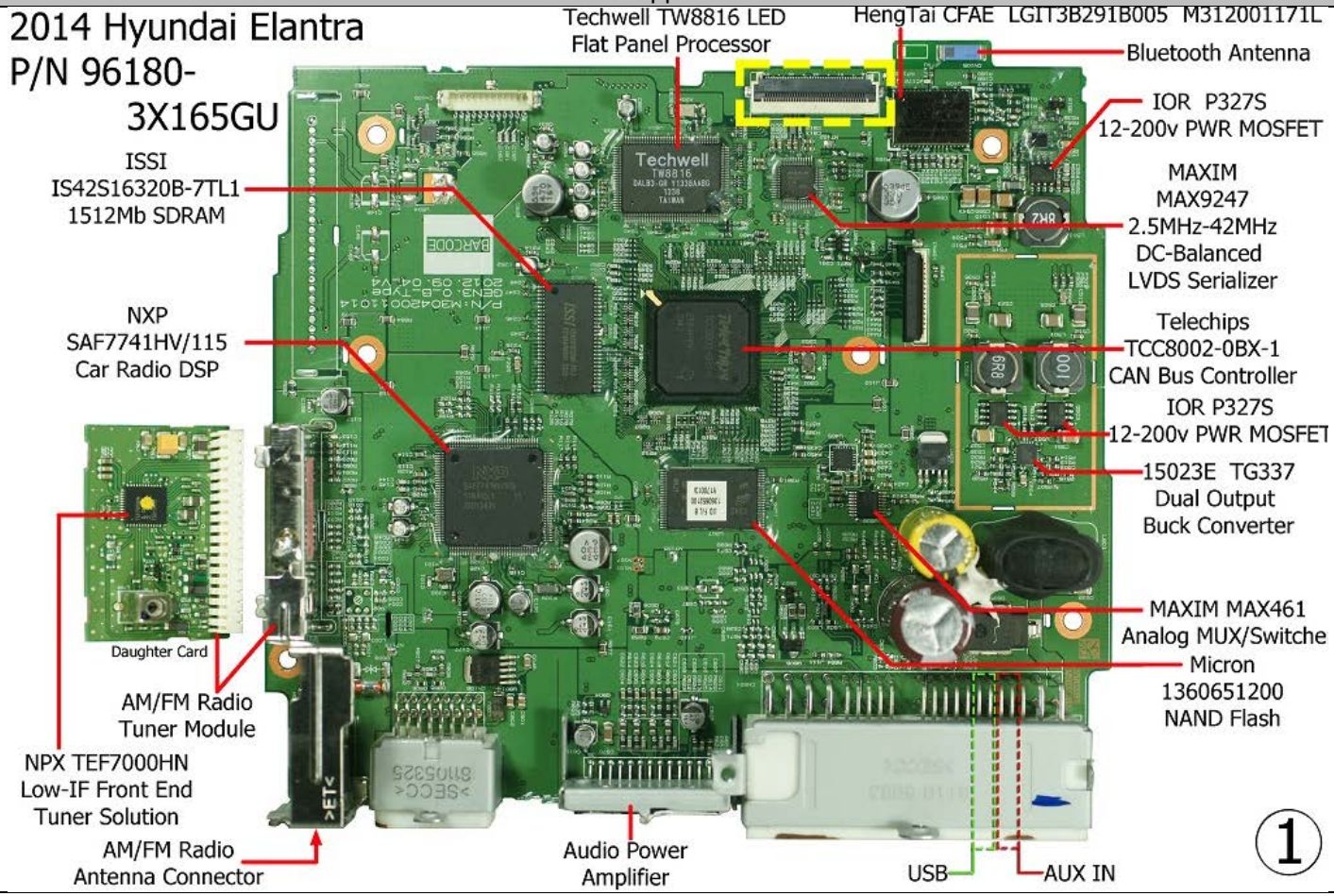
Appendix A - Claim Chart for US Patent No. 7,489,786 Against Infotainment Systems of Accused Hyundai Automobiles

