept'—*i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.' " *Id.* (alteration in original). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].' " *Id.* at 2357

(alterations in original) (quoting *Mayo*, 132 S. Ct. at 1297). "[S]imply appending conventional steps, specified at a high level of generality, to ... abstract ideas cannot make those ... ideas patentable." *Mayo*, 132 S. Ct. at 1300. Further, "the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment." *Alice*, 134 S. Ct. at 2358 (quoting *Bilski v. Kappos*, 561 U.S. 593, 610-11 (2010)). Thus, "the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *Id.* For this second step, the machine-or-transformation test can be a "useful clue," although it is not determinative. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014), *cert. denied*, 135 S. Ct. 2907 (2015).

***3** Patent eligibility under § 101 is a question of law suitable for resolution on a motion for judgment on the pleadings. *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1293 (Fed. Cir. 2016). The Federal Circuit follows regional circuit law for motions for judgment on the pleadings. *Id.* Under Third Circuit law, a Rule 12(c) motion for judgment on the pleadings is reviewed under the same standard as a Rule 12(b)(6) motion to dismiss when the Rule 12(c) motion alleges that the plaintiff failed to state a claim upon which relief can be granted. *Revell v. Port Auth.*, 598 F.3d 128, 134 (3d Cir. 2010); *Turbe v. Gov't of the Virgin Islands*, 938 F.2d 427, 428 (3d Cir. 1991). The court must accept the factual allegations in the complaint and take them in the light most favorable to the non-moving party. *Erickson v. Pardus*, 551 U.S. 89, 94 (2007); *Christopher v. Harbury*, 536 U.S. 403, 406 (2002).

The Federal Circuit has held that the district court is not required to individually address claims not asserted or identified by the non-moving party, so long as the court identifies a representative claim and "all the claims are substantially similar and linked to the same abstract idea." *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat. Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (internal quotation marks omitted).

III. DISCUSSION

A. The Volume Patents

The '949 patent contains three independent claims: claim 1, claim 8, and claim 15. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[1] Claim 1 reads:

> 1. A multimedia controller including a processor, the controller configured to:
>
> provide a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is an independent playback device configured to playback a multimedia output from multimedia source;
>
> accept via the user interface an input to facilitate formation of the player group, wherein the input to facilitate formation of the player group indicates that at least two of the plurality of players in the local area network are to be included in the player group for synchronized playback of a multimedia output from the same multimedia source;
>
> for any individual player in the player group, accept via the user interface a player-specific input to adjust a volume of that individual player, wherein the player-specific input to adjust the volume of that individual player causes that individual player to adjust its volume; and
>
> accept via the user interface a group-level input to adjust a volume associated with the player group, wherein the group-level input to adjust the volume associated with the player group causes each of the players in the player group to adjust its respective volume.

('949 patent, claim 1).

The '014 patent contains four independent claims, three of which have been asserted: claim 1, claim 16, and claim 38. In briefing Defendants argued, and, at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9). Claim 1 reads:

> ***4** 1. A method for controlling a plurality of players, the method comprising: displaying on a screen a first list showing at least available players;
>
> displaying, when at least one of the players is selected as a zone group head, on the screen a second list showing at least some of the players that are eligible to be grouped with the zone group head;
>
> forming a zone group started with the zone group head, after one or more players from the at least some of the players are selected to join the zone group; and

> synchronizing all players in the zone group;
>
> adjusting a volume meter represented by an averaged value of audio volumes of the players in the group, wherein said adjusting of the volume meter includes changing a volume of each of the group of players synchronously in accordance with an adjustment made by a user.

('014 patent, claim 1).

"First, we determine whether the claims at issue are directed to [an abstract idea]." *Alice*, 134 S. Ct. at 2355. "The 'abstract ideas' category embodies 'the longstanding rule that an idea of itself is not patentable.' " *Id.* (internal quotation marks omitted) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). "The Supreme Court has not established a definitive rule to determine what constitutes an 'abstract idea' sufficient to satisfy the first step of the *Mayo/Alice* inquiry." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016). The Supreme Court has recognized, however, that "fundamental economic practice[s]," *Bilski*, 561 U.S. at 611, "method[s] of organizing human activity," *Alice*, 134 S. Ct. at 2356, and mathematical algorithms, *Benson*, 409 U.S. at 64, are abstract ideas. In navigating the parameters of such categories, courts have generally sought to "compare claims at issue to those claims already found to be directed to an abstract idea in previous cases." *Enfish*, 822 F.3d at 1334. "But in determining whether the claims are directed to an abstract idea, we must be careful to avoid oversimplifying the claims because '[a]t some level, all inventions ... embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.' " *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016) (alterations in original) (quoting *Alice*, 134 S. Ct. at 2354).

Defendants assert that the "Volume patents are directed to the abstract idea of 'controlling audio settings for multiple audio devices.' " (D.I. 117 at 13). Defendants contend that, like the concept of collecting and storing data in *Content Extraction*, the Volume patents seek to claim a concept that is "very basic" and "fundamental to the entire technological field described in the Asserted Patents." (*Id.* at 14). According to Defendants, the claimed method "can be manually performed by a human." (*Id.*). Defendants also argue that the asserted claims of the '014 patent encompass prior art devices because the claims are not limited to wirelessly networked audio players. (*Id.* at 15).

Plaintiff counters that Defendants are oversimplifying in characterizing the invention. (D.I. 126 at 12). Plaintiff asserts that the invention embodies "a concrete and tangible concept limited to a specific technological field and it is tethered to specific devices." (*Id.* at 13). Plaintiff further asserts that the invention discloses new functionality and is not simply an automation of steps previously performed by humans. (*Id.*) Finally, Plaintiff objects to Defendants' characterization of the "network" as encompassing prior art hardwired audio systems. (*Id.* at 10). Plaintiff contends, rather, that the claims are limited to audio players on a data network. (*Id.*).

***5** I agree with Plaintiff that Defendants have advanced an oversimplified characterization of the allegedly abstract idea. "Under step one of *Mayo/Alice*, the claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject malter." *Internet Patents*, 790 F.3d at 1346. As the Federal Circuit has cautioned, "courts 'must be careful to avoid oversimplifying the claims' by looking at them generally and failing to account for the specific requirements of the claims." *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016) (quoting *TLI Commc'ns*, 823 F.3d at 611).

As support for their proposed characterization, Defendants cite to several cases they claim are similar to this one. Many of these cases are inapplicable, however, as they are directed to the abstract idea of collecting, organizing, and storing data. *See TLI Commc'ns*, 823 F.3d at 613 ("claims directed to abstract idea of classifying, organizing, and storing digital images"); *Content Extraction*, 776 F.3d at 1347 (claims drawn to abstract idea of collecting, recognizing, and storing data); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014) (claims drawn to abstract idea of "organizing information through mathematical correlations" where claims "not tied to a specific structure or machine"); *Visual Memory LLC v. NVIDIA Corp.*, 2016 WL 3041847, at *4 (D. Del. May 27, 2016), *appeal docketed*, No. 16-2254 (Fed. Cir. June 28, 2016) (claims drawn to "abstract idea of categorical data storage"). In order to make the argument that these cases are similar to this one, Defendants offer additional alternative characterizations

of the alleged abstract idea, arguing the Volume patents are directed to "organizing and manipulating electronic information" (D.I. 117 at 15) or, alternatively, "organizing and distributing information." (*Id.* at 16). These alternative characterizations are a far cry from, and oversimplified to a greater degree than, "controlling audio settings for multiple audio devices." (*Id.* at 13).

I think these claims are far more specific and limited than Defendants argue. For example, claim 1 of the '014 patent could only be considered to encompass collecting and organizing information if I were to restrict my analysis to the first two limitations involving displaying lists of available players. This is inappropriate. Considering the claim in its entirety reveals that there is more to the claim than organizing information. Rather, the third limitation calls for "forming a zone group," an action that involves controlling actual devices and effecting a fundamental alteration in how the plurality of zone players are networked together. The remaining limitations involve controlling the zone players that have been grouped together, also actions that are not accurately characterized as organizing information. Similarly, claim 1 of the '949 patent claims a controller that provides a user interface allowing for the formation of groups of zone players and control of these players. To characterize this claim as being drawn to "organizing and distributing information" is a gross oversimplification. Defendants' arguments ignore tangible limitations that are tied to specific devices. I am not persuaded.

For similar reasons, I reject Defendants' argument that the concept claimed is fundamental to the entire field. The claims of both Volume patents relate not to the field of audio devices generally, but only to methods and devices for controlling the specific "players" referenced in the claims. I have already construed the term "player" to mean "data network device configured to process and output audio." (D.I. 219 at 9). Claim 1 of each of the Volume Patents, therefore, requires concrete, tangible components, specifically a "plurality of players," where the players are the specific devices described in the patents. Only under Defendants' oversimplified characterization of these patents could the claimed concept be considered fundamental to the technological field.

***6** Defendants further argue that these patents are similar to those invalidated in *TLI Commc'ns*. (Hr'g Tr. at 5:21-6:10). In *TLI*, the claims were found to be abstract at step one because they were "directed to the use of conventional or generic technology in a nascent but well-known environment, without any claim that the invention reflects an inventive solution to any problem presented by combining the two" rather than being directed to "a specific improvement to computer functionality." *TLI Commc'ns*, 823 F.3d at 612. Importantly, however, the specification of the patent at issue in *TLI* did not "provide any technical details for the tangible components." *Id.* In contrast, the claims of the Volume patents are not directed to "generic technology." They are directed to controllers and networked audio players that are described in detail in the specifications. ('014 patent at 6:18-8:49; '959 patent at 7:8-13:10). Furthermore, the specifications of both Volume patents describe the problems presented and solved by these inventions as "dynamically managing the ad hoc creation and deletion of groups" of audio players and "control of the audio players as a group." ('014 patent at 2:3-6; '949 patent at 2:10-13). Although Defendants attempt to argue that this is a "manufactured problem," I do not think *TLI* is analogous to this case both because the Volume patents are directed to specific rather than generic technology and present a specific improvement to the existing technology.

Defendants next argue that "each of the recited steps can be manually performed by a human." (D.I. 117 at 14). However, Defendants do not explain how a human could manually accomplish this feat. Nor could they. Performing the method of claim 1 of the '014 patent requires the following steps: 1) displaying a list of available players on a screen; 2) if one of the players is a zone head, displaying on the screen a second list of players that could be grouped with the zone head; 3) forming a group by selecting some of the players to group with the zone head; 4) synchronizing the players in the group; and 5) using the controller to synchronously adjust the volume of all of the grouped players. Even setting aside the steps involving displaying lists on a screen, it seems clear that in order to form a group in step 3 in a hard wired system contemplated by Defendants, a user would need to re-wire the audio system each time a new group is formed. Forming and changing the composition of player groups in real time simply by making a few selections on the screen of a device is not something a human could do manually in a hard wired system.

Similarly, claim 1 of the '949 patent is a device claim for a controller used to form and control groups of

audio players. Defendants' arguments that a human could perform the actions the device is said to perform is at best illogical. Defendants "provided no evidence that the process previously used [to group audio speakers] is the same as the process required by the claims." *McRO, Inc.*, 837 F.3d at 1314. As in *McRO*, the prior art method of grouping and controlling audio devices (*i.e.* by hardwiring them into the desired configuration) "would not be within the scope of the claims" because it does not involving using a controller with a user interface to view lists of available devices on the data network that are then grouped and controlled synchronously. Furthermore, unlike in *McRO*, the method is not implemented on a general purpose computer. Rather, as discussed above, the method is directed to specific devices that are described and claimed in the patents.

It seems to me that the invention as claimed in each of the Volume patents represents a substantial improvement over the existing technology—the invention described in the patents allows for the audio devices to be grouped and regrouped in real time simply using a user interface to select the desired members of the groups without the need for altering any hard wiring in the physical system. This is not simply a "more efficient" method of doing something already done by humans. It is a method that provides for capabilities far beyond what a traditional hardwired system offers. Plaintiff does not contend that audio speakers are a new technology. What is claimed, however, is not a traditional speaker; rather, the claims are directed to an improvement to the existing technology for grouping and controlling audio speakers. Furthermore, the claims are grounded in a specific device—the player/zone player/playback device that is described in the patent and that I previously construed to mean "data network device configured to process and output audio." (D.I. 219 at 9).

***7** Finally, Defendants argue that the claims of the '014 patent "encompass the admitted prior art of hard-wired traditional multi-zone systems." (D.I. 117 at 15). I am not persuaded that this is true for many of the same reasons I have already explained above. Whether it is true or not, however, is irrelevant in the context of this motion because "section 101 eligibility should not become a substitute for a patentability analysis related to prior art, adequate disclosure, or the other conditions and requirements of Title 35." *Research Corp. Tech., Inc. v. Microsoft Corp.*, 627 F.3d 859, 868 (Fed. Cir. 2010).

For the reasons given above, I find that the Volume patents claim patent-eligible subject matter under § 101. Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

B. The Pairing Patents

The '509 patent contains three independent claims: claim 1, claim 11, and claim 23. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 1 is representative. (Hr'g Tr. at 61:6-9).[2] Claim 1 reads:

> 1. A method comprising:
>
> identifying, via a controller, a plurality of playback devices on a local area network (LAN), wherein at least one of the plurality of playback devices is configured to request an audio data stream from a source device in response to receipt of a command via the controller over the LAN;
>
> instructing, via the controller over the LAN, at least one of the plurality of playback devices to process the requested audio data stream into at least one of a first and a second channel of the requested audio data stream and to reproduce a respective one of the first and the second channel, wherein the plurality of playback devices, when grouped, provide multi-channel sound, such that a first playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the first channel of the requested audio data stream for the group and a second playback device in the group of the plurality of playback devices is configured as part of the group to reproduce the second channel of the requested audio data stream for the group; and
>
> displaying, via the controller, an indication that each of the plurality of playback devices is configured to reproduce a respective channel.

('509 patent, claim 1). The '959 patent contains two independent claims. In briefing Defendants argued, and at oral argument Plaintiff agreed, that claim 14 is representative. (Hr'g Tr. at 61:6-9). Claim 14 reads:

> 14. A method for outputting audio in a multi-channel listening environment, wherein the method is performed by a playback device, the method comprising:

receiving audio data over a network;

processing the audio data before the playback device outputs audio from a plurality of speaker drivers based on the audio data;

when the playback device is configured for a first type of pairing, performing a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers;

when the playback device is configured for a second type of pairing, performing a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers.

('959 patent, claim 14).

***8** Defendants argue that the claims of the '509 patent are directed to the abstract idea of "grouping and controlling audio players." (D.I. 117 at 19). According to Defendants, the method described in claim 1 forms "the very foundation of any audio system with more than one speaker." (*Id.*). As to the '959 patent, Defendants argue that the claims are directed to the abstract idea of "changing audio settings based on programmed instructions." (*Id.* at 23). Defendants further allege that the claims of this patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (*Id.*). As with the other patents at issue in this motion, Defendants argue that the claimed methods from both of the Pairing patents "can be performed entirely by humans." (*Id.*).

Plaintiff respond that the claims of both of the Pairing patents "are directed to several specific improvements in existing audio system technology." (D.I. 126 at 17, 21). Plaintiff also takes issue with Defendants' contention that the claimed methods can be performed by humans. (*Id.* at 19, 22). Plaintiff further argues, as with the Volume patents, that Defendants have advanced an oversimplified characterization of the claims. (*Id.* at 19).

Defendants make the same arguments here as they did for the Volume patents. I again reject those arguments. As with the Volume patents, I agree with Plaintiff that Defendants' characterization of the purportedly abstract idea is oversimplified. Just as with the Volume patents, the Pairing patents claim methods that involve specific devices (playback devices and controllers) that are described in detail in the specifications. ('509 patent at 5:63-8:50; '959 patent at 7:8-13:10). Furthermore, as with the Volume patents, the claimed methods do not represent simply an automation of something done manually. Rather, the method of claim 1 the '509 patent requires using a controller to identify the playback devices on a local area network, instruct some of the devices to each output different channels of audio data, and display on the controller's screen which device is outputting which channel. In order to perform this method manually, leaving aside the steps involving using a controller or displaying on the screen of the controller, a person would have to manually rewire the devices each time a new selection is made for which devices are to output which channels. Similarly, the method of claim 14 of the '959 patent is performed by the playback device and involves receiving and then processing audio data, recognizing the type of pairing that has been selected for that playback devices, performing an equalization previously specified for that type of pairing, and then outputting audio. This simply is not the kind of method that could be performed manually and, even if it were, automating the method as claimed represents a substantial improvement to the functionality of a specific device. I also reject Defendants' argument that the claims of the '959 patent "are so broad and abstract as to encompass the same general idea and practice identified in the '509 patent." (D.I. 117 at 23). It seems clear to me that the two patents claim substantially different methods even if it could also be said they address "the same general idea."

At oral argument, Defendants drew an analogy between this case and the claims at issue in *Personalized Media*. (Hr'g Tr. at 12:16-13:2). *Personalized Media* involved a claim "directed to the abstract idea of using personal information to create a customized presentation." *Personalized Media Commc'ns, LLC v. Amazon.com, Inc.*, 161 F. Supp. 3d 325, 330 (D. Del. 2015), *aff'd*, 2016 WL 7118532 (Fed. Cir. Dec. 7, 2016). The claim in *Personalized Media*, however, is not analogous to the claims of the Pairing patents. These patents, like the Volume patents, are not about organizing, manipulating, or distributing information. Rather, these patents claim improvements to specific devices, not generic technology, and the methods involve controlling the devices to effect tangible changes in their configurations. For these reasons, I find that the Pairing patents claim patent-eligible subject matter under § 101.

*9 Having found that the claims are not drawn to an abstract idea under step one, it is unnecessary for me to proceed to step two.

IV. CONCLUSION

For the reasons set forth above, the motion for judgment on the pleadings for lack of patentable subject matter (D.I. 116) will be denied. An appropriate order will be entered.

All Citations

Slip Copy, 2017 WL 971700

Footnotes

1 At oral argument on November 14, 2016, the parties were directed to submit additional briefing to the extent that they felt claim 1 of each of these patents was not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that claim 1 of each patent is not representative. (D.I. 225).

2 At oral argument, the parties were directed to submit additional briefing to the extent that they felt claim 1 of the '509 patent and claim 14 of the '959 patent were not representative of any of the asserted dependent claims. (Hr'g Tr. at 62:5-8). The parties waited until February 1, 2017 to propose substantial additional briefing on this issue in a Joint Stipulation. (D.I. 224). On February 2, I denied the parties' Joint Stipulation, finding that the parties had waived any argument that these claims are not representative. (D.I. 225).

End of Document

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/013,959	06/16/2017	9213357	04-0401-REEXAM (14-1800-R	9548

107361 7590 07/06/2017

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Sonos, Inc.
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EXAMINER	
ENGLAND, DAVID E	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
07/06/2017	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/013,959*.

PATENT NO. *9213357*.

ART UNIT *3992*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Ex Parte Reexamination Interview Summary – Pilot Program for Waiver of Patent Owner's Statement	Control No. 90/013,959	Patent Under Reexamination is Requested 9213357
	Examiner	Art Unit 3992

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

All participants (USPTO official and patent owner):

(1) PATRICIA VOLPE, OCRU (3)

(2) JEFFREY P. ARMSTRONG, 54967 (4)

Date of Telephonic Interview:06/22/2017.

A. The USPTO official requested waiver of the patent owner's statement pursuant to the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The patent owner **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

☐ The patent owner **did not agree** to waive its right to file a patent owner's statement under 35 U.S.C. 304 at this time.

☒ USPTO personnel were unable to reach the patent owner.**

B. The Patent Owner of record telephoned the Office and indicated they would like to participate in the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The Patent owner of record telephoned the Office and **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

The patent owner is not required to file a written statement of this telephone communication under 37 CFR 1.560(b) or otherwise. However, any disagreement as to this interview summary must be brought to the immediate attention of the USPTO, and no later than one month from the mailing date of this interview summary. Extensions of time are governed by 37 CFR 1.550(c).

*For more information regarding this pilot program, see *Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings*, 75 *Fed. Reg.* 47269 (August 5, 2010), available on the USPTO Web site at http://www.uspto.gov/patents/law/notices/2010.jsp.

**The patent owner may contact the USPTO personnel at (571) 272-7705 or at the telephone number provided below if the patent owner decides to waive the right to file a patent owner's statement under 35 U.S.C. 304.

/ PATRICIA VOLPE / (571)272-6825
Signature and telephone number of the USPTO official, who contacted, was contacted by, or attempted to contact the patent owner.

cc: Requester (if third party requester)

Litigation Search Report CRU 3999

Ex Parte Reexamination: 90/013,959

TO: Examiner Location: CRU Art Unit: 3999 Date: 06/22/2017	From: Patricia Volpe Location: MDE 4B21 Phone: (571) 272-6825 patricia.volpe@uspto.gov

Search Notes

Litigation search for U.S. Patent Number: **9,213,357**

NO LITIGATION FOUND.

1) I performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.

2) I performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.

3) I performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.

4) I performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.

5) I performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Patent Search 9213357 6/22/2017

No cases found.

Return to Search

(Charges for search still apply)

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Citing References (14)

Treatment	Title	Date	Type	Depth	Headnote(s)
Mentioned by	**1. Defendants' Response in Opposition to Plaintiff's Motion to Strike Affirmative Defenses under Federal Rule of Civil Procedure 12(f)** Out Of Pat. SONOS, INC., Plaintiff, v. D&M HOLDINGS INC. d/b/a the D+M Group, D&M Holdings U.S. Inc., and Denon Electronics (USA), LLC, Defendants. 2016 WL 4771470, *1 , D.Del. (Trial Motion, Memorandum and Affidavit) , (NO. 14-1330 (RGA)) ... is a list of the 25 issued patents that claim priority to 10/490,758 (those asserted in this case are underlined): U.S. Patent Nos. 9,218,017 9,213,357 9,213,356 9,207,905 9,195,258 9,189,011 9,189,010 9,182,777 9,176,520 9,176,519 9,170,600 9,164,533 9,164,532 9,164,531 9,158,327 9,141,645 8,938,637 8,755,546 8,689,036 8,586,949 8,423,659 8,370,678 8,234,395 8,086,752 8,020,023 Plaintiff is ...	May 09, 2016	Motion		—
—	**2. NETWORK DIGITAL AUDIO SYSTEM HAS ONE TASK SOURCE PROCESSOR AND SEVERAL MEMBER PROCESSORS, SUCH THAT EACH MEMBER PROCESSOR DETERMINES ITS TASK EXECUTION TIME BASED ON CURRENT TIME VALUE INDICATED BY SOURCE PROCESSOR** Out Of Pat. DWPI 2005-172844 ... Sep. 27, 2016, 331 pages.Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 9: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Sep. 27, 2016, 251 pages.Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions, filed Apr ...	July 28, 2003	DWPI	—	—
—	**3. RF 038329/0253** Out Of Pat. ... Application Date 2015-01-15 Application Number 14/505027 Application Date 2014-10-02 Title Obtaining Content from Remote Source for Playback Granted Patent Number US Pat. 9213357 Granted Patent Date 2015-12-15 Published Application Number US Pat. App. 20150039109 Published Application Date 2015-02-05 Application Number 14/516867 ...	Apr. 01, 2016	Assignments	—	—
—	**4. RF 035518/0127** Out Of Pat. ... CHICAGO, IL 60606 Number of Pages 3 Last Modified 2015-12-15 PATENTS AFFECTED Title Obtaining Content from Remote Source for Playback Granted Patent Number US Pat. 9213357 Granted Patent Date 2015-12-15 Published Application Number US Pat. App. 20150039109 Published Application Date 2015-02-05 Application Number 14/516867 ...	Apr. 28, 2015	Assignments	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
---	**5. SMART-LINE IN PROCESSING** Cal Of Pats US PAT 9686606+ , U.S. PTO Utility An example playback device includes a first interface for receiving a first audio signal from a first audio source; a second interface for receiving a second audio signal from a... ... User Manual; Copyright 2004, 507 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 9: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Sep. 27, 2016, 251 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendants' Brief in Support of their Motion ...	June 20, 2017	Patents	---	---
---	**6. SMART LINE-IN PROCESSING IN A GROUP** Cal Of Pats US PAT 9681223+ , U.S. PTO Utility Technology for smart line-in processing in an audio environment is disclosed. An example playback device includes a line-in connector for receiving a first audio signal, a network... ... filed Sep. 27, 2016, 331 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Amended Invalidity Contentions Exhibit 9: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 , filed Sep. 27, 2016, 251 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendants' Brief in Support of their Motion ...	June 13, 2017	Patents	---	---
---	**7. OBTAINING CONTENT BASED ON CONTROL BY MULTIPLE CONTROLLERS** Cal Of Pats US PAT 9665343+ , U.S. PTO Utility A system is described for maintaining synchrony of operations among a plurality of devices that have independent clocking arrangements. The system includes a task distribution... ... filed Apr. 15, 2016, 161 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 11: Defendants ...	May 30, 2017	Patents	---	---
---	**8. RESUMING SYNCHRONOUS PLAYBACK OF CONTENT** Cal Of Pats US PAT 9658820+ , U.S. PTO Utility A system is described for maintaining synchrony of operations among a plurality of devices that have independent clocking arrangements. The system includes a task distribution... ... filed Apr. 15, 2016, 161 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 11: Defendants ...	May 23, 2017	Patents	---	---

Treatment	Title	Date	Type	Depth	Headnote(s)
---	**9. OBTAINING CONTENT FROM MULTIPLE REMOTE SOURCES FOR PLAYBACK** Out Of Plac US PAT 9569170 , U.S. PTO Utility A system is described for maintaining synchrony of operations among a plurality of devices that have independent clocking arrangements. The system includes a task distribution... ... filed Apr. 15, 2016, 161 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 11: Defendants ...	Feb. 14, 2017	Patents	---	---
---	**10. OBTAINING CONTENT FROM LOCAL AND REMOTE SOURCES FOR PLAYBACK** Out Of Plac US PAT 9569171 , U.S. PTO Utility A system is described for maintaining synchrony of operations among a plurality of devices that have independent clocking arrangements. The system includes a task distribution... ... filed Apr. 15, 2016, 161 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 11: Defendants ...	Feb. 14, 2017	Patents	---	---
---	**11. RESUMING SYNCHRONOUS PLAYBACK OF CONTENT** Out Of Plac US PAT 9569172+ , U.S. PTO Utility A system is described for maintaining synchrony of operations among a plurality of devices that have independent clocking arrangements. The system includes a task distribution... ... Networks, 1999, vol. 31, 225-235.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendants Initial Invalidity Contentions Exhibit 2: Defendants ...	Feb. 14, 2017	Patents	---	---
---	**12. OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK** Out Of Plac US PAT 9563394 , U.S. PTO Utility A system is described for maintaining synchrony of operations among a plurality of devices that have independent clocking arrangements. The system includes a task distribution... ... filed Apr. 15, 2016, 161 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 11: Defendants ...	Feb. 07, 2017	Patents	---	---

Treatment	Title	Date	Type	Depth	Headnote(s)
----	**13. AUDIO OUTPUT BALANCING** Out Of Pos. US PAT 9549258 , U.S. PTO Utility An example implementation involves a first playback device receiving audio content to be played back by the first playback device and a second playback device in synchrony. Such... ... filed Apr. 15, 2016, 161 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.Sonos, Inc. v. D M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 11: Defendants ...	Jan. 17, 2017	Patents	----	----
----	**14. AUDIO OUTPUT BALANCING** Out Of Pos. US PAT 9544707 , U.S. PTO Utility An example implementation involves a first playback device receiving audio content to be played back by the first playback device and a second playback device in synchrony. The... ... filed Apr. 15, 2016, 161 pages.Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 10: Defendants' Invalidity contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.Sonos, Inc. v. D&M Holdings Inc. et al., Defendant's Initial Invalidity Contentions Exhibit 11: Defendants ...	Jan. 10, 2017	Patents	----	----

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors:	Nicholas A.J. Millington
In re U.S. Patent No.:	9,213,357
Ex Parte Reexam No.:	90/013,959
Filing Date:	Herewith
Docket No.:	131131.00049.005
For:	OBTAINING CONTENT FROM REMOTE SOURCE FOR PLAYBACK

MAIL STOP: Ex Parte Reexam
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

RENEWED REQUEST FOR EX PARTE REEXAMINATION

I. REEXAMINATION REQUEST

In response to the Notice of Incomplete Ex Parte Reexamination Request mailed May 25, 2017, reexamination under 35 U.S.C. §§ 302-307 and 37 C.F.R. § 1.510 is requested of Claims 9, 10, 12 and 19 (collectively, the "Challenged Claims") of United States Patent No. 9,213,357 which issued December 15, 2015 to Nicholas A. J. Millington (the '357 Patent) from U.S. Application No. 14/516,867 (the "'867 Application").

Requestors seek reexamination of the Challenged Claims of the '357 Patent on the basis of:

a) U.S. 9,195,258 to Nicholas A. J. Millington, filed February 20, 2014, issued November 24, 2015 (the "'258 Patent");

b) U.S. 6,611,537 to Edens et al., filed May 15, 1998, issued August 26, 2003 ("Edens");

c) U.S. 2004/0252400 to Blank et al., filed June 13, 2003, published December 16, 2004 ("Blank");

d) U.S. 2002/015003 to Gray et al., filed April 17, 2001, published October 17, 2002 ("Gray");

e) "File and Printer Sharing with Microsoft Windows," Microsoft Corporation, published November 2003 ("Microsoft File Sharing");

f) "Symantec pcAnywhere User's Guide," copyright 1995-2002, Symantec Corporation ("pcAnywhere")

g) RFC 1305, Network Time Protocol (Version 3) Specification, Implementation and Analysis, March, 1992 ("RFC 1305")

h) SMPTE Made Simple, TimeLine Vista, Inc., 1996 ("SMPTE Made Easy");

i) The MP3 and Internet Audio Handbook, Bruce Fries and Marty Fries, TeamCom Books (2000) (the "Handbook");

j) Admitted Prior Art (APA) in the '357 Patent and other related Sonos patents (the "Sonos APA");

k) U.S. Patent application publication 2007/0142944 to Goldberg et al. ("Goldberg");

l) U.S. Patent application publication 2003/0073432 to Meade ("Meade");

m) "Web Design in a Nutshell," O'Reilly & Associates, Inc. (2001) ("Nutshell");

n) RFC 2326, Real Time Streaming Protocol (RTSP) (April 1998) ("RTSP")

o) RFC 1889, RTP: A Transport Protocol for Real-Time Applications (January 1996) ("RTP")

A Substantial New Question of Patentability, as to the Challenged Claims of the '357 Patent, is raised by the Asserted Art, as required by 37 C.F.R. § 1.510(b)(1). A detailed explanation of the pertinence and manner of applying the Asserted Art to the Challenged Claims for which reexamination is requested is also included in this request, as required by 37 C.F.R. § 1.510(b)(2). Specifically, each item or combination of items of the Asserted Art not only raises a Substantial New Question of Patentability, but also anticipates the Challenged Claims of the '357 Patent under 35 U.S.C. 102(b) or 102(e)(1), or renders claims of the Challenged Claims of the '357 Patent obvious under 35 U.S.C. 103(a), as shown below:

1. Claims 9, 10, 12 and 19 are invalid under the judicially-created doctrine of obviousness-type double patenting over the '258 Patent (**Table 1**);

2. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 102(b) over Edens (**Table 2**);

3. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 102(e)(1) over Blank (**Table 4**);

4. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Edens, the Handbook and the Sonos APA (**Table 3**);

5. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Blank, Gray, SMPTE, RFC 1305, Microsoft File Sharing, pcAnywhere, the Handbook and the Sonos APA (**Table 5**);

6. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Meade, Goldberg and the Sonos APA (**Table 6**); and

7. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Meade, Goldberg, Blank, Gray, Edens, SMPTE, RFC 1305, Microsoft File Sharing, pcAnywhere, the Handbook, the Sonos APA, Nutshell, RTSP and RTP (**Table 7**)

As such, this Request presents seven separate Substantial New Questions of Patentability in seven separate tables, as identified above. Accordingly, Requestors respectfully request that the Director order reexamination of the '357 Patent under 37 C.F.R. § 1.525(a).

II. CONCURRENT LITIGATION

The '357 Patent is presently being asserted by the assignee, Sonos, Inc., against D&M Holdings Inc. and others in litigation pending in the United States District Court for the District of Delaware, C.A. No. 14-1330 (RGA) (the "Concurrent Litigation"), which was filed on October 21, 2014.

III. OVERVIEW OF THE '357 PATENT AND PROSECUTION HISTORY

1. Background of the Invention

The Background of the Invention section of the '357 Patent at 1:47 to 2:28 makes a number of admissions regarding the prior art. Based on systems that were being marketed at the time and which were likely to have been known to the inventor of the '357 Patent or other Sonos employees or counsel for Sonos, the prior art systems and components that Sonos may have been referring to include the Yamaha MusicCast system and components, the Philips Streamium system and components, the Sony RoomLink system and components, the Barix Extreamer system and components, the Barix Instreamer system and components, the Onkyo Integra system and components, the Imerge/Viva system and components, the Turtle Beach system and components, the Sonic Blue system and components, the TerraPlayer system and components, the Oxmoor system and components, the Netstreams system and components, the MP3Elf system and components and the SliMP3 system and components. To the extent that Sonos disputes that the Sonos APA was referring to prior art systems and components, the Office should issue a request for information to determine exactly what prior art systems and components in general, and whether these prior art systems and components in particular, were known to the inventor, Sonos,

its employees and it's counsel, on or prior to the date on which the application for the '357 Patent was filed, and for an explanation regarding the functionality of such prior art systems and components as they were known to Sonos personnel. The Sonos APA includes the following:

1.) It was known that it was desirable to maintain synchrony of operations among a plurality of independently-clocked digital data processing devices in relation to information that was provided thereto by a common source.

2.) Systems were being developed in which one audio information source can distribute audio information in digital form to a number of audio playback devices for playback.

3.) The audio playback devices were known to be for receiving the digital information and for converting it to analog form for playback.

4.) It was known that the audio playback devices could be located in the same room or distributed in different rooms in a residence such as a house or an apartment, in different offices in an office building, or the like.

5.) In this configuration, it was known that the audio information that is distributed to various audio playback devices may relate to the same audio program, or the information may relate to different audio programs.

6.) If the audio information source provides audio information relating to the same audio program to two or more audio playback devices at the same time, the audio playback devices will generally contemporaneously (i.e. synchronously) play the same program.

7.) It was known that if two or more audio playback devices are contemporaneously attempting to play back the same audio program, it can be difficult to ensure that they do so simultaneously. Small differences in the audio playback devices' start times and/or playback speeds can be perceived by a listener as an echo effect, and larger differences can be very annoying. However, if the start times are coordinated, such as by transmitting control data over a low latency network for streaming audio, then simultaneous playback would be possible under the prior art.

8.) It was known that differences in playback time could arise because for a number of reasons, including delays in the transfer of audio information over the network. Such delays can differ as among the various audio playback devices for a variety of reasons, including where they are connected into the network, message traffic and other reasons as will be apparent to those skilled in the art. Conversely, under ideal conditions where the delays are minimal, the differences

in playback time would be minimal and would not be noticed by a listener, such as where audio is being streamed over a low latency network.