In these Infringement Contentions, Blitzsafe contends that at least the following claims of U.S. Patent No. 7,489,786 ("'786 patent") identified below are infringed by the infotainment systems in accused Hyundai automobiles. Blitzsafe does not concede that any claims of the '786 patent that are not listed below are not infringed by the infotainment systems in accused Hyundai automobiles. Moreover, the citations to certain documents and other information below are intended to be exemplary only and in no way foreclose Blitzsafe from citing or relying on additional documents, information, and/or testimony at a later time. These contentions are preliminary in nature, and an analysis of Hyundai's infotainment systems, internal documentation and/or testimony from relevant witnesses may be necessary to more fully and accurately describe the infringing features of its accused products. Accordingly, Blitzsafe reserves the right to supplement, correct, modify, and/or amend these contentions once such additional information is made available to Blitzsafe. Furthermore, Blitzsafe reserves the right to supplement, correct, modify, and/or amend these contentions as discovery in this case progresses; in view of the Court's claim construction order(s); in view of any positions taken by Hyundai, including but not limited to positions on claim construction, invalidity, and/or non-infringement; and in connection with the preparation and exchange of expert reports.

Claim	Support
1[P]. An audio device integration system comprising:	Each accused Hyundai automobile includes a device integration system, which supports docking integration of audio/video devices, such as freely lying or docked smartphones and other smart devices, as well as MP3 players (e.g., iPods and iPhones playing MP3 files, as well as Android devices). Accused Hyundai automobiles also support audio streaming from iPhones and other smart devices using downloadable apps, such as Google Play Music, Spotify and Pandora apps.
[1A] a first connector electrically connectable to a car stereo;	Each device integration system of accused Hyundai automobiles includes the car stereo, including one or more car stereo components, such as, for example, DSPs, coils, tuner circuitry, car stereo software, virtual buttons, display unit, etc. The device integration system also includes an interface for, among other things, channeling audio signals to the car stereo from an after-market audio device, such as an iPhone, iPad or Android Device, connected via a USB connector. The device integration system includes "a first connector electrically connectable to a car stereo" because, as set forth below, the car stereo controls may be used to control the after-market audio device, and because the car stereo receives information from the after-market audio device regardless of the particular configuration of the device integration system. The "first connector electrically connectable to a car stereo" may include an electrical connector such as a circuit board connector, soldered connector, wired connector or software/virtual connector that is connectable to the car stereo or any component thereof, including at least the connector set forth in the yellow dashed box below.

Appendix A - Claim Chart for US Patent No. 7,489,786 Against Infotainment Systems of Accused Hyundai Automobiles

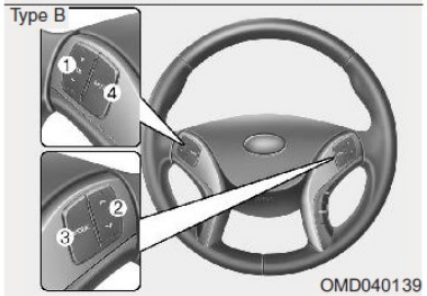
Claim	Support
	

Claim	Support

Type A

OMD040139N

Type B



OMD040139

Steering wheel audio control (if equipped)

The steering wheel may incorporate audio control buttons.

⚠ CAUTION

Do not operate audio remote control buttons simultaneously.

1. VOLUME (VOL+/-)

- Push the lever upward (+) to increase the volume.
- Push the lever downward (-) to decrease the volume.

2. PRESET/SEEK (∧ / ∨)

The SEEK/PRESET button has different functions based on the system mode.

For the following functions the button should be pressed for 0.8 second or more.

RADIO mode

It will function as the AUTO SEEK select button.

CD/USB/iPod mode

It will function as the FF/REW button.

If the SEEK/PRESET button is pressed for less than 0.8 second, it will work as follows in each mode.

RADIO mode

It will function as the PRESET STATION buttons.

CD/USB/iPod mode

It will function as TRACK UP/DOWN button.

3. MODE

Press the button to change audio source.

- FM(1~2)➡AM➡SAT(1~3)➡CD➡USB AUX(iPod) FM...