9.) Another problem that was known was that when an audio playback device converts the digital audio information from digital to analog form, it does so using a clock that provides timing information. Generally, the audio playback devices that were being developed have independent clocks, and, if they are not clocking at precisely the same rate, the audio playback provided by the various devices can get out of synchronization. Conversely, if the playback devices were clocking at or near the same rate, then they could play back in synchrony for some period of time before losing synchronization, and this would not cause loss of synchrony in playback devices that were streaming audio over a low-latency network.

Based on this Sonos APA and the teachings of the '357 Patent, it appears that what Sonos was disclosing was a way to achieve and maintain synchronous playback under less than ideal conditions, and with playback devices that did not use highly accurate clocks. The disclosure used a frame structure for audio data that included 1) a sequence number, 2) a timestamp in each frame, and 3) the audio data in each frame that is associated with that sequence number and time stamp, and that a series of these frames with that associated information were used in conjunction with clock information of an audio information channel device to synchronize playback devices with clocks that were not synchronized. See '357 Patent, 31:31-37 ("the invention provides a network audio system in which a number of devices share information can reproduce audio information synchronously, notwithstanding the fact that packets, which may contain digital audio information, transmitted over the network to the various zone players connected thereto may have differing delays and the zone players operate with independent clocks.")

Thus, while Sonos admitted that synchronous playback under ideal conditions based on playback timing information, clock information of a first playback device and audio data was known, they purported to disclose how to achieve synchronous playback when conditions were not ideal, such as when the clocks of the playback devices were not synchronous, and where transmission delays were significant. In order for the Challenged Claims of the '357 Patent to be valid, they should have avoided the prior art systems discussed in the Sonos APA, but they do not. In particular, the Challenged Claims of the '357 Patent do not require the disclosed frame structure, and only require limited parts of that frame structure that were already in the prior art, such as sequence numbers for audio data frames (which are inherent in the concept of digital audio data,

as a sequence is necessary to reconstruct the entire audio file/song/track), "clock information" (which has a broadest reasonable interpretation that encompasses time, rate, skew, drift, frequency, clock location, clock type, and other information that is not even needed for synchronous playback), and "playback timing information" (which can be information under a broadest reasonable interpretation that does not provide for synchronous playback, such as a start time only).

In addition, the '357 Patent claims priority to U.S. Provisional Application 60/490,768, filed July 28, 20013 (the '768 Provisional) which is commonly owned with the '357 Patent and which discloses the following additional Sonos APA at pages 1-2:

10.) Discovery protocols can be used to learn about other components on the network and to establish communication with them. For example, the Universal Plug and Play (UPnP) architecture defines discovery as the first step in UPnP networking. This allows devices to discover other devices and to exchange information about themselves and/or their services. Sonos provided only a small and minor document related to UPnP, even though there was an extensive amount of material related to UPnP that was more relevant and publicly available. In other reexaminations, Sonos has buried this UPnP information in voluminous information disclosure statements, and has not identified with particularity where or how it could have been used or could otherwise have been relevant to the claimed inventions.

11.) Timing information can be distributed to various network connected devices using network time protocols such as Network Time Protocol (NTP) and the Simple Network Time Protocol (SNTP). In the concurrent litigation, Sonos has denied that NTP/SNTP are associated with UPnP, even though UPnP explicitly discloses the use of RTP, which discloses the use of NTP.

In addition, while the '357 Patent does not disclose the following APA, other commonly owned Sonos patents admit that:

12.) "expensive hardware and/or circuitry" can be used to solve the problem of "inherent differences in the frequencies or clock rates of the crystal oscillators influencing the rates in which the digital content is converted to analog content for playing over the respective audio and/or audiovisual reproduction devices," and that generally the same material disclosed in the '357 Patent can be used to provide "systems and methods for synchronizing operations among a plurality of independently clocked digital data processing devices without a voltage controlled crystal oscillator." See U.S. 8,689,036 at 1:50-62; U.S. 8,938,637 at 1:55-67; U.S. 8,020,023 at

1:41-53. These patents claim priority to the '768 Provisional in common with the '357 Patent, and thus, to the extent that priority could be claimed to any inventions disclosed in the '768 Provisional, the admissions regarding this APA would be as of that earliest priority date. In addition, because of the common priority claim, these admissions regarding the prior art in these other related patents of Sonos are also admissions in regards to the '357 Patent.

In light of this Sonos APA, there is nothing in the Challenged Claims that was not either explicitly disclosed or inherent in the Sonos APA, as shown below:

'357 Patent	**Sonos APA**
9. A first playback device comprising:	
one or more processors; a network interface; and	1.) It was known that it was desirable to maintain synchrony of operations among a plurality of independently-clocked digital data processing devices in relation to information that was provided thereto by a common source. Digital data processing devices receiving information from a common source inherently require processors and network interfaces under the broadest reasonable interpretation ("BRI") of this limitation.
tangible, non-transitory computer-readable memory comprising program instructions that, when executed by the one or more processors, cause the first playback device to:	1.) It was known that it was desirable to maintain synchrony of operations among a plurality of independently-clocked digital data processing devices in relation to information that was provided thereto by a common source. 9.) Another problem that was known was that when an audio playback device converts the digital audio information from digital to analog form, it does so using a clock that provides timing information. Generally, the audio playback devices that are being developed have independent clocks, and, if they are not clocking at precisely the same rate, the audio playback provided by the various devices can get out of synchronization. These described operations inherently require tangible, non-transitory computer-readable memory comprising program instructions that, when executed by the one or more processors, cause the playback devices to perform various actions under the BRI of this limitation.
receive, via the network interface from a network device configured to control the first playback device and communicatively coupled to the first	1.) It was known that it was desirable to maintain synchrony of operations among a plurality of independently-clocked digital data processing devices in relation to information that was provided thereto by a common source. 2.) Systems were being developed in which one audio information source can distribute audio information in digital form to a number of audio playback devices for playback.

'357 Patent	Sonos APA
playback device over a local area network (LAN), control information comprising an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN; and	3.) The audio playback devices were known to be for receiving the digital information and for converting it to analog form for playback. 4.) It was known that the audio playback devices could be located in the same room or distributed in different rooms in a residence such as a house or an apartment, in different offices in an office building, or the like. 5.) In this configuration, the audio information that is distributed to various audio playback devices may relate to the same audio program, or the information may relate to different audio programs. 6.) If the audio information source provides audio information relating to the same audio program to two or more audio playback devices at the same time, the audio playback devices will generally contemporaneously play the same program. Receiving audio data from a common source for synchronous playback inherently requires the playback devices to receive, via the network interface from a network device configured to control the first playback device and communicatively coupled to the first playback device over a local area network (LAN), control information comprising an address identifying a network location of audio information available at an audio information source. While this APA does not require the audio information source to be outside of the LAN, obtaining audio from a source outside of a LAN over the Internet was well known, and would satisfy the BRI of this limitation.
after receiving the control information, (i) obtain, via the network interface from the audio information source outside of the LAN, the audio information;	5.) In this configuration, the audio information that is distributed to various audio playback devices may relate to the same audio program, or the information may relate to different audio programs. 6.) If the audio information source provides audio information relating to the same audio program to two or more audio playback devices at the same time, the audio playback devices will generally contemporaneously play the same program. Obtaining the audio information that was admitted to be used for synchronous playback in the APA is inherent under the BRI of this limitation.
(ii) transmit, via the network interface of the first playback device to a second	11.) Timing information can be distributed to various network connected devices using network time protocols such as Network Time Protocol (NTP) and the Simple Network Time Protocol (SNTP).

'357 Patent	Sonos APA
playback device, the audio information, playback timing information associated with the audio information, and device clock information of the first playback device; and	12.) "expensive hardware and/or circuitry" can be used to solve the problem of "inherent differences in the frequencies or clock rates of the crystal oscillators influencing the rates in which the digital content is converted to analog content for playing over the respective audio and/or audiovisual reproduction devices," and that generally the same material disclosed in the '357 Patent can be used to provide "systems and methods for synchronizing operations among a plurality of independently clocked digital data processing devices without a voltage controlled crystal oscillator." While the APA does not explicitly disclose the transmission of audio information, playback timing information associated with the audio information, and device clock information of a first playback device to a second playback device, a person having skill in the art would recognize that networked devices could easily relay data to other networked devices under the BRI of this limitation.
(iii) play back the audio information in synchrony with the second playback device by using the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information,	2.) Systems were being developed in which one audio information source can distribute audio information in digital form to a number of audio playback devices for playback. 3.) The audio playback devices were known to be for receiving the digital information and for converting it to analog form for playback. 4.) It was known that the audio playback devices could be located in the same room or distributed in different rooms in a residence such as a house or an apartment, in different offices in an office building, or the like. 5.) In this configuration, the audio information that is distributed to various audio playback devices may relate to the same audio program, or the information may relate to different audio programs. 6.) If the audio information source provides audio information relating to the same audio program to two or more audio playback devices at the same time, the audio playback devices will generally contemporaneously play the same program. 7.) It was known that if two or more audio playback devices are contemporaneously attempting to play back the same audio program, it can be difficult to ensure that they do so simultaneously. Small differences in the audio playback devices' start times and/or playback speeds can be perceived by a listener as an echo effect, and larger differences can be very annoying.

'357 Patent	Sonos APA
	It is noted that this limitation does not require the second playback device to "play back the audio information in synchrony by using the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information," and only applies to the first playback device. As such, "in synchrony with the second playback device" is merely an intended use and not a positive limitation. There is no claim limitation directed to determining whether the audio information is being played back in synchrony with the second playback device, such as receiving any form of feedback from the second playback device or taking any specific actions at the second playback device, or what to do if it is determined that playback is not occurring synchronously. As such, any playback device that plays back audio information using playback timing information and its own clock information meets this limitation under the BRI for this limitation.
wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information.	1.) It was known that it was desirable to maintain synchrony of operations among a plurality of independently-clocked digital data processing devices in relation to information that was provided thereto by a common source. Maintaining synchrony of operations among a plurality of independently-clocked digital data processing devices in relation to information that was provided thereto by a common source meets the limitation of the first and second playback devices remain independently clocked during synchronous playback of the audio information under the BRI of this limitation.
10. The first playback device of claim 9, wherein the program instructions, when executed by the one or more processors, further cause the first playback device to: generate the playback timing information associated with the audio information; and	11.) Timing information can be distributed to various network connected devices using network time protocols such as Network Time Protocol (NTP) and the Simple Network Time Protocol (SNTP). 12.) "expensive hardware and/or circuitry" can be used to solve the problem of "inherent differences in the frequencies or clock rates of the crystal oscillators influencing the rates in which the digital content is converted to analog content for playing over the respective audio and/or audiovisual reproduction devices," and that generally the same material disclosed in the '357 Patent can be used to provide "systems and methods for synchronizing operations among a plurality of independently clocked digital data processing devices without a voltage controlled crystal oscillator." While the APA does not explicitly disclose the transmission of audio information, playback timing information associated with the audio information, and device clock information of a first playback device to a second playback device, a person having skill in the art would

'357 Patent	Sonos APA
	recognize that networked devices could easily generate and relay data to other networked devices under the BRI of this limitation.
generate the device clock information of the first playback device.	11.) Timing information can be distributed to various network connected devices using network time protocols such as Network Time Protocol (NTP) and the Simple Network Time Protocol (SNTP). 12.) "expensive hardware and/or circuitry" can be used to solve the problem of "inherent differences in the frequencies or clock rates of the crystal oscillators influencing the rates in which the digital content is converted to analog content for playing over the respective audio and/or audiovisual reproduction devices," and that generally the same material disclosed in the '357 Patent can be used to provide "systems and methods for synchronizing operations among a plurality of independently clocked digital data processing devices without a voltage controlled crystal oscillator." A person having skill in the art would recognize that processor-driven playback devices would inherently include instructions to generate the device clock information of the first playback device under the BRI of this limitation.
11. The first playback device of claim 9, wherein the control information further comprises one or more instructions for the first playback device and the second playback device to playback audio information.	2.) Systems were being developed in which one audio information source can distribute audio information in digital form to a number of audio playback devices for playback. 3.) The audio playback devices were known to be for receiving the digital information and for converting it to analog form for playback. 4.) It was known that the audio playback devices could be located in the same room or distributed in different rooms in a residence such as a house or an apartment, in different offices in an office building, or the like. 5.) In this configuration, the audio information that is distributed to various audio playback devices may relate to the same audio program, or the information may relate to different audio programs. 6.) If the audio information source provides audio information relating to the same audio program to two or more audio playback devices at the same time, the audio playback devices will generally contemporaneously play the same program. 7.) It was known that if two or more audio playback devices are contemporaneously attempting to play back the same audio program, it can be difficult to ensure that they do so simultaneously. Small differences in the audio playback devices' start times and/or playback

'357 Patent	Sonos APA
	speeds can be perceived by a listener as an echo effect, and larger differences can be very annoying. The APA establishes that playback devices could playback audio information in response to instructions from a controller under the BRI of this limitation.
12. The first playback device of claim 11, wherein the first and second playback devices are members of a synchrony group, and wherein the program instructions, when executed by the one or more processors, further cause the first playback device to:	1.) It was known that it was desirable to maintain synchrony of operations among a plurality of independently-clocked digital data processing devices in relation to information that was provided thereto by a common source. Playback devices that playback audio in synchrony are members of a synchrony group under the BRI of this limitation.
transmit, to the network device, status information that comprises a status of the synchrony group.	10.) Discovery protocols can be used to learn about other components on the network and to establish communication with them. For example, the Universal Plug and Play (UPnP) architecture defines discovery as the first step in UPnP networking. This allows devices to discover other devices and to exchange information about themselves and/or their services. The UPnP discovery information of the APA meets the limitation of transmitting, to the network device, status information that comprises a status of the synchrony group under the BRI of this limitation.
19. The first playback device of claim 9, wherein the audio information source outside of the LAN is an Internet-accessible audio information source, and wherein obtaining, from the audio information source outside of the LAN, the audio information, comprises obtaining the audio information from the Internet-	1.) It was known that it was desirable to maintain synchrony of operations among a plurality of independently-clocked digital data processing devices in relation to information that was provided thereto by a common source. While a "common source" does not necessarily require obtaining the audio information from an Internet-accessible audio information source, a person having skill in the art would recognize that this is well known functionality under the BRI of this limitation

'357 Patent	Sonos APA
accessible audio information source.	

In view of these admissions, it is difficult to understand how the Challenged Claims of the '357 Patent were allowed, and it is noted that the Examiner did not acknowledge or consider any of the Sonos APA on the record. Sonos all but admitted that synchronous playback between networked audio devices from external sources was known in the art, using the NTP or SNTP standards which, as discussed below, require audio information, playback timing and clock information to be exchanged between playback devices. At best, the problem that Sonos sought to solve was not synchronous playback for networked audio devices under ideal conditions and using expensive but commercially-available circuitry such as voltage-controlled crystal oscillators, but rather synchronous playback for networked audio devices under less than ideal conditions, and using inexpensive circuitry other than voltage-controlled crystal oscillators. However, there is nothing in the claims that addresses these additional limitations, and in fact, the Challenged Claims do not even encompass synchronous playback with a second playback device, because they only include limitations for a single playback device under the BRI of the claim terms. The second playback device at best only needs to be playing back audio information in synchrony, but as there are no limitations that require the second playback device to play back the audio information in any particular manner, such as with the playback timing information associated with the audio information, or even for any specific amount of time (e.g. synchrony for 1 second would meet the claim) or within any specific degree of synchronization (playback that differs in time by more 100 milliseconds can be "synchronized," depending on the location of the playback devices) and device clock information of the first playback device (those limitations only apply to the claimed first playback device), those claim elements are more properly characterized as an intended use under the BRI. As will be shown herein, the broad scope of the Challenged Claims causes them to read on the Asserted Art.

2. The '867 Application was filed on October 17, 2014 with 20 claims.

The '867 Application was filed on June 5, 2004 with independent claims 21, 33 and 40, and with 20 total claims. The independent claim relevant to this request is claim 11, which is shown below:

21. (New) A first playback device comprising:

a network interface; and

memory comprising program instructions that, when executed by the processor, cause the playback device to:

receive, via the network interface from a network device communicatively coupled to the first playback device over a local area network (LAN), an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN;

obtain, via the network interface from the audio information source, the audio information;

transmit, via the network interface to a second playback device, the audio information; and

play back the audio information.

Claim 21 was renumbered as claim 9 after allowance. As can be seen, claim 21 as originally submitted was very broad and read on the Sonos APA.

3. The priority date and the critical date for the '357 Patent is April 1, 2004.

In the Concurrent Litigation, Sonos has not claimed an earlier priority date or date of conception or conception and reduction to practice ("Critical Date") than April 1, 2004. See Sonos, Inc.'s Amended Responses to Defendant D&M Holdings Inc.'s First Set of Interrogatories (Nos. 1-11) to Plaintiff ("Sonos Interrogatories") at page 10 (Appendix B). As such, unless Sonos provides additional evidence regarding an earlier priority date or Critical Date than April 1, 2004, which has not been produced in the Concurrent Litigation, then the earliest priority date or Critical Date for the '357 Patent is April 1, 2004.

4. The Office rejected the Challenged Claims in the First Office Action.

In the First Office action, the Office rejected claims 21, 22, 30-34 and 40 under 35 U.S.C. 103(a) over Goldberg, in view of U.S. Patent application publication 2005/0027821 to Alexander et al. ("Alexander"). Claims 23-29 and 35-39 were rejected under 35 U.S.C. 103(a) over Goldberg in view of Alexander and further in view of Meade.

Goldberg discloses an audio player device that can play audio synchronously with another audio player device, but does not explicitly disclose a specific synchronization mechanism (although synchrony was not originally claimed, as shown above). However, synchrony is inherent in Goldberg, because Goldberg is directed to synchronous playback. Goldberg discloses at [0102]-[0103] that the playback unit 100 "can be designed on a "base" of consumer electronics products such as cell phones, portable MP3 players, or personal digital assistants (PDAs), and indeed can be configured as an add-on module to any of these devices," and that it can include "a user interface

(e.g. an LCD or OLED screen, which can be combined with a touch-sensitive screen, keypad and/or keyboard), communications interfaces (e.g. Firewire, USB, or other serial communications ports), permanent or removable digital storage, and other components." As such, a person having skill in the art would understand that the unit 100 of Goldberg could be implemented using a PC. Goldberg also does not disclose "receiving, by a first playback device from a network device communicatively coupled to the first playback device over a local area network (LAN), an address identifying a location of audio information available at an audio information source."

Alexander discloses a system for peer to peer file sharing in which a first playback device provides an address identifying a location of audio information available at an audio information source to a second playback device.

Goldberg in view of Alexander does not expressly teach an instruction to join a synchrony group by the first playback device from a network device (which was at issue for claims other than claim 21). Meade discloses a system for controlling appliances that allows content to be shared and split between playback devices, such as a PC, as shown in Figure 2 of Meade, below.

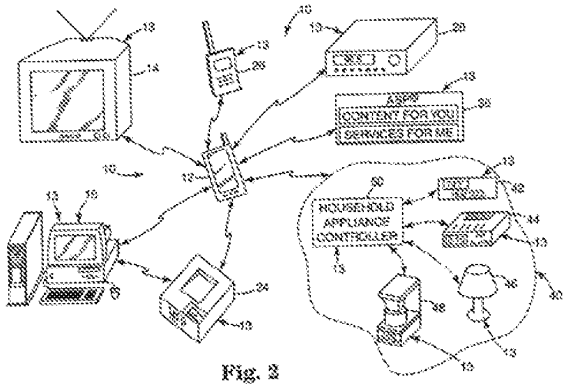


Fig. 2

A person having ordinary skill in the art would understand that the disclosures of Meade, Alexander and Goldberg could be implemented on a plurality of personal computers, and that such systems are easily modified and combined in accordance with networking and other interoperability standards.

5. <u>In order to overcome the rejection, Sonos acquiesced to the rejections and amended the claims.</u>

Rather than traverse the rejection of the original claims as being improper, Sonos elected to acquiesce to the rejection and to amend the claims. Claim 21 as amended is shown below:

21. (Currently Amended) A first playback device comprising:

a network interface; and

memory comprising program instructions that, when executed by **[[the]] a** processor, cause the playback device to:

receive, via the network interface from a network device **configured to control the first playback device and** communicatively coupled to the first playback device over a local area network (LAN), **control information comprising (i) one or more instructions that cause the first playback device and a second playback device to playback audio information and (ii)** an address identifying a network location of **the** audio information available at an audio information source, wherein the audio information source is outside of the LAN; **and**

in response to receiving the control information, (i) obtain, via the network interface from the audio information source **outside of the LAN**, the audio information; transmit, via the network interface **of the first playback device** to **[[a]] the** second playback device, the audio information; and **(iii)** play back the audio information.

As noted in *TorPharm Inc. v. Ranbaxy Pharms.*, Inc., 336 F.3d 1322, 1330 (Fed. Cir. 2003), "in ascertaining the scope of an issued patent, the public is entitled to equate an inventor's acquiescence to the examiner's narrow view of patentable subject matter with abandonment of the rest. Such acquiescence may be found where the patentee narrows his or her claims by amendment, *Lemelson v. General Mills, Inc.*, 968 F.2d 1202, 1288-89 (Fed. Cir. 1992), or lets stand an examiner's restrictive interpretation of a claim, *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 978-79 (Fed. Cir. 1999)." By electing to amend the claims of the '867 Application, Sonos let stand the restrictive interpretation of the claims by the Office. Sonos cannot now argue that the combination of Goldman and Alexander, either with or without Meade, was improper, as that would amount to an improper broadening of the claims during reexamination. This principle of acquiescence is also important for this ex parte reexamination request with respect to the rejection of the claims over Meade in view of Goldberg, and the Office should not allow Sonos to broaden the claims by arguing that this combination of prior art is not obvious, or that it does not disclose the claim limitations that Sonos previously acquiesced to.

6. The Examiner again rejected the claims in a Final Office Action.

On March 9, 2015, the Office rejected claims 21-40 over Meade in view of Goldberg in a final Office action ("Final Office action"). As such, the amendments submitted by Sonos were insufficient to overcome the rejections.

In addition, it is noted that Examiner Survillo failed to apply the BRI in rejecting the claims in the Final Office action. For example, the Final Office action states at page 6 that in "Meade, video device 14 and audio device 28 playback a television broadcast and a radio broadcast of a

single event, a football game, which is multimedia information, but not limited to the 'audio information', as claimed." This is incorrect. The claims as presented included the transitional term "comprising," and thus were not limited to just audio information but encompassed multimedia information that included audio information under the BRI. As such, while the rejection of the claims was proper, it was based on a reasoning that ultimately resulted in the allowance of claims that should have been properly rejected when considered in view of the Sonos APA, which Examiner Survillo did not specifically address.

7. **In response to the rejections, Sonos again acquiesced to the rejections and amended the claims.**

Rather than traverse the rejection of the original claims as being improper, Sonos elected to acquiesce to the rejection and to amend the claims in a response filed on July 7, 2015. Claim 21 as amended is shown below:

> 21. A first playback device comprising:
> **one or more processors**;
> a network interface; and
> **tangible, non-transitory computer-readable** memory comprising program instructions that, when executed by **[[a]] the one or more** processors, cause the playback device to:
> receive, via the network interface from a network device configured to control the first playback device and communicatively coupled to the first playback device over a local area network (LAN), control information comprising ~~**(i) one or more instructions that cause the first playback device and a second playback device to playback audio information and (ii)**~~ an address identifying a network location of the audio information available at an audio information source, wherein the audio information source is outside of the LAN; and
> ~~**in response to**~~ **after** receiving the control information, (i) obtain, via the network interface from the audio information source outside of the LAN, the audio information; (ii) transmit, via the network interface of the first playback device to the second playback device, the audio information**, playback timing information associated with the audio information, and device clock information of the first playback device;** and (iii) play back the audio information **in synchrony with the second playback device by using the playback timing information associated with the audio information and the clock information of the first playback device to play back the audio information, wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information**.

8. **The Office allowed the claims on August 4, 2015.**

In the Notice of Allowance mailed August 4, 2015, the Examiner provided reasons for allowing the claims, stating that "none of the qualifying prior art references of record, taken alone or in combination, disclose or reasonably suggest: a combination of elements as claimed in independent claim 33, wherein after receiving the control information (i) obtaining, by the first playback device from the audio information source outside of the LAN, the audio information; (ii) transmitting, by the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock time information of the first playback device; and (iii) playing back, by the first playback device, the audio information in synchrony with the second playback device by using the timing information associated with the audio information and the device clock time information of the first playback device to play back the audio information, wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information. Independent claims 21 and 40 contain similar limitations." However, it appears that Examiner Survillo was not aware of the Sonos APA that is directed to these limitations, or of the fact that Goldberg discloses certain real time streaming software applications that inherently included the ability to obtain audio information from outside of the LAN and to transmit the audio information, playback timing information and clock information of the first playback device for the purpose of playing back the audio information in synchrony, as discussed below. There are no statements in the record that reflect that Examiner Survillo was aware of this information or considered it when determining what was allegedly missing from the prior art.

IV. PATENTS AND PRINTED PUBLICATIONS RELIED UPON OR REFERRED TO

A copy of every patent or printed publication relied upon above or referred to herein is discussed in detail in one of the following appendices. Further, each patent and printed publication set forth below or discussed in the appendices has also been either provided or cited on the attached modified Form PTO/SB/42.

Appendix A: the '357 Patent

Appendix B: the Sonos Interrogatories

Appendix C: the '258 Patent

Appendix D: Edens

Appendix E: Blank

Appendix F: Gray

Appendix G: Microsoft File Sharing

Appendix H: pcAnywhere

Appendix I: RFC 1305

Appendix J: SMPTE Made Easy

Appendix K: the Handbook

Appendix L: Meade

Appendix M: Goldberg

Appendix N: Nutshell

Appendix O: RTSP

Appendix P: RTP

Appendix Q: Plaintiff Sonos, Inc.'s Supplemental Opening Brief on Claim Construction

V. DISCUSSION OF THE ART AND SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY

A. The Asserted Art Presents a Substantial New Question of Patentability that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during prosecution of any other prior proceeding involving the patent for which reexamination is requested

In the notice mailed May 25, 2017, the Office states at page 1 of the attachment to PTOL 2077 that it "must first be demonstrated that a patent or printed publication that is relied upon in a proposed rejection presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during prosecution of any other prior proceeding involving the patent for which reexamination is requested." While Requester believes that this was originally included in the Request, it is specifically set forth below for the convenience of the Office.

As discussed above, in the Notice of Allowance mailed on August 4, 2015 during the original prosecution, the Office identified the following reasons for the allowance of the claims:

> none of the qualifying prior art references of record, taken alone or in combination, disclose or reasonably suggest: a combination of elements as claimed in independent claim 33, wherein after receiving the control information (i) **obtaining, by the first playback device from the audio information source outside of the LAN, the audio information**; (ii) **transmitting, by the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock time information of the first playback device**; and (iii) **playing back, by the first playback device, the audio information in synchrony with the second playback device by using the timing information associated with the audio information and the device clock time information of the first playback device to play back the audio information, wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information**.

(emphasis added) (collectively, the "Identified Features"). However, as shown below, the Office failed to consider a number of relevant issues and overlooked prior art references that had been submitted that disclosed the Identified Features.

1. **Non-statutory double patenting**: First, the Office failed to consider on the record whether the Challenged Claims of the '357 Patent (filed on October 17, 2014 and allowed on August 4, 2015) were allowable over the claims of the '258 Patent (filed on February 20, 2014 and allowed on July 2, 2015). This is particularly important, because the '258 Patent was held to be allowable because it also had the Identified Features, as discussed below. It is unclear why the claims of the '258 patent were not specifically considered by the Office, because the same examiner (Examiner Survillo) handled both applications. However, it is noted that the '258 Patent was not identified as a related co-pending application. Furthermore, Sonos interviewed Examiner Survillo during the prosecution of the '258 Patent on October 22, 2014, March 10, 2015, April 13, 2015 and June 25, 2015, and Sonos separately interviewed Examiner Survillo for the '357 Patent on different dates (December 16, 2014, May 11, 2015, May 27, 2015 and July 31, 2015), so it is possible that Examiner Survillo confused these two related applications for a single application. This is particularly likely, given that Examiner Survillo was the primary examiner for 18 issued Sonos patents (9,665,343; 9,658,820; 9,354,656; 9,218,017; 9,213,357; 9,213,356; 9,207,905; 9,195,258; 9,189,011; 9,189,010; 9,182,777; 9,176,520; 9,176,519; 9,170,600; 9,164,533; 9,164,532; 9,164,531; 9,158,327), and also for an unknown number of pending applications. As such, the question of obviousness-type double patenting of the '357 Patent over at least the '258

Patent (and potentially one or more of these additional patents) presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, or during prosecution of any other prior proceeding involving the patent for which reexamination is requested.

2. **Edens:** As shown below, Edens is a single prior art reference under 35 U.S.C. 102(b) that discloses each of the Identified Features, such as by using PCs as networked audio devices to obtain and playback synchronized audio. As such, Edens presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during prosecution of any other prior proceeding involving the patent for which reexamination is requested.

3. **The Handbook** - In the notice of allowance for the '357 Patent, the Office stated that the prior art did not disclose or suggest (i) obtaining audio information from a source outside of the LAN by the first playback device. While it is believed that Edens discloses this functionality, the Handbook discloses the same functionality as disclosed on the '357 Patent in greater detail than in Edens, and shows that a PC was capable of obtaining audio information from a source outside of the LAN by the first playback device. Therefore, the Handbook can be combined with any primary reference that discloses a networked audio device that can be a PC (including Edens, Blank, Gray, Meade and Goldberg) as an example of commonplace PC functionality, and presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during prosecution of any other prior proceeding involving the patent for which reexamination is requested

4. **The Sonos APA** - As shown above, the Sonos APA discloses each of the Identified Features in combination with networked audio devices (which can be PCs as demonstrated by Edens and the Handbook), and can thus be combined with any prior art that discloses PCs as networked audio devices (including Edens, Blank, Gray, Meade and Goldberg) as an example of commonplace PC functionality, and was not explicitly considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is

requested, and during prosecution of any other prior proceeding involving the patent for which reexamination is requested.

5. **Blank, Gray, SMPTE and RFC 1305** - As shown below, Blank discloses each of the Identified Features in combination with networked audio devices such as PCs. Blank incorporates Gray, SMPTE and RFC 1305 by reference, but Sonos has objected to incorporation by reference in the Concurrent Litigation, so to the extent that it is considered that Blank does not incorporate Gray, SMPTE and RFC 1305 by reference, it would be obvious to combine those references at least because Blank explicitly discloses that combination for the purposes discussed in Blank, and that combination is provided as an alternate grounds of invalidity under 35 U.S.C. 103(a) because of the objections raised by Sonos in the Concurrent Litigation. Blank (with or without the incorporated materials) was not explicitly considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested.

6. **pcAnywhere and Microsoft File Sharing** - In the notice of allowance for the '357 Patent, the Office stated that the prior art did not disclose or suggest (i) obtaining audio information from a source outside of the LAN by the first playback device. However, as shown below, pcAnywhere in combination with and Microsoft File Sharing discloses this limitation as well as other claim limitations, in combination with networked audio devices such as PCs, and can thus be combined with any prior art that discloses PCs as networked audio devices (including Edens, Blank, Gray, Meade and Goldberg) as an example of commonplace PC functionality. Sonos has disputed that such PC functionality was known to one of ordinary skill in the art in the Concurrent Litigation, so these materials are specifically provided as an alternate basis for finding a substantial new question of patentability. These references were not explicitly considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during prosecution of any other prior proceeding involving the patent for which reexamination is requested.

7. **Meade, Goldberg and the Sonos APA** - As shown below, Meade in view of Goldberg when considered with the Sonos APA (for its teaching of NTP and SNTP) discloses each of the Identified Features in combination with networked audio devices such as PCs. Furthermore, Goldberg discloses compatibility with streaming audio, which includes RTP, RTSP and NTP, as evidenced by Nutshell, and because Sonos has objected to incorporation by reference of such

common and well-known standards functionality in the Concurrent Litigation, those references are also provided as a combination under 35 U.S.C. 103(a), because they would have been well known to a person having skill in the art. Likewise, a person having skill in the art would understand that the PCs of Meade and Goldberg could use the functionality disclosed in pcAnywhere and Microsoft File Sharing, as well as the SMPTE and RFC 1305 functionality of the PCs of Blank and Gray, and also the timing architecture of Edens (i.e. using one of the PCs/networked audio devices as a timing server), and this well-known and commonplace functionality of PCs that were used as networked audio devices was not explicitly considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested.

Accordingly, Requester has addressed the non-compliance with 37 C.F.R. 1.510(b)(1) stated at page 1 of the attachment to PTOL 2077 in the Notice mailed May 25, 2017.

In regards to the non-compliance with 37 C.F.R. 1.510(b)(2) stated at pages 1-2 of the attachment to PTOL 2077 in the Notice mailed May 25, 2017, part of the reasons discussed above address this non-compliance. In addition, the number of permutations being considered is not unlimited, and instead is only seven (7). These are:

1. Claims 9, 10, 12 and 19 are invalid under the judicially-created doctrine of obviousness-type double patenting over the '258 Patent (**Table 1**);

2. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 102(b) over Edens (**Table 2**);

3. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 102(e)(1) over Blank (**Table 4**);

4. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Edens, the Handbook and the Sonos APA (**Table 3**);

5. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Blank, Gray, SMPTE, RFC 1305, Microsoft File Sharing, pcAnywhere, the Handbook and the Sonos APA (**Table 5**);

6. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Meade, Goldberg and the Sonos APA (**Table 6**); and

7. Claims 9, 10, 12 and 19 are invalid under 35 U.S.C. 103(a) over Meade, Goldberg, Blank, Gray, Edens, SMPTE, RFC 1305, Microsoft File Sharing, pcAnywhere, the Handbook, the Sonos APA, Nutshell, RTSP and RTP (**Table 7**)

While the combinations for Table 5 and Table 7 appear to involve a large number of different references, as discussed above, the majority of these references (SMPTE, RFC 1305, Microsoft File Sharing, pcAnywhere, the Handbook, Nutshell, RTSP and RTP) only describe commonplace and well known PC functionality that a person of ordinary skill in the art would not consider to be novel or non-obvious in conjunction with PCs. These references are provided for the convenience of the Office, in the event that Sonos argues that PC functionality like a synchronization mechanism for synchronized playback of audio that uses playback timing data and clock information of the devices (RFC 1305, RTP, RTSP, SMPTE), or the ability to control a PC over a network from another network device like a PC (pcAnywhere, the Handbook, Nutshell, Microsoft File Sharing), was not known, or that Sonos invented such functionality and has the right to prevent others from using such common and well know prior art functionality. With this understanding, it can be seen that Table 5 essentially is directed only to Blank (with the materials that are incorporated by reference added for consideration under 35 U.S.C. 103(a)), and that Table 7 essentially is directed to Meade, Goldberg, Blank and Edens (with the materials that are incorporated by reference added for further consideration under 35 U.S.C. 103(a)).