4. MUTE (if equipped)

- Press the button to mute the sound.
- Press the button to turn off the microphone during a telephone call.

Detailed information for audio control buttons are described in the following pages in this section.

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Claim	Support

✻ NOTICE FOR USING THE iPod® DEVICE

- Some iPod models might not support the communication protocol and the files will not be played.
  Supported iPod models:
  - iPod Mini
  - iPod 4th(Photo) ~ 6th(Classic) generation
  - iPod Nano 1st~4th generation
  - iPod Touch 1st~2nd generation
- The order of search or playback of songs in the iPod can be different from the order searched in the audio system.
- If the iPod disabled due to its own malfunction, reset the iPod. (Reset: Refer to iPod manual)
- An iPod may not operate normally on low battery.
- Some iPod devices, such as the iPhone, can be connected through the Bluetooth® interface. The device must have audio Bluetooth® capability (such as for stereo headphone Bluetooth®). The device can play, but it will not be controlled by the audio system.

⚠ CAUTION IN USING THE iPod® DEVICE

- *The Hyundai iPod Power Cable is needed in order to operate iPod with the audio buttons on the audio system. The USB cable provided by Apple may cause malfunction and should not be used for Hyundai vehicles.*
  ✻ *The Hyundai iPod Power Cable may be purchased through your Hyundai Dealership.*
- *When connecting iPod with the iPod Power Cable, insert the connector to the multimedia socket completely. If not inserted completely, communications between iPod and audio may be interrupted.*
- *When adjusting the sound effects of the iPod and the audio system, the sound effects of both devices will overlap and might reduce or distort the quality of the sound.*
- *Deactivate (turn off) the equalizer function of an iPod when adjusting the audio system's volume, and turn off the equalizer of the audio system when using the equalizer of an iPod.*

(Continued)

(Continued)

- *When the iPod cable is connected, the system can be switched to AUX mode even without iPod device and may cause noise. Disconnect the iPod cable when you are not using the iPod device.*
- *When not using iPod with car audio, detach the iPod cable from iPod. Otherwise, iPod may remain in accessory mode, and may not work properly.*

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Claim	Support

MD_USA_iPod

Using iPod®

* iPod® is a trademark of Apple Inc.

1. CD/AUX Button (iPod)

If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod.
If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode.

2. TRACK Button

- Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played.
  Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track.
  Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed.
- Press the SEEK button for less than 0.8 seconds to move to the next track.
  Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed.

MD_USA_iPod

3. 1 Button (RANDOM)

- Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random)
- Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random)
- To cancel RANDOM Play, press this button again.

4. 2 Button (REPEAT)

Repeats the song currently played.

5. 3 Button (CATEGORY)

Moves to the upper category from currently played category of the iPod.
To move to (play) the category (song) displayed, MENU 3.
You will be able to search through the lower category of the selected category.

6. INFO Button

Displays the information of the file currently played in the order of
TITLE → ARTIST → ALBUM → NORMAL DISPLAY → TITLE... (Displays no information if the file has no song information.)