B. Claim limitations

During ex parte reexamination, as during original prosecution, the claims must be "given their broadest reasonable interpretation consistent with the specification," *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005). All contentions regarding the scope of the claims in general, and the following specific claim constructions in particular, are believed to be consistent with the broadest reasonable interpretation ("BRI") for the reasons provided. Based on Sonos' prior handling of both ex parte prosecution and ex parte reexamination matters, it is likely that they will argue that the claims are limited in some manner, either by the specification, or by demonstrating commercial versions of Sonos products and arguing that such commercial versions of products embody the claims, but in most cases, the commercial versions of Sonos products contain numerous new features that are not disclosed in Sonos patent applications, and interpreting the claims to be narrowly directed to such new features is improper. The Office should scrutinize any such arguments by Sonos to ensure that the construction of the claims is consistent with the BRI, and does not implicitly include any narrowing limitations that are only being proposed to try to preserve validity but which will not be observed when making infringement allegations.

1. **"independently clocked"** – this limitation was first added to the claims of the '258 Patent, a co-pending application that was being examined by the same examiner that was handling the '867 Application (Mr. Oleg Survillo), in an examiner's amendment on June 25, 2015, in order to over the rejection of the claims. Three references were discussed during that interview, namely, U.S. 2007/0142944 to Goldberg, U.S. 2003/0073432 to Meade and U.S. 2002/0114354 to Sinha. No explicit statement was made regarding the meaning of the term "independently clocked," but based on the disclosure of these three references, it appears that it was intended to refer to devices with clocks that are not synchronized, a position that Sonos has not followed in the Concurrent Litigation, where it has accused devices of infringing that use synchronized clocks. In particular, the only reference of these three references that discloses clocks is Sinha, which had previously been cited by Examiner Survillo during the prosecution of the '258 Patent in an Advisory Action dated April 15, 2015. In particular, Examiner Survillo stated that Sinha disclosed "synchronizing a slave clock to a master clock by means of a synchronization signal sent from the master to the slave (abstract, par. [0003]-[0008], [0016]-[0018])." This is similar to the Sonos APA, which included:

11.) Timing information can be distributed to various network connected devices using network time protocols such as Network Time Protocol (NTP) and the Simple Network Time Protocol (SNTP).

12.) "expensive hardware and/or circuitry" can be used to solve the problem of "inherent differences in the frequencies or clock rates of the crystal oscillators influencing the rates in which the digital content is converted to analog content for playing over the respective audio and/or audiovisual reproduction devices," and that generally the same material disclosed in the '357 Patent can be used to provide "systems and methods for synchronizing operations among a plurality of independently clocked digital data processing devices without a voltage controlled crystal oscillator."

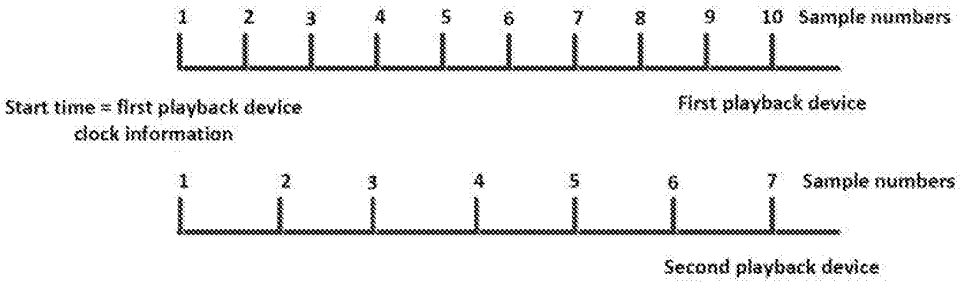
In response to this Advisory Action during the prosecution of the '258 Patent, Sonos filed a response on May 11, 2015, and argued at pages 14-15 that "Sinha discloses 'synchroniz[ing] one or more pairs of initially independent clocks over a communications link ... to facilitate synchronous data transfers and/or consistent data transfer rates across a link where '[a] master side establishes a master transfer clock ***or*** a master network clock, and transmits information reflecting ***one*** of those clocks to a slave side.' Sinha, ¶¶ 8, 12, 16 (emphasis added)." Based on these

arguments, it appears that Examiner Survillo and Sonos had discussed at some point that clocks that are initially independent but which become synchronized are no longer independent.

However, in the Concurrent Litigation, Sonos is accusing devices that use synchronized clocks of infringing the claims of the '357 Patent. For example, during the claim construction proceedings, D&M sought to construe the term "independently clocked" as "operating autonomously to any external clock," which would reflect the apparent agreement between Sonos and Examiner Survillo that devices with synchronized clocks (which do not operate autonomously to any external clock) should properly be excluded from the scope of the claims of the '357 Patent. However, Sonos proposed and vigorously advocated to the Court a construction of "each zone player operates in accordance with its own respective clock during synchronous playback." As a result of Sonos's efforts, the Court essentially adopted their construction, and construed the term "independently clocked" as "operating in accordance with their own respective clocks during synchronous playback." Sonos has further stated in the Concurrent Litigation that it considers the term "independently clocked" to encompass synchronized clocks (i.e. dependent clocks).

As such, the proper construction for the term "independently clocked" should reflect the position that Sonos advocated in the Concurrent Litigation, namely, "operating in accordance with their own respective clocks during synchronous playback," even though that position appears to be contrary to the position that Sonos implicitly advocated to the Office during the original prosecution, because it reflects the BRI of the term "independently clocked." Even clocks that are synchronized, like those of Sinha, are "operating in accordance with their own respective clocks during synchronous playback." Furthermore, a person having ordinary skill in the art would recognize that a playback device such as a PC has many different clocks, such as is disclosed in the '357 Patent at Fig. 3 (DAC clock 34 and device clock 43), such that even if one of these clocks were synchronized (to the extent that Sonos argues in this ex parte reexamination proceeding that synchronized clocks are not "independently clocked, contrary to the position it has taken in its infringement contentions in the concurrent litigation), other device clocks would not be synchronized and the playback devices would thus remain "independently clocked," under the broadest reasonable interpretation of that term, because they have at least one clock that that is independent of a clock of the other playback device, in accordance with arguments made by Sonos in the Concurrent Litigation

2. **"playback timing information"** – the specification defines "playback timing information" at 11:14-17, stating that "the audio and playback timing information is in the form of a series of frames, with each frame having a time stamp. The time stamp indicates a time, relative to the time indicated by a clock maintained by the audio information channel device 23, at which the frame is to be played." While this makes it fairly evident that the inventors contemplated that "playback timing information" was required for each frame, in order to ensure that each playback device played each frame at the same time, in the concurrent litigation Sonos has proposed a construction for "playback timing information" of "information indicating when the audio information [content] is to be played back," (construction 1) which would be satisfied by a start time for playback. See Appendix Q, page 5. This litigation-inspired proposed construction is needed by Sonos in order to assert infringement, because the accused D&M products do not use the disclosed Sonos timing architecture that employs "a series of frames, with each frame having a time stamp." However, the proposed construction from Sonos is defective, because even if the audio playback starts at the same time, it will be unable to play back in synchrony if the "independent clocks" are clocking at different rates, as shown below:



However, even though this proposed is broader than the BRI, it should be adopted during ex parte reexamination of the '357 Patent, because Sonos has advocated that the claim term "playback timing information" should be construed in that broad manner in the Concurrent Litigation.

In contrast, the construction for the term "playback timing information" that has been proposed by D&M in the Concurrent Litigation, "a series of time values, associated with an audio work divided into blocks of information, each indicating when one of blocks of audio information should be played by the device," (construction 2) is fully consistent with the definition in the specification, and also results in the potential for synchronous playback of audio if all of the other

implementation-specific details disclosed in the '395 Patent are utilized. While this proposed construction is believed to be consistent with the BRI, the proposed construction advocated by Sonos for the purpose of asserting the claims of the '357 Patent against others should be properly adopted. However, as shown below, the Challenged Claims of the '395 Patent are invalid over the prior art under either proposed construction.

C. Obviousness-type double patenting over the '258 Patent presents a Substantial New Question of Patentability (Table 1)

Obviousness-type double patenting of the Challenged Claims of the '357 Patent in view of the '258 Patent was not considered by the Office during the original prosecution of the '357 Patent, and presents a substantial new question of patentability as shown below, because at least claim 1 '357 Patent has been shown to be obvious in view of at least claim 11 of the '258 Patent. The Office can properly consider obviousness-type double patenting during ex parte reexamination. *See In re Lonardo*, 119 F.3d 960, 968 (Fed. Cir. 1997) ("The board did not err in concluding that double patenting was properly raised during reexamination of the '748 and '013 patents and that claims 9 and 11 of the '748 patent and claims 1, 2, and 5 of the '013 patent are unpatentable over the '762 patent on the ground of obviousness-type double patenting."). In the Concurrent litigation, it appears that Sonos is asserting that devices that are covered by the '357 Patent are also necessarily covered by the '258 Patent, by characterizing these patents by the broad general heading of the "sync patents" and further asserting that any single proposed non-infringing alternative must avoid infringing all of the Sonos "sync patents" to be acceptable (i.e. that a combination of non-infringing alternatives would be unacceptable for some reason). The position asserted by Sonos during the Concurrent Litigation appears to be that any networked audio device that can play back audio in synchrony with another networked audio device necessarily infringes the so-called "sync patents," and that Sonos owns the right to prevent anyone else from playing back audio in synchrony using networked audio devices. Even under a more reasonable interpretation of the claims, though, it is apparent that a Substantial New Question of Patentability exists as to whether the claims of the '357 Patent and the '258 Patent are invalid due to obviousness-type double patenting, as shown below. The relevant associated claim limitations are shown for claim 9 of the '357 Patent and claim 11 of the '258 Patent in 1) bold, 2) bold and italics, 3) underlining and bold and 4) italics and underlining in bold (to demonstrate related limitations from each claim).

TABLE 1

SUBSTANTIAL NEW QUESTION OF PATENTABILITY

BASED ON OBVIOUSNESS-TYPE DOUBLE PATENTING OVER THE '258 PATENT

'357 Patent	'258 Patent – Obviousness-type double patenting
9. A first playback device comprising:	11. A system comprising:
one or more processors; a network interface; and	a plurality of zone players that are communicatively coupled via at least a local area network (LAN) with a plurality of controllers, wherein:
tangible, non-transitory computer-readable memory comprising program instructions that, when executed by the one or more processors, cause the first playback device to:	***each of the plurality of controllers is configured to provide control information to any one of the plurality of zone players via the LAN***; and
receive, via the network interface from ***a network device configured to control the first playback device and communicatively coupled to the first playback device over a local area network (LAN)***, ***control information*** comprising an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN; and	**each of the plurality of zone players is configured to** (a) ***receive control information from any one of the plurality of controllers via the LAN,*** **wherein the received control information comprises a direction for the zone player to enter into a synchrony group with at least one other zone player of the plurality of zone players**,
after receiving the control information, (i) **obtain, via the network interface from the audio information source outside of the LAN, the audio information**; (ii) **transmit, via the network interface of the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock information of the first playback device**; and (iii) **play back the audio information in synchrony with the second playback device by using the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information**, ***wherein the first***	(b) **in response to the direction, enter into the synchrony group with the at least one other zone player of the plurality of zone players**, wherein in the synchrony group, **the zone player and the at least one other zone player are configured to play back audio in synchrony based at least in part on (b-i) audio content, (b-ii) playback timing information associated with the audio content, wherein the playback timing information is generated by and transmitted from one of the zone player or the at least one other zone player to the other of the zone player or the at least one other zone player and (b-iii) clock time information for the one of the zone player or the at least one other zone player, wherein the clock time information is generated by and transmitted from the one of the zone player or the at least one other zone player to the other of the zone player or the at least one other zone player**, ***wherein the***

and second playback devices remain independently clocked during synchronous playback of the audio information.	***zone players in the synchrony group remain independently clocked while playing back audio in synchrony***, and
	(c) transmit status information to at least one of the plurality of controllers via the LAN, wherein the status information comprises an indication of a status of the synchrony group.

As can be seen, the primary limitations of the claims of the '357 and '258 Patents are identical, namely, 1) being configured to perform the claimed functions, such as with user-configurable software, 2) being controlled by a network device over the LAN, 3) playing back audio information in synchrony, based the audio information, clock information for one of the playback devices, and playback timing information, each of which are transmitted from one playback device to the other, and 4) independently clocked playback devices (as noted, the "independently clocked" limitation was first added to the claims of the '258 patent to overcome a rejection imposed by Examiner Survillo, and then was apparently included by Sonos in the claims of the '357 Patent to help overcome a rejection of those claims by the same examiner). The remaining limitations (status information, number of controllers, the ability to receive audio information from the Internet) are also largely similar and are also Sonos APA, with minor implementation differences that would be obvious to a person having ordinary skill in the art.

Furthermore, Examiner Survillo indicated in the Notice of Allowance for both of the '258 Patent and the '357 Patent that the Identified Features were the reason for allowing the claims. The statement from the Notice of Allowance for the '357 Patent is shown below, adjacent to the statement from the Notice of Allowance in the '258 Patent on July 2, 2015:

'357 Patent reasons for allowance	**'258 Patent reasons for allowance**
none of the qualifying prior art references of record, taken alone or in combination, disclose or reasonably suggest:	none of the qualifying prior art references of record, taken alone or in combination, disclose or reasonably suggest:
a combination of elements as claimed in independent claim 33, wherein after receiving the control information	a combination of elements as claimed in independent claim 21, wherein in response to the direction, **the first zone player enters into the synchrony group with the second zone player, wherein in the synchrony group, the first and second zone players are configured to play back audio in synchrony based at least in part on**

(i) obtaining, by the first playback device from the audio information source outside of the LAN, the audio information;	[this claim of the '258 Patent does not require the audio information to come from any specific location]
(ii) transmitting, by the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock time information of the first playback device; and	(i) audio content, (ii) playback timing information associated with the audio content, wherein the playback timing information is generated by one of the first or second zone players, and (iii) clock time information for the one of the first or second zone players, and wherein the generated playback timing information and the clock time information is transmitted from the one of the first or second zone players to the other of the first or second zone players,
(iii) **playing back, by the first playback device, the audio information in synchrony with the second playback device by using the timing information associated with the audio information and the device clock time information of the first playback device to play back the audio information**,	
wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information.	wherein the first and second zone players remain independently clocked during the playback.

While the limitations do not exactly correspond as shown in the table, the limitations shown in underlining and bold correspond, and the only limitation that does not correspond is the limitation from the '357 Patent that the audio information be obtained from a source outside of the LAN. In other words, Examiner Survillo indicated on the record that the reasons why he believed that the '357 and '258 Patent were allowable over the prior art that he considered were almost exactly the same, which provides clear and convincing evidence of obviousness-type double patenting.

M.P.E.P. 804(II)(B)(2) instructs that the "analysis employed with regard to nonstatutory double patenting is 'similar to, but not necessarily the same as that undertaken under 35 USC § 103,'" and that even "though the specification of the applied patent or copending application is not technically considered to be prior art, it may still be used to interpret the applied claims." Furthermore, when deciding whether an obviousness type double patenting rejection is proper, the Office should:

(A) Determine the scope and content of a patent claim relative to a claim in the application at issue;

(B) Determine the differences between the scope and content of the patent claim as determined in (A) and the claim in the application at issue;

(C) Determine the level of ordinary skill in the pertinent art; and

(D) Evaluate any objective indicia of nonobviousness.

Any nonstatutory double patenting rejection made under the obviousness analysis should make clear:

(A) The differences between the inventions defined by the conflicting claims — a claim in the patent compared to a claim in the application; and

(B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue would have been an obvious variation of the invention defined in a claim in the patent.

Based on these requirements, it is evident that the claims of the '357 and '258 Patent are invalid for obviousness-type double patenting, because: (a) the scope and content of the claims of the '258 Patent relative to the claims of the '357 overlap with regards to the most substantive limitation; (b) the differences between the scope and content of the claims of the '258 patent and the claims of the '357 Patent are primarily directed to minor features that were well known in the art, such as the number of playback devices/zone players claimed, the number of controllers claimed, obtaining audio over the Internet and instructing the playback devices to play the same audio content; (c) the level of ordinary skill in the pertinent art was relatively high, such as a person with a four year degree in electrical engineering or an equivalent degree and several years of relevant experience; and (d) there are no objective indicia of nonobviousness, because the claims are directed to the same general features of the same disclosed networked audio devices, and were considered to be allowable because they included the Identified Features.

The differences between the inventions defined by the conflicting claims are 1) the number of controllers (one versus two), 2) the type of control information received (an instruction to "enter into a synchrony group" and an instruction to obtain audio information from outside the LAN, 3) the transmission of status information to a controller. A person of ordinary skill in the art would conclude that the invention defined in the claims of the '357 Patent are an obvious variation of the invention defined in a claims of the '258 Patent are 1) the number of controllers is an obvious

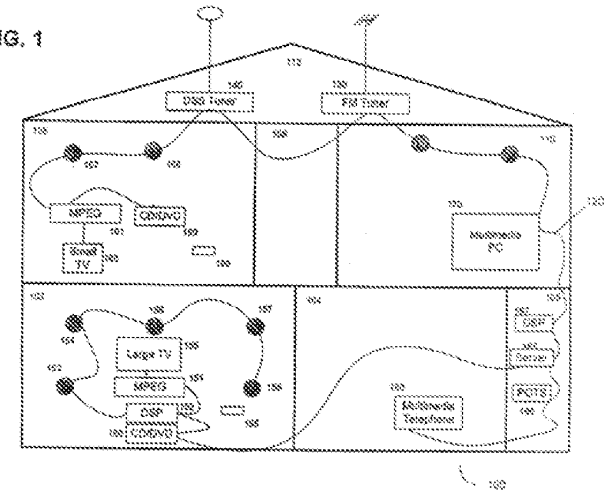
design choice/user implementation choice, 2) an instruction to play the same audio content from a source outside of the LAN in synchrony with another zone player is essentially an instruction to enter into a "synchrony group," and 3) providing status information of playback devices is well known and a common feature (and is in fact Sonos APA).

It is further noted that the '357 Patent and the '258 Patent each claim priority to U.S. 8,234,395 (the "'395 Patent"), and that a third patent, U.S. 8,938,637 (the "'637 Patent"), is also being asserted by Sonos in the Concurrent Litigation as one of the so-called "sync patents." During the prosecution of the '637 Patent, the examiner for that application (Mr. Vincent Tran) imposed a double patenting rejection of the pending claims over the issued claims of the '395 Patent, U.S. 8,370,678 and U.S. 8,689,036, for which Sonos submitted a terminal disclaimer on August 14, 2014. It is further noted that a large number of issued patents (24) and pending applications (31) claim priority to the '395 Patent, and that the claims of each of these patents and pending applications other than the claims specifically addressed herein have not been reviewed for double patenting issues. Accordingly, reexamination of the claims of the '357 Patent due to obviousness-type double patenting in view of the claims of the '258 Patent and/or any of the other 25 issued patents or 31 pending applications that also claim priority to the '395 Patent is respectfully requested.

D. Edens

Edens discloses a whole-house networked audio system that includes playback devices such as multimedia PC 170, stereo (left 167 and right 168) amplifier/speakers, surround sound amplifier/speakers 153, 154, 156, 157 and 158, and portable stereo playback devices called multimedia/data viewers (MDV) 5100. A synchronous logical ring network is used to allow all of these playback devices to be controlled by a single controller and to playback audio in synchrony, using playback timing data and clock information of a first playback device that is also a network clock device. See Figure 1 of Edens, below:

FIG. 1



Edens also discloses a protocol and architecture for the synchronous logical ring network that synchronizes all network devices to a single reference clock of a network clock device, which can be any of the networked audio devices on the network of Edens, and which provides for fixed frames of information propagating around the network at consistent time intervals. Edens at Abstract. The synchronous data can include digital stereo audio having left channel and right channel data, which can be routed to one or more of the audio devices on the network. See Edens at ; 24:57-25:2 ("As noted above, and as will be explained in greater detail below, network devices on a logical ring network of the present invention are synchronized to one another. . . As will be explained below, **this low-level device synchronization greatly facilitates the synchronization of audio and video sources, audio sources received by multiple speakers**, and many other media synchronization requirements."); 31:22-36; 52:66-53:10 ("As each frame propagates around the default network path (or alternate path) of the logic ring networks, the CD player would overwrite nibbles 10-15 and 74-79 with the respective (left and right channel) source digital audio streams. Other network devices would merely pass those nibbles of each frame along to the next network device on the logical ring network. **One or more "left" speaker network devices (e.g., in different rooms of a house) would extract nibbles 10-15 of each frame and play that left channel digital audio stream**. Similarly, **one or more "right" speaker network devices would extract nibbles 74-79 and play that right channel digital audio stream**."); 104:7-15.

Claim 3 of Edens is very similar to claim 9 of the '357 Patent, and includes the following limitations:

a network adapter for connecting a device to a first adjacent device and a second adjacent device on a communication network, wherein the device is adapted to be connected to a remote Internet server;

the network adapter includes a plurality of connectors for daisy-chaining the device between the first adjacent device and the second adjacent device via unshielded twisted pair media;

a transceiver that can receive a synchronous stream of digital signals from the first adjacent device and transmit substantially that same stream of digital signals to the second adjacent device in a constant time period;

the stream of digital signals representing information including digital audio from a source network device, whereby the information can propagate along the network in a daisy-chained fashion from device to device, and can be played or otherwise reproduced by one or more network devices; and

wherein the information is organized into fixed-length frames of data bits, and a subset of the data bits represents data stream channels of information that can contain streams of digital audio.

Claim 3 of Edens thus encompasses devices that would also be encompassed by claim 9 of the '357 Patent, and explicitly discloses the use of synchronized networked audio devices that can include PCs and other devices that play stereo audio data, where the stereo audio data can be transmitted from a first networked audio device to a second networked audio device. The first networked audio device can be designated as the network clock device, and can provide playback timing data to the second playback device in the form of a frame header that is used to synchronize playback, and clock information of the first playback device in the form of clock sync or time sync data.

E. The Handbook

The Handbook discloses that, as of the Critical Date of the '357 Patent:

1.) It was well known to obtain digitally-encoded audio data over the Internet in either file or streaming format (see pages 17, 18, 123-154).

2.) There were a large number of streaming media players, including QuickTime, RealPlayer, Sonicbox, Spinner, vTuner, Winamp, Winplay and Windows Media Player that allowed PCs to receive audio information from remote sources over the Internet (see pages 28-34, 68-74, 243-261).

3.) That PCs could be used to play digital audio from a network source, and that these PCs included processors, RAM, sound cards, speakers, network cards and software (see pages 66, 75-84, 109-116).

The Handbook is provided as evidence of the background of the invention, but would also be obvious to combine the Handbook with other prior art as of the Critical Date of the '357 Patent that discloses the use of PCs to play audio data, because the Handbook discusses commonly available hardware and software functionality that was used as of that date to enable PCs to obtain audio data from a remote source over the Internet and either store that audio data for subsequent playback or to play the audio data in a streaming format. The Handbook demonstrates that the use of PCs and other networked audio devices to play audio data in synchrony was well known as of the Critical Date of the '357 Patent.

F. Edens, either alone under 35 U.S.C. 102(b) (Table 2) or in combination with the Handbook and Sonos APA under 35 U.S.C. 103(a) (Table 3), presents a Substantial New Question of Patentability

Although Edens was submitted to the Patent Office by Sonos during the original examination of the '357 Patent, as one of hundreds of references in over 60 total pages of Information Disclosure Statements, it was not specifically considered by Examiner Survillo or applied against any of the claims of the '357 Patent. As shown in the claim chart below, Edens discloses each element of the '357 Patent in a manner that was not considered during the original prosecution of the '357 Patent, at least because the prior art considered during the original prosecution did not include any explicit disclosure or teaching of networked audio devices that transmit playback timing data, clock data and audio data to other networked audio devices, for synchronous playback of the audio data, as disclosed in Edens.[1] Therefore, the invalidity of the Challenged Claims in view of Edens presents a substantial new question of patentability.

In addition, while Edens explicitly discloses and claims connecting to sources over the Internet for playback of audio data, to the extent that it is considered not to explicitly or inherently satisfy the limitation of receiving, via the network interface from a network device configured to control the first playback device and communicatively coupled to the first playback device over a local area network (LAN), control information comprising an address identifying a network

[1] As discussed below, Goldberg included a reference to standards that were not considered on the record by Examiner Survillo, and which disclose the transmission of playback timing data and clock data with audio data.

location of audio information available at an audio information source, wherein the audio information source is outside of the LAN, the Handbook discloses that it was well known as of the Critical Date of the '357 Patent to provide control information to a networked audio device that comprises an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN.

In addition, as discussed above, Sonos admits in the Background of the Invention at 1:47 to 2:28 that it was known in the art that there are a number of circumstances under which it is desirable to maintain synchrony of operations among a plurality of independently-clocked digital data processing devices in relation to, for example, information that is provided thereto by a common source, and that these include systems in which one audio information source can distribute audio information in digital form to a number of audio playback devices for playback. In such an arrangement, the audio information that is distributed to various audio playback devices may relate to the same audio program, and that the audio playback devices can contemporaneously play the same program (i.e. in a synchrony group). The audio playback devices have independent clocks, and if they are clocking at precisely the same rate, the audio playback provided by the various devices can occur in synchronization. Therefore, the invalidity of the Challenged Claims over Edens in view of the Handbook and the Sonos APA presents a substantial new question of patentability

TABLE 2

SUBSTANTIAL NEW QUESTION OF PATENTABILITY FOR

CLAIMS 9, 10, 12 AND 19 BASED ON EDENS UNDER 35 U.S.C. 102(B)

'357 Patent	Edens under 35 U.S.C. 102(b)
9. A first playback device comprising:	
one or more processors; a network interface; and	Edens discloses a multimedia PC 170, which can be "used to control devices on logical ring network 120, as well as to transmit and receive digital media to/from other network devices." Edens at 14:41-43. The other network devices can include other multimedia PCs that are playing back audio in synchrony. In addition, surround sound amplifiers/speakers 153-158 are networked audio devices that could be implemented with PC functionality similar to multimedia PC 170, see Edens at 14:64-67 ("by adding devices of greater complexity, particularly CPU-based devices controlled by software or firmware, the possibilities are virtually endless" for controlling devices in the system of Edens.). Edens also discloses a multimedia/data viewer (MDV) 5100, which is a portable interface and display device that can act as a remote control or interface for network devices or as a multimedia/data playback device. In particular, MDV 5100 includes CPU 5102, 10 Base-T Ethernet connection 5176, and a high quality audio subsystem that includes stereo A/D 5122 and D/A 5124 (using Crystal Semiconductor 5331 and 4331 components, respectively), which supports a 44.1 kHz sample rate with 18-bit audiophile sampling. 108:62-110:4. As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices and are referred to herein in regards to the playback device functionality, and Edens discloses that these playback devices can be used to play back audio in synchrony. See Eden at 27:1-5 ("One of these special markers, the 'frame header' (which actually comprises 2 symbols), is used to synchronize all other devices to the network clock device at a rate useful for synchronizing digital media streams, such as CD audio or MPEG video.")
tangible, non-transitory computer-readable memory comprising program instructions that, when executed by the one or more	Edens discloses tangible, non-transitory computer-readable memory comprising program instructions that, when executed by the one or more processors, cause the first playback device to perform functions, such as in multimedia PC 170, a CPU-based speaker device controlled by software or firmware, or MDV 5100.

'357 Patent	Edens under 35 U.S.C. 102(b)
processors, cause the first playback device to:	See Edens at 109:30-32 ("64MB KM64000 flash memory 5106 stores the operating system and applications software for multimedia/data viewer 5100."); 14:64-67 ("by adding devices of greater complexity, particularly CPU-based devices controlled by software or firmware, the possibilities are virtually endless" for controlling devices in the system of Edens.). As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices having tangible, non-transitory computer-readable memory comprising program instructions that, when executed by the one or more processors, cause the first playback device to perform programmed actions.
receive, via the network interface from a network device configured to control the first playback device and communicatively coupled to the first playback device over a local area network (LAN), control information comprising an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN; and	PC 170, a CPU-based speaker device controlled by hardware and software or the audio hardware (stereo A/D 5122 and D/A 5124, respectively) of MDV 5100 are playback devices of Edens that can be used to receive multimedia content or data, such as MPEG2 audio in response to Web browsing, which requires these playback devices of Edens to be able to access an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN. Edens discloses multiple ways for the playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) to receive control information via the network interface from a network device configured to control the first playback device and communicatively coupled to the first playback device over the LAN. In one embodiment, the playback devices of Edens "could be controlled by respective remote control/interface/monitor devices 190 and 195 (which could range from simple remote controls to complex controllers with large LCD screens capable of viewing computer graphics images, MPEG2 video, etc.)." 14:19-23. In another embodiment, "[m]ultimedia PC 170 could be used to control devices on logical ring network 120, as well as to transmit and receive digital media to/from other network devices" 14:42-44. Edens further notes that "by adding devices of greater complexity, particularly CPU-based devices controlled by software or firmware, the possibilities are virtually endless" for controlling devices in the system of Edens. 14:64-67 As such, Edens discloses both localized and distributed controls that can be used in any suitable manner.

'357 Patent	Edens under 35 U.S.C. 102(b)
	Edens discloses accessing a URL over the Internet for information required by a playback device of Eden for operational purposes at 46:56-60 ("Other interested devices can read this information for subsequent use in communicating directly with a particular device and/or obtaining additional information about a device from an external resource (e.g., the Internet via a URL 'pointer').") and 47:47-54 ("As will be apparent to one reasonably skilled in the art, many different data structures (e.g., a linked list of objects) and combinations of RAM/ROM/registers can be employed to accommodate the various types of data contained within the configuration and code control block, as well as any other information stored in a network device's local memory and I/O address space, including 'pointers' to external information.") A person having ordinary skill in the art would recognize that URL pointers could be used to obtain audio data, as it was widely known by the Critical Date of the '357 Patent to obtain audio data from a remote source over the Internet. As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices that receive, via the network interface from a network device configured to control the first playback device and communicatively coupled to the first playback device over a local area network (LAN), control information comprising an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN, because Edens disclosed the ability to control the playback devices of Edens over the ring network of Edens and to obtain audio information for playback using one of those playback devices from a source outside of the LAN.
after receiving the control information, (i) obtain, via the network interface from the audio information source outside of the LAN, the audio information;	Edens discloses that the playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) can obtain audio information from outside of the LAN, such as by using a controller to "accommodate virtually any programming change a user makes (typically via some form of remote control device) with respect to the source (e.g., DSS satellite receiver, DVD player, CD player, etc.) or destination (e.g., particular speakers, televisions/monitors, etc.) of an audio or video program, or other form of data." Edens at 56:34-41. See also 14:19-23; 14:42-44; 14:64-67; claim 3. See Edens at 14:24-40 ("As will be discussed below, virtually any information obtained or generated by one network device can be distributed 'simultaneously' (i.e., within the same digital sample, appropriate to the media type) to any other network device, merely

'357 Patent	Edens under 35 U.S.C. 102(b)
	because such devices are connected to logical ring network 120. For example, server 185 in utility room 105 might be recording various digital audio/video programs/channels previously selected by a family member. Upon request, such information could be transmitted along logical ring network 120 for immediate viewing, or saved for later viewing (e.g., to avoid being overwritten as new programs are recorded).") As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices that would obtain audio information for playback using one of those playback devices from a source outside of the LAN after receiving an appropriate instruction.
(ii) transmit, via the network interface of the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock information of the first playback device; and	Edens discloses that a first playback device of Edens (PC 170, a CPU-based speaker device or MDV 5100) can transmit the audio information, playback timing information associated with the audio information, and device clock information of the first playback device, via the network interface of the first playback device to a second playback device. For example, Edens discloses at 10:9-18 that "one of the competing devices is elected the network clock device to which all other devices are then synchronized. By synchronizing all network devices to a single reference clock, and providing fixed frames of information propagating around the network at consistent time intervals (44.1 kHz "frame rates" in one embodiment, to enable device synchronization to the CD audio sample rate), the logical ring network ensures that information always will propagate from one device to another at consistent time intervals." Edens uses frames of data that include the "frame header," which is **playback timing information** that is used to synchronize digital media streams such as CD audio (**audio information**). See Eden at 27:1-5 ("One of these special markers, the 'frame header' (which actually comprises 2 symbols), is used to synchronize all other devices to the network clock device at a rate useful for synchronizing digital media streams, such as CD audio or MPEG video.") Edens transmits **device clock information of the first playback device** (acting as network clock device) using a TIME MARK system command with "time of day" specified in the timestamp field. See Edens at 51:38-56 ("In one embodiment, the network clock device transmits this 'time of day' reference by first broadcasting a TIME MARK system command with the 'time of

'357 Patent	Edens under 35 U.S.C. 102(b)
	day' specified in the Timestamp field, which indicates to interested network devices that such 'time of day' will occur upon receipt of the next 'WK' frame header. At the appropriate time, the network clock device then substitutes the Time Sync ('WK') frame header (in lieu of the far more common Clock Sync ('JK') frame header) to 'mark' the previously specified time of day. It should be noted that this "time of day" is a very accurate relative time marker. Although it is received at slightly different times by network devices due to propagation delays along the logical ring network, these relative time differences remain constant due to the synchronous nature of the logical ring network. Moreover, in one embodiment, the delay does not exceed one (44.1 kHz audio sample) frame time. The 'sub-frame' field of the Timestamp therefore is set to zero in this embodiment.") Also, see Edens at 10:58-66 ("In addition to 'frame header' markers that synchronize devices to a master clock, these frames contain two independent streams—a 'data stream' for the distribution of real-time continuous digital media streams, as well as asynchronous data, and a 'system command stream' for the distribution of 'system commands,' which are used primarily for network initialization and auto-configuration of network devices, as well as basic switching of digital media streams."). Any one of the playback devices of Edens can serve as the network clock device. See Edens at 26:33-46 ("In one embodiment, at least one device on a logical ring network must be capable of acting as the network clock device, typically in addition to performing its 'normal' function (e.g., CD player). During network initialization, a clock arbitration process determines which device (among those capable of acting as the network clock device) will be deemed the network clock device. In other embodiments, the network clock device could be predetermined—e.g., via a user-settable switch. Once the network clock device has been selected, all other devices are synchronized to the network clock device. The precise details of the network initialization process, and the manner in which devices are synchronized to the network clock device, are discussed in greater detail below.") See also Edens at 32:28-52 ("The vast majority of the total network bandwidth is utilized by network devices sending and receiving digital media streams, such as audio, video, phone, asynchronous and other data. . . . These channels may be associated with a particular type of media (e.g., digital audio) and may occupy a number of 4-bit data nibbles (varying from channel