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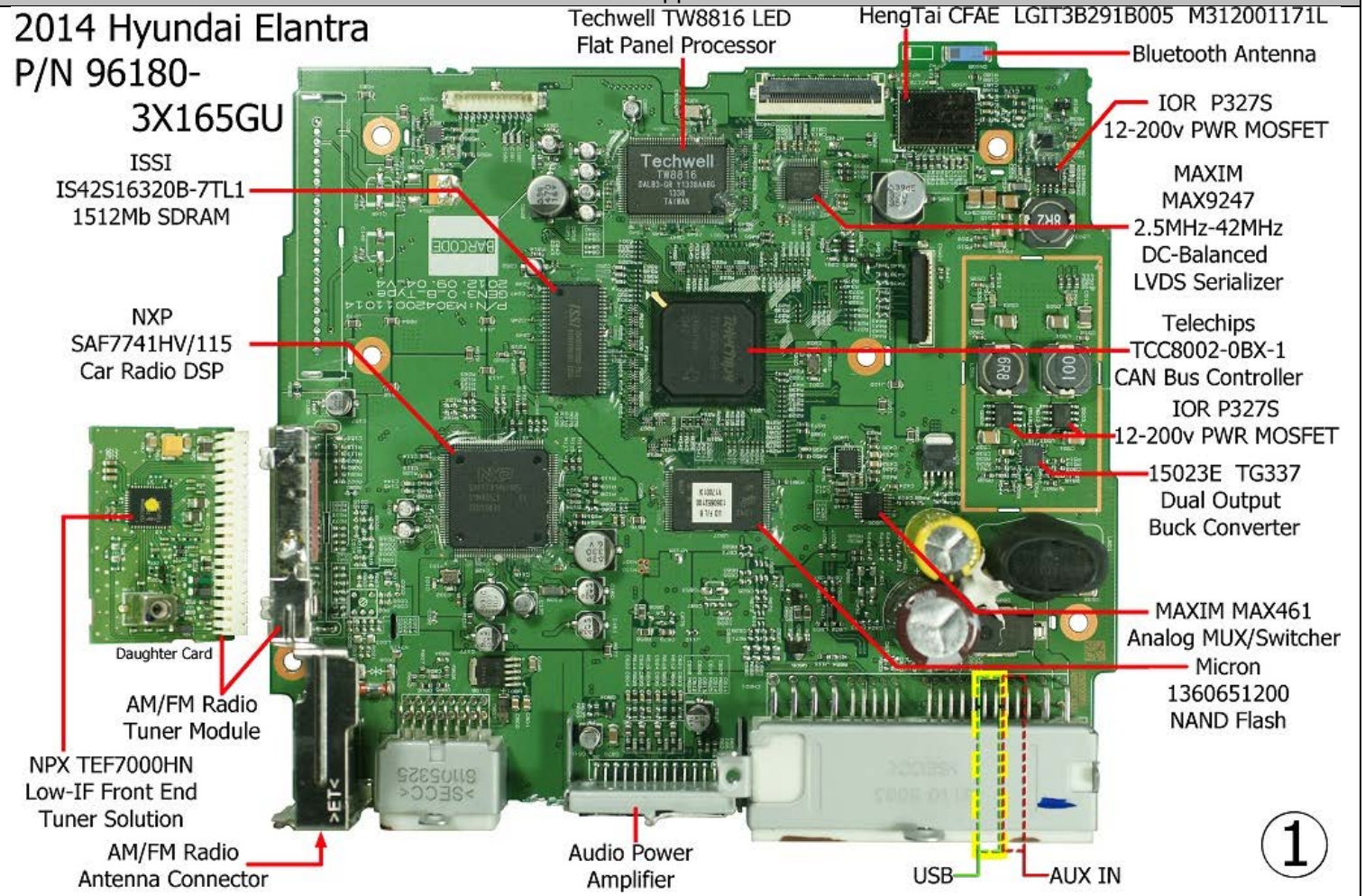
See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:99, 4:115-16.[1]

See also Ex. B (2016 Hyundai Sonata Android Audio).[2]

[1] Blitzsafe has produced Ex. A, 2011 Hyundai Elantra Owner's Manual, simultaneously with these Infringement Contentions as a document bearing production numbers BS-HK-0000004 – 385. All pin-cites are to manual pages.
[2] Blitzsafe has produced Ex. B, 2016 Hyundai Sonata Android Audio, simultaneously with these Infringement Contentions as a document bearing production numbers BS-HK-0000694 – 701. All pin-cites are to manual pages.

Claim	Support
[1B] a second connector electrically connectable to an after-market audio device external to the car stereo;	Each device integration system of accused Hyundai automobiles includes "a second connector electrically connectable to an after-market audio device external to the car stereo" because, as set forth below, the after-market audio device receives commands for controlling its operation from the car stereo, and because the car stereo receives information from the after-market audio device regardless of the particular configuration of the device integration system. The second connector is for connecting to a USB cable (or, in some cases, a combination USB/AUX cable) for mating with an after-market audio device external to the car stereo, such as an iPad, iPhone or other smart device playing MP3 files or streaming radio and other audio content from the Internet or from applications, such as Google Play Music, Spotify and Pandora apps.