'357 Patent	Edens under 35 U.S.C. 102(b)
	to channel) corresponding to the network bandwidth required by such media. For example, in the default data stream channel allocation illustrated in Table III, 'Audio Left Channel 0' occupies nibbles 2-7 of a frame, and represents the left channel of a stereo digital audio stream. In order to achieve CD-quality audio for that left channel, 4 nibbles (16 bits) are required to represent the range of audio intensity levels for each audio sample. The remaining 2 nibbles can be used for additional information, such as more phone lines or 'surround sound' (e.g., Dolby ProLogic), which is encoded into stereo audio recordings.") See Edens at 14:24-40 ("As will be discussed below, virtually any information obtained or generated by one network device can be distributed 'simultaneously' (i.e., within the same digital sample, appropriate to the media type) to any other network device, merely because such devices are connected to logical ring network 120. For example, server 185 in utility room 105 might be recording various digital audio/video programs/channels previously selected by a family member. Upon request, such information could be transmitted along logical ring network 120 for immediate viewing, or saved for later viewing (e.g., to avoid being overwritten as new programs are recorded).") Edens discloses that audio can be converted from analog to digital and routed to the entire network for playback. See Edens at 104:7-15 ("MPEG1 Encoder 3850 provides left 3884 and right 3886 audio input through two RCA phono connectors (not shown). The stereo analog audio is converted to a serial digital audio stream (via audio A/D converter 3882) and routed via line 3878 to both the MPEG encoder 3864 and logical ring network adapter 3858. This allows the uncompressed stereo audio input to be routed to the rest of the network directly as an audio stream or as the compressed audio portion of the MPEG stream.") As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices that could transmit, via the network interface of the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock information of the first playback device, such as when the playback device was also the network clock and was obtaining the audio information from a source outside of the LAN of Eden, as Edens discloses that any CPU-

'357 Patent	Edens under 35 U.S.C. 102(b)
	enabled/intelligent playback device of Eden could perform those functions.
(iii) play back the audio information in synchrony with the second playback device by using the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information,	The playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) play back the audio information in synchrony with the second playback device by using the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information, as discussed above. See Edens at 10:9-18; 10:58-66; 26:33-46; 27:1-5; 32:28-52; 51:38-56. See also Eden at 11:13-18 ("Thus, two speakers on the network will receive left and right channel digital audio, respectively, at the "same time" (i.e., within one sample time of accuracy), and thus be synchronized to each other (i.e., phase coherent), even if the source device is physically located in another room and/or zone of the network). Phase coherency is a critical factor in high-quality stereo audio systems, as well as multi-channel surround sound systems, such as Dolby AC-3."). The Timestamp field "time of day" mechanism can be used to determine when to play back the audio information in synchrony. See Edens at 56:9-14 ("In addition, the controller may use the "Timestamp" field to cause all network devices receiving a STOP STREAMS system command to stop transmitting their streams simultaneously, at the time specified by the Timestamp field, using the "time of day" mechanism discussed above.") 10:4-7 ("Information can propagate around this logical ring, reaching every device on each revolution around the network. Network devices are full-duplex, transmitting and receiving information simultaneously.") It is noted that this limitation does not require the second playback device to playback the audio information by using the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information. That limitation only applies to the first playback device, and as long as the second playback device is playing back the audio information in synchrony with the first playback device while the first playback device uses the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information, then the claim limitation is satisfied. As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers

'357 Patent	Edens under 35 U.S.C. 102(b)
	153-158 and MDCV 5100 are intelligent playback devices that could playback the audio information, playback timing information associated with the audio information, and device clock information of the first playback device, because Edens discloses that these playback devices could be used to play back audio in synchrony.
wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information.	The playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) remain independently clocked, because they "operate in accordance with their own respective clocks during synchronous playback." In addition, Edens discloses that these network devices can each be capable of acting as a "clock" device and can arbitrate for election as the "network clock" device. Edens at 24:56-63 ("As noted above, and as will be explained in greater detail below, network devices on a logical ring network of the present invention are synchronized to one another. This synchronization occurs upon initialization of the logical ring network, during which each device capable of acting as a "clock" device arbitrates for election as the "network clock" device.") Independent clocking is also disclosed by virtue of the network clock selection process between independently clocked devices, only one of which is selected as the network clock. See Edens at 48:66-49:12 ("To initiate the network clock device arbitration process, each 'clock-capable' network device immediately broadcasts repeated CLOCK ID system commands (with its own Device ID in the source address field) 1004. Because the logical ring network is not yet synchronized to a network clock device, each such device ignores all received information other than CLOCK ID system commands (i.e., resynchronizing to each received frame header). Upon receiving a CLOCK ID system command, it compares the received 'source' Device ID with its own Device ID 1006. The 'clock-capable' network device having the highest Device ID will win the arbitration. As will become apparent, this arbitration process will be decided very quickly—i.e., in a single 'revolution' of a system command around the default network path of the logical ring network.") As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices that remain independently clocked during synchronous playback of the audio information, because they would have multiple clocks, and

'357 Patent	Edens under 35 U.S.C. 102(b)
	would operate in accordance with their own respective clocks during synchronous playback.
10. The first playback device of claim 9, wherein the program instructions, when executed by the one or more processors, further cause the first playback device to: generate the playback timing information associated with the audio information; and	The program instructions of the first playback device of Edens (PC 170, a CPU-based speaker device or MDV 5100) cause the first playback device to generate the playback timing information associated with the audio information, such as by generating the frame header. See Edens at 27:1-5 ("One of these special markers, the 'frame header' (which actually comprises 2 symbols), is used to synchronize all other devices to the network clock device at a rate useful for synchronizing digital media streams, such as CD audio or MPEG video.") A person of ordinary skill would have understood that this disclosure from Edens was the claimed program instructions that, when executed by the one or more processors, further caused the first playback device to generate the playback timing information associated with the audio information, because the generation of the frame header could have been accomplished in a device such as multimedia PC 170 or other playback devices of Edens, such as when that playback device was the network clock device and also the device that was obtaining audio data from outside of the network and providing it to other playback devices of Edens.
generate the device clock information of the first playback device.	The program instructions of the playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) cause the associated playback device to generate the device clock information of the first playback device, such as by generating the TIME MARK system command with "time of day" specified in the timestamp field. See Edens at 51:38-56 ("In one embodiment, the network clock device transmits this "time of day' reference by first broadcasting a TIME MARK system command with the 'time of day' specified in the Timestamp field, which indicates to interested network devices that such 'time of day' will occur upon receipt of the next 'WK' frame header. At the appropriate time, the network clock device then substitutes the Time Sync ('WK') frame header (in lieu of the far more common Clock Sync ('JK') frame header) to 'mark' the previously specified time of day. It should be noted that this "time of day" is a very accurate relative time marker. Although it is received at slightly different times by network devices due to propagation delays along the logical ring network, these relative time differences remain constant due to the synchronous nature of the logical ring network. Moreover, in one embodiment, the delay does not exceed one (44.1 kHz audio

'357 Patent	Edens under 35 U.S.C. 102(b)
	sample) frame time. The 'sub-frame' field of the Timestamp therefore is set to zero in this embodiment.") A person of ordinary skill would have understood that this disclosure from Edens was the claimed program instructions that, when executed by the one or more processors, further caused the first playback device to generate the device clock information of the first playback device, because the generation of the time of day, time sync and clock sync data could have been accomplished in a device such as multimedia PC 170 or other playback devices of Edens, such as when that playback device was the network clock device and also the device that was obtaining audio data from outside of the network and providing it to other playback devices of Edens.
11. The first playback device of claim 9, wherein the control information further comprises one or more instructions for the first playback device and the second playback device to playback audio information.	Edens discloses that the control information further comprises one or more instructions for the first playback device and the second playback device to playback audio information. No limitations are provided in regards to the format, substance or type of instructions, such that any instruction for the first playback device and the second playback device to playback audio information meets this limitation under the broadest reasonable interpretation. Edens discloses that network devices such as the playback devices can send commands to one another, pursuant to virtually any protocol, which would include simple playback protocols such as a "play" command. See Edens at 11:26-30 ("Network devices also can utilize channels of the data stream to send custom commands to one another, including control information, pursuant to virtually any protocol known to such devices.") Edens discloses that audio data can be played by surround sound amplifier/speaker devices 153-158, which can be controlled by control devices 190 and 195, which inherently requires instructions for the first playback device and the second playback device (e.g. two or more of surround sound amplifiers/speaker devices 153-158 (which can be CPU-based devices augmented with hardware and software as disclosed at 14:64-67) to playback audio information. See Edens at 14:11-23 ("The audio extracted by MPEG2 decoder 161 could be transmitted back onto logical ring network 120 and played by left 167 and right 168 amplifier/speakers. The audio extracted by MPEG2 decoder 151 could be transmitted back onto logical ring network 120, processed by DSP (e.g., AC-3 surround sound decoder) 152, and then transmitted back onto logical ring network 120 and played by surround sound amplifier/speakers 153, 154, 156, 157 and 158.

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	The systems in rooms 106 and 102 could be controlled by respective remote control/interface/monitor devices 190 and 195 (which could range from simple remote controls to complex controllers with large LCD screens capable of viewing computer graphics images, MPEG2 video, etc."). A controller of Edens can also send a START STREAMS command to networked audio devices to start playback. See Edens at 56:25-41 ("Finally, having assigned all reallocated network nibble streams to the relevant network devices, the controller could restart those streams simultaneously by sending the START STREAMS system command to such devices. The START STREAMS system command is identical to the STOP STREAMS system command discussed above, except that devices start (rather than stop) transmitting/receiving data at the time indicated by the Timestamp field. Thus, a controller can accommodate virtually any programming change a user makes (typically via some form of remote control device) with respect to the source (e.g., DSS satellite receiver, DVD player, CD player, etc.) or destination (e.g., particular speakers, televisions/monitors, etc.) of an audio or video program, or other form of data.") The start/stop streams commands applies to each device that is receiving the information and then further transmitting it on to another device. 10:4-7 ("Information can propagate around this logical ring, reaching every device on each revolution around the network. Network devices are full-duplex, transmitting and receiving information simultaneously.") A person of ordinary skill would have understood that this disclosure from Edens was the claimed control information further comprises one or more instructions for the first playback device and the second playback device to playback audio information, because the START STREAMS command was an instruction for playing back the audio content that could have been generated by a controlling multimedia PC, MDV 5100 or other control device of Edens, and would have been received and retransmitted by each playback device of Edens that was playing back the audio in synchrony .
12. The first playback device of claim 11, wherein the first and second playback devices are members of a synchrony group, and wherein the program	Edens discloses that the first and second playback devices are members of a synchrony group, which is any two devices that are synchronized in some manner under the broadest reasonable construction of the term "synchrony group." For example, Edens explicitly discloses synchronized playback between stereo speaker devices, and also between multiple sets of stereo speakers.

'357 Patent	Edens under 35 U.S.C. 102(b)
instructions, when executed by the one or more processors, further cause the first playback device to:	52:66-53:10 ("As each frame propagates around the default network path (or alternate path) of the logic ring networks, the CD player would overwrite nibbles 10-15 and 74-79 with the respective (left and right channel) source digital audio streams. Other network devices would merely pass those nibbles of each frame along to the next network device on the logical ring network. **One or more "left" speaker network devices (e.g., in different rooms of a house) would extract nibbles 10-15 of each frame and play that left channel digital audio stream**. Similarly, **one or more "right" speaker network devices would extract nibbles 74-79 and play that right channel digital audio stream**.") A person of ordinary skill would have understood that this disclosure from Edens demonstrated that multiple playback devices of Edens could play back the audio in synchrony, which would make them members of a "synchrony group" under the BRI. See also Edens at 10:4-7; 11:13-18; 14:24-40; 27:1-5; 32:28-52; 56:9-14 and 104:7-15.
transmit, to the network device, status information that comprises a status of the synchrony group.	Edens discloses transmit status information to the network device that comprises a status of the synchrony group. The broadest reasonable interpretation of the term "status information" includes any kind of status information associated with the synchrony group, including any device that is capable of communicating with other devices, such as by responding to a MASTER RESET, CLOCK ID, SCAN RESET, SCAN REQUEST, SCAN REPLY and SCAN INITIATE system command, which are used to reset and initialize network devices, by communicating with other network devices and read/write one another's device-specific information via the MESSAGE, READ, WRITE, SET and GET system commands, or by responding to a data stream channel reallocation and control via the TALK ASSIGN, TALK QUERY, LISTEN ASSIGN, LISTEN QUERY, START STREAMS, STOP STREAMS, and QUERY STREAMS system commands. See Table V, 40:45 to 45:20. A person of ordinary skill would have understood that this disclosure from Edens was the claimed transmission of status information that comprises a status of the synchrony group to the network device, because device-specific information obtained via the MESSAGE, READ, WRITE, SET and GET system commands, or from a response to a data stream channel reallocation and control via the TALK ASSIGN, TALK QUERY, LISTEN ASSIGN, LISTEN QUERY, START STREAMS, STOP STREAMS, and QUERY STREAMS provided status information

'357 Patent	Edens under 35 U.S.C. 102(b)
	from a member of a synchrony group, which meets the claim limitation under the BRI.
19. The first playback device of claim 9, wherein the audio information source outside of the LAN is an Internet-accessible audio information source, and wherein obtaining, from the audio information source outside of the LAN, the audio information, comprises obtaining the audio information from the Internet-accessible audio information source.	Edens discloses that the audio information source outside of the LAN can be an Internet-accessible audio information source, and wherein obtaining the audio information from the audio information source outside of the LAN comprises obtaining the audio information from the Internet-accessible audio information source. See, e.g., claim 3; 14:19-23 (playback devices "could be controlled by respective remote control/interface/monitor devices 190 and 195 (which could range from simple remote controls to complex controllers with large LCD screens capable of viewing computer graphics images, MPEG2 video, etc."); 14:42-44 ("[m]ultimedia PC 170 could be used to control devices on logical ring network 120, as well as to transmit and receive digital media to/from other network devices"); 14:64-67 ("by adding devices of greater complexity, particularly CPU-based devices controlled by software or firmware, the possibilities are virtually endless"); 46:56-60 ("Other interested devices can read this information for subsequent use in communicating directly with a particular device and/or obtaining additional information about a device from an external resource (e.g., the Internet via a URL 'pointer')."); and 47:47-54 ("As will be apparent to one reasonably skilled in the art, many different data structures (e.g., a linked list of objects) and combinations of RAM/ROM/registers can be employed to accommodate the various types of data contained within the configuration and code control block, as well as any other information stored in a network device's local memory and I/O address space, including 'pointers' to external information.") A person of ordinary skill would have understood that this disclosure from Edens was the claimed obtaining the audio information from the Internet-accessible audio information source, because the ability to obtain data from an external resource using a URL or to browse the web could be used to obtain audio information from an Internet source.

TABLE 3

SUBSTANTIAL NEW QUESTION OF PATENTABILITY FOR CLAIMS 9, 10, 12 AND 19 BASED ON EDENS, THE HANDBOOK AND SONOS APA UNDER 35 U.S.C. 103(A)

'357 Patent	Edens, the Handbook and Sonos APA under 35 U.S.C. 103(a)
9. A first playback device comprising:	
one or more processors; a network interface; and	Edens discloses a multimedia PC 170, which can be "used to control devices on logical ring network 120, as well as to transmit and receive digital media to/from other network devices." Edens at 14:41-43. The other network devices can include other multimedia PCs that are playing back audio in synchrony. In addition, surround sound amplifiers/speakers 153-158 are networked audio devices that could be implemented with PC functionality similar to multimedia PC 170, see Edens at 14:64-67 ("by adding devices of greater complexity, particularly CPU-based devices controlled by software or firmware, the possibilities are virtually endless" for controlling devices in the system of Edens.). Edens also discloses a multimedia/data viewer (MDV) 5100, which is a portable interface and display device that can act as a remote control or interface for network devices or as a multimedia/data playback device. In particular, MDV 5100 includes CPU 5102, 10 Base-T Ethernet connection 5176, and a high quality audio subsystem that includes stereo A/D 5122 and D/A 5124 (using Crystal Semiconductor 5331 and 4331 components, respectively), which supports a 44.1 kHz sample rate with 18-bit audiophile sampling. 108:62-110:4. As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices and are referred to herein in regards to the playback device functionality, and Edens discloses that these playback devices can be used to play back audio in synchrony. See Eden at 27:1-5 ("One of these special markers, the 'frame header' (which actually comprises 2 symbols), is used to synchronize all other devices to the network clock device at a rate useful for synchronizing digital media streams, such as CD audio or MPEG video.")
tangible, non-transitory computer-readable memory comprising program instructions	Edens discloses tangible, non-transitory computer-readable memory comprising program instructions that, when executed by the one or more processors, cause the first playback device to

'357 Patent	Edens, the Handbook and Sonos APA under 35 U.S.C. 103(a)
that, when executed by the one or more processors, cause the first playback device to:	perform functions, such as in multimedia PC 170, a CPU-based speaker device controlled by software or firmware, or MDV 5100. See Edens at 109:30-32 ("64MB KM64000 flash memory 5106 stores the operating system and applications software for multimedia/data viewer 5100."); 14:64-67 ("by adding devices of greater complexity, particularly CPU-based devices controlled by software or firmware, the possibilities are virtually endless" for controlling devices in the system of Edens.). As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices having tangible, non-transitory computer-readable memory comprising program instructions that, when executed by the one or more processors, cause the first playback device to perform programmed actions. To the extent it is considered that Edens does not disclose a playback device with tangible, non-transitory computer-readable memory comprising program instructions that, when executed by the one or more processors, cause the first playback device to perform the claimed functions, the Handbook discloses that PCs could be used as playback devices and included such memory devices and program instructions. See the Handbook, pages see pages 17-18, 28-34, 66-84, 109-116, 123-154, 243-261. A person having ordinary skill in the art would recognize that the multimedia PC 170 of Edens could be used with the hardware and software disclosed in the Handbook, but that hardware and software was convention PC hardware and software that was widely used as of the Critical Date of the '357 Patent.
receive, via the network interface from a network device configured to control the first playback device and communicatively coupled to the first playback device over a local area network (LAN), control information comprising an address identifying a network location of audio information	PC 170, a CPU-based speaker device controlled by hardware and software or the audio hardware (stereo A/D 5122 and D/A 5124, respectively) of MDV 5100 are playback devices of Edens that can be used to receive multimedia content or data, such as MPEG2 audio in response to Web browsing, which requires these playback devices of Edens to be able to access an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN. Edens discloses multiple ways for the playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) to receive control information via the network interface from a network device configured to control the first playback device and

'357 Patent	Edens, the Handbook and Sonos APA under 35 U.S.C. 103(a)
available at an audio information source, wherein the audio information source is outside of the LAN; and	communicatively coupled to the first playback device over the LAN. In one embodiment, the playback devices of Edens "could be controlled by respective remote control/interface/monitor devices 190 and 195 (which could range from simple remote controls to complex controllers with large LCD screens capable of viewing computer graphics images, MPEG2 video, etc.)." 14:19-23. In another embodiment, "[m]ultimedia PC 170 could be used to control devices on logical ring network 120, as well as to transmit and receive digital media to/from other network devices" 14:42-44. Edens further notes that "by adding devices of greater complexity, particularly CPU-based devices controlled by software or firmware, the possibilities are virtually endless" for controlling devices in the system of Edens. 14:64-67 As such, Edens discloses both localized and distributed controls that can be used in any suitable manner. Edens discloses accessing a URL over the Internet for information required by a playback device of Eden for operational purposes at 46:56-60 ("Other interested devices can read this information for subsequent use in communicating directly with a particular device and/or obtaining additional information about a device from an external resource (e.g., the Internet via a URL 'pointer').") and 47:47-54 ("As will be apparent to one reasonably skilled in the art, many different data structures (e.g., a linked list of objects) and combinations of RAM/ROM/registers can be employed to accommodate the various types of data contained within the configuration and code control block, as well as any other information stored in a network device's local memory and I/O address space, including 'pointers' to external information.") A person having ordinary skill in the art would recognize that URL pointers could be used to obtain audio data, as it was widely known by the Critical Date of the '357 Patent to obtain audio data from a remote source over the Internet. As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices that receive, via the network interface from a network device configured to control the first playback device and communicatively coupled to the first playback device over a local area network (LAN), control information comprising an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN, because Edens disclosed the ability to control the playback devices of Edens over the ring network of Edens and

'357 Patent	Edens, the Handbook and Sonos APA under 35 U.S.C. 103(a)
	to obtain audio information for playback using one of those playback devices from a source outside of the LAN. To the extent it is considered that Edens does not disclose a playback device that can receive, via the network interface from a network device configured to control the first playback device and communicatively coupled to the first playback device over a local area network (LAN), control information comprising an address identifying a network location of audio information available at an audio information source, wherein the audio information source is outside of the LAN, the Handbook discloses that PCs could be used as playback devices and included the ability to obtain audio information from a source outside the LAN. See the Handbook, pages see pages 17-18, 28-34, 66-84, 109-116, 123-154, 243-261. A person having ordinary skill in the art would recognize that the multimedia PC 170 of Edens could be used with the hardware and software disclosed in the Handbook, but that hardware and software was convention PC hardware and software that was widely used as of the Critical Date of the '357 Patent.
after receiving the control information, (i) obtain, via the network interface from the audio information source outside of the LAN, the audio information;	Edens discloses that the playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) can obtain audio information from outside of the LAN, such as by using a controller to "accommodate virtually any programming change a user makes (typically via some form of remote control device) with respect to the source (e.g., DSS satellite receiver, DVD player, CD player, etc.) or destination (e.g., particular speakers, televisions/monitors, etc.) of an audio or video program, or other form of data." Edens at 56:34-41. See also 14:19-23; 14:42-44; 14:64-67; claim 3. See Edens at 14:24-40 ("As will be discussed below, virtually any information obtained or generated by one network device can be distributed 'simultaneously' (i.e., within the same digital sample, appropriate to the media type) to any other network device, merely because such devices are connected to logical ring network 120. For example, server 185 in utility room 105 might be recording various digital audio/video programs/channels previously selected by a family member. Upon request, such information could be transmitted along logical ring network 120 for immediate viewing, or saved for later viewing (e.g., to avoid being overwritten as new programs are recorded).") As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices that would obtain audio information for playback using one of those

'357 Patent	Edens, the Handbook and Sonos APA under 35 U.S.C. 103(a)
	playback devices from a source outside of the LAN after receiving an appropriate instruction. To the extent it is considered that Edens does not disclose a playback device that can obtain audio information via a network interface from the audio information source outside of the LAN, the Handbook discloses that PCs could be used as playback devices and included the ability to obtain audio information from a source outside the LAN. See the Handbook, pages see pages 17-18, 28-34, 66-84, 109-116, 123-154, 243-261.
(ii) transmit, via the network interface of the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock information of the first playback device; and	Edens discloses that a first playback device of Edens (PC 170, a CPU-based speaker device or MDV 5100) can transmit the audio information, playback timing information associated with the audio information, and device clock information of the first playback device, via the network interface of the first playback device to a second playback device. For example, Edens discloses at 10:9-18 that "one of the competing devices is elected the network clock device to which all other devices are then synchronized. By synchronizing all network devices to a single reference clock, and providing fixed frames of information propagating around the network at consistent time intervals (44.1 kHz "frame rates" in one embodiment, to enable device synchronization to the CD audio sample rate), the logical ring network ensures that information always will propagate from one device to another at consistent time intervals." Edens uses frames of data that include the "frame header," which is **playback timing information** that is used to synchronize digital media streams such as CD audio (**audio information**). See Eden at 27:1-5 ("One of these special markers, the 'frame header' (which actually comprises 2 symbols), is used to synchronize all other devices to the network clock device at a rate useful for synchronizing digital media streams, such as CD audio or MPEG video.") Edens transmits **device clock information of the first playback device** (acting as network clock device) using a TIME MARK system command with "time of day" specified in the timestamp field. See Edens at 51:38-56 ("In one embodiment, the network clock device transmits this 'time of day' reference by first broadcasting a TIME MARK system command with the 'time of day' specified in the Timestamp field, which indicates to interested network devices that such 'time of day' will occur upon receipt of the next 'WK' frame header. At the appropriate time, the network clock device then substitutes the Time Sync ('WK') frame header

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	(in lieu of the far more common Clock Sync ('JK') frame header) to 'mark' the previously specified time of day. It should be noted that this "time of day" is a very accurate relative time marker. Although it is received at slightly different times by network devices due to propagation delays along the logical ring network, these relative time differences remain constant due to the synchronous nature of the logical ring network. Moreover, in one embodiment, the delay does not exceed one (44.1 kHz audio sample) frame time. The 'sub-frame' field of the Timestamp therefore is set to zero in this embodiment.") Also, see Edens at 10:58-66 ("In addition to 'frame header' markers that synchronize devices to a master clock, these frames contain two independent streams—a 'data stream' for the distribution of real-time continuous digital media streams, as well as asynchronous data, and a 'system command stream' for the distribution of 'system commands,' which are used primarily for network initialization and auto-configuration of network devices, as well as basic switching of digital media streams."). Any one of the playback devices of Edens can serve as the network clock device. See Edens at 26:33-46 ("In one embodiment, at least one device on a logical ring network must be capable of acting as the network clock device, typically in addition to performing its 'normal' function (e.g., CD player). During network initialization, a clock arbitration process determines which device (among those capable of acting as the network clock device) will be deemed the network clock device. In other embodiments, the network clock device could be predetermined—e.g., via a user-settable switch. Once the network clock device has been selected, all other devices are synchronized to the network clock device. The precise details of the network initialization process, and the manner in which devices are synchronized to the network clock device, are discussed in greater detail below.") See also Edens at 32:28-52 ("The vast majority of the total network bandwidth is utilized by network devices sending and receiving digital media streams, such as audio, video, phone, asynchronous and other data. . . . These channels may be associated with a particular type of media (e.g., digital audio) and may occupy a number of 4-bit data nibbles (varying from channel to channel) corresponding to the network bandwidth required by such media. For example, in the default data stream channel allocation illustrated in Table III, 'Audio Left Channel 0' occupies nibbles 2-7 of a frame, and represents the left channel of a stereo

'357 Patent	Edens, the Handbook and Sonos APA under 35 U.S.C. 103(a)
	digital audio stream. In order to achieve CD-quality audio for that left channel, 4 nibbles (16 bits) are required to represent the range of audio intensity levels for each audio sample. The remaining 2 nibbles can be used for additional information, such as more phone lines or 'surround sound' (e.g., Dolby ProLogic), which is encoded into stereo audio recordings.") See Edens at 14:24-40 ("As will be discussed below, virtually any information obtained or generated by one network device can be distributed 'simultaneously' (i.e., within the same digital sample, appropriate to the media type) to any other network device, merely because such devices are connected to logical ring network 120. For example, server 185 in utility room 105 might be recording various digital audio/video programs/channels previously selected by a family member. Upon request, such information could be transmitted along logical ring network 120 for immediate viewing, or saved for later viewing (e.g., to avoid being overwritten as new programs are recorded).") Edens discloses that audio can be converted from analog to digital and routed to the entire network for playback. See Edens at 104:7-15 ("MPEG1 Encoder 3850 provides left 3884 and right 3886 audio input through two RCA phono connectors (not shown). The stereo analog audio is converted to a serial digital audio stream (via audio A/D converter 3882) and routed via line 3878 to both the MPEG encoder 3864 and logical ring network adapter 3858. This allows the uncompressed stereo audio input to be routed to the rest of the network directly as an audio stream or as the compressed audio portion of the MPEG stream.") As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices that could transmit, via the network interface of the first playback device to a second playback device, the audio information, playback timing information associated with the audio information, and device clock information of the first playback device, such as when the playback device was also the network clock and was obtaining the audio information from a source outside of the LAN of Eden, as Edens discloses that any CPU-enabled/intelligent playback device of Eden could perform those functions. In addition, to the extent that it is considered that Edens does not teach this limitation, Sonos APA discloses that it was known to

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	transmit audio information and playback timing information associated with the audio information (for synchronous playback) and device clock information of the first playback device (using RFC 1305 or SNTP), via the network interface of the first playback device to a second playback device. See '357 Patent at 1:47 to 2:28 and the '768 Provisional at pages 1-2. It would be obvious to use the Sonos APA with the system of Edens, because both Edens and the Sonos APA are directed to networked audio devices that play back audio in synchrony, and the Sonos APA would allow Edens to utilize other communications media than the synchronous logical ring network, because it teaches that the timing functionality can be provided by a network that is compliant with RFC 1305 or SNTP.
(iii) play back the audio information in synchrony with the second playback device by using the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information,	The playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) play back the audio information in synchrony with the second playback device by using the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information, as discussed above. See Edens at 10:9-18; 10:58-66; 26:33-46; 27:1-5; 32:28-52; 51:38-56. See also Eden at 11:13-18 ("Thus, two speakers on the network will receive left and right channel digital audio, respectively, at the "same time" (i.e., within one sample time of accuracy), and thus be synchronized to each other (i.e., phase coherent), even if the source device is physically located in another room and/or zone of the network). Phase coherency is a critical factor in high-quality stereo audio systems, as well as multi-channel surround sound systems, such as Dolby AC-3."). The Timestamp field "time of day" mechanism can be used to determine when to play back the audio information in synchrony. See Edens at 56:9-14 ("In addition, the controller may use the "Timestamp" field to cause all network devices receiving a STOP STREAMS system command to stop transmitting their streams simultaneously, at the time specified by the Timestamp field, using the "time of day" mechanism discussed above.") 10:4-7 ("Information can propagate around this logical ring, reaching every device on each revolution around the network. Network devices are full-duplex, transmitting and receiving information simultaneously.") It is noted that this limitation does not require the second playback device to playback the audio information by using the playback timing information associated with the audio information and the

'357 Patent	Edens, the Handbook and Sonos APA under 35 U.S.C. 103(a)
	device clock information of the first playback device to play back the audio information. That limitation only applies to the first playback device, and as long as the second playback device is playing back the audio information in synchrony with the first playback device while the first playback device uses the playback timing information associated with the audio information and the device clock information of the first playback device to play back the audio information, then the claim limitation is satisfied. As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices that could playback the audio information, playback timing information associated with the audio information, and device clock information of the first playback device, because Edens discloses that these playback devices could be used to play back audio in synchrony. In addition, to the extent that Edens is considered not to teach this limitation, the Sonos APA at 1:47 to 2:28 acknowledges that it was known to play back audio information in synchrony with first and second playback devices by using the device clock information of the first playback device to play back the audio information, which inherently requires playback timing information associated with the audio information. It would be obvious to a person having ordinary skill in the art to use the Sonos APA with the system of Edens, because both Edens and the Sonos APA are directed to networked audio devices that play back audio in synchrony, and the Sonos APA would allow Edens to utilize other communications media than the synchronous logical ring network, because it teaches that the timing functionality can be provided by a network that is compliant with RFC 1305 or SNTP.
wherein the first and second playback devices remain independently clocked during synchronous playback of the audio information.	The playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) remain independently clocked, because they "operate in accordance with their own respective clocks during synchronous playback." In addition, Edens discloses that these network devices can each be capable of acting as a "clock" device and can arbitrate for election as the "network clock" device. Edens at 24:56-63 ("As noted above, and as will be explained in greater detail below, network devices on a logical ring network of the present invention are synchronized to one another. This synchronization occurs upon initialization of the logical ring network, during which each device

'357 Patent	Edens, the Handbook and Sonos APA under 35 U.S.C. 103(a)
	capable of acting as a "clock" device arbitrates for election as the "network clock" device.") Independent clocking is also disclosed by virtue of the network clock selection process between independently clocked devices, only one of which is selected as the network clock. See Edens at 48:66-49:12 ("To initiate the network clock device arbitration process, each 'clock-capable' network device immediately broadcasts repeated CLOCK ID system commands (with its own Device ID in the source address field) 1004. Because the logical ring network is not yet synchronized to a network clock device, each such device ignores all received information other than CLOCK ID system commands (i.e., resynchronizing to each received frame header). Upon receiving a CLOCK ID system command, it compares the received 'source' Device ID with its own Device ID 1006. The 'clock-capable' network device having the highest Device ID will win the arbitration. As will become apparent, this arbitration process will be decided very quickly—i.e., in a single 'revolution' of a system command around the default network path of the logical ring network.") As such, a person of ordinary skill would have understood that any one of multimedia PC 170, surround sound amplifiers/speakers 153-158 and MDCV 5100 are intelligent playback devices that remain independently clocked during synchronous playback of the audio information, because they would have multiple clocks, and would operate in accordance with their own respective clocks during synchronous playback. In addition, the Sonos APA discloses that playback devices can remain independently clocked during synchronous playback of audio information, see '357 Patent at 2:21-27 ("When an audio playback device converts the digital audio information from digital to analog form, it does so using a clock that provides timing information. Generally, the audio playback devices that are being developed have independent clocks, and, if they are not clocking at precisely the same rate, the audio playback provided by the various devices can get out of synchronization."). Thus, if the independent clocks of the audio playback devices are clocking at precisely the same rate by design, or if they are synchronized, then the audio playback provided by the various devices remains in synchronization. The claims do not address how to address the situation where the independent clocks of the audio playback devices are not clocking at precisely the same rate or are not

'357 Patent	Edens, the Handbook and Sonos APA under 35 U.S.C. 103(a)
	synchronized, and how to accommodate/correct/address that condition
10. The first playback device of claim 9, wherein the program instructions, when executed by the one or more processors, further cause the first playback device to: generate the playback timing information associated with the audio information; and	The program instructions of the first playback device of Edens (PC 170, a CPU-based speaker device or MDV 5100) cause the first playback device to generate the playback timing information associated with the audio information, such as by generating the frame header. See Edens at 27:1-5 ("One of these special markers, the 'frame header' (which actually comprises 2 symbols), is used to synchronize all other devices to the network clock device at a rate useful for synchronizing digital media streams, such as CD audio or MPEG video.") A person of ordinary skill would have understood that this disclosure from Edens was the claimed program instructions that, when executed by the one or more processors, further caused the first playback device to generate the playback timing information associated with the audio information, because the generation of the frame header could have been accomplished in a device such as multimedia PC 170 or other playback devices of Edens, such as when that playback device was the network clock device and also the device that was obtaining audio data from outside of the network and providing it to other playback devices of Edens.
generate the device clock information of the first playback device.	The program instructions of the playback devices of Edens (PC 170, a CPU-based speaker device or MDV 5100) cause the associated playback device to generate the device clock information of the first playback device, such as by generating the TIME MARK system command with "time of day" specified in the timestamp field. See Edens at 51:38-56 ("In one embodiment, the network clock device transmits this "time of day' reference by first broadcasting a TIME MARK system command with the 'time of day' specified in the Timestamp field, which indicates to interested network devices that such 'time of day' will occur upon receipt of the next 'WK' frame header. At the appropriate time, the network clock device then substitutes the Time Sync ('WK') frame header (in lieu of the far more common Clock Sync ('JK') frame header) to 'mark' the previously specified time of day. It should be noted that this "time of day" is a very accurate relative time marker. Although it is received at slightly different times by network devices due to propagation delays along the logical ring network, these relative time differences remain constant due to the synchronous nature of the logical ring network. Moreover, in one embodiment, the delay does not exceed one (44.1 kHz audio