Claim	Support
	

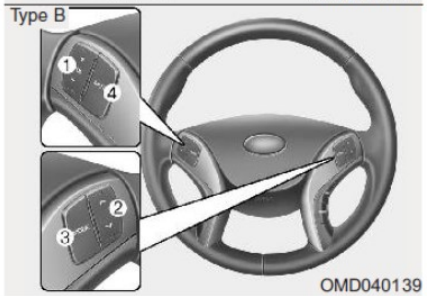
Claim	Support
	Features of your vehicle **⚠ WARNING** **The following must be observed when installing ANY floor mat to the vehicle, so that it will not interfere with the pedal.** **• Ensure that the floor mats are securely attached to the vehicle's floor mat anchor(s) before driving the vehicle.** **• Do not use ANY floor mat that cannot be firmly attached to the vehicle's floor mat anchors.** **• Do not stack floor mats on top of one another (e.g. all-weather rubber mat on top of a carpeted floor mat). Only a single floor mat should be installed in each position.** **IMPORTANT – Your vehicle was manufactured with driver's side floor mat anchors that are designed to securely hold the floor mat in place. To avoid any interference with pedal operation, HYUNDAI recommends that only the HYUNDAI floor mat designed for use in your vehicle be installed.** **Aux, USB and iPod® port** If your vehicle has an aux and/or USB(universal serial bus) port or iPod port, you can use an aux port to connect audio devices and a USB port to plug in a USB, or use the HYUNDAI accessory ipod cable the plugs into both ports to connect an ipod. **✱ NOTICE** **When using a portable audio device connected to the power outlet, noise may occur during playback. If this happens, use the power source of the portable audio device.** ⁂ iPod® is a trademark of Apple Inc. **Navigation system (if equipped)** The navigation system ascertains the present position of your vehicle by using information from satellites and guides you to the place you assign as the destination. Detailed information for the navigation system is described in a seperate manual. **Bluetooth hands-free (if equipped)** You can use the phone wirelessly by using the Bluetooth. Detailed information for the Bluetooth hands-free is described in the "Audio section" in this chapter or in the manual supplied separately. 4 97

Claim	Support

Type A

OMD040139N

Type B



OMD040139

Steering wheel audio control (if equipped)

The steering wheel may incorporate audio control buttons.

⚠ CAUTION

Do not operate audio remote control buttons simultaneously.

1. VOLUME (VOL+/-)

- Push the lever upward (+) to increase the volume.
- Push the lever downward (-) to decrease the volume.

2. PRESET/SEEK (∧ / ∨)

The SEEK/PRESET button has different functions based on the system mode.

For the following functions the button should be pressed for 0.8 second or more.

RADIO mode

It will function as the AUTO SEEK select button.

CD/USB/iPod mode

It will function as the FF/REW button.

If the SEEK/PRESET button is pressed for less than 0.8 second, it will work as follows in each mode.

RADIO mode

It will function as the PRESET STATION buttons.

CD/USB/iPod mode

It will function as TRACK UP/DOWN button.

3. MODE

Press the button to change audio source.

- FM(1~2)➡AM➡SAT(1~3)➡CD➡USB AUX(iPod) FM...

4. MUTE (if equipped)

- Press the button to mute the sound.
- Press the button to turn off the microphone during a telephone call.

Detailed information for audio control buttons are described in the following pages in this section.

4 | 99

Claim	Support

✻ NOTICE FOR USING THE iPod® DEVICE

- Some iPod models might not support the communication protocol and the files will not be played.
  Supported iPod models:
  - iPod Mini
  - iPod 4th(Photo) ~ 6th(Classic) generation
  - iPod Nano 1st~4th generation
  - iPod Touch 1st~2nd generation
- The order of search or playback of songs in the iPod can be different from the order searched in the audio system.
- If the iPod disabled due to its own malfunction, reset the iPod. (Reset: Refer to iPod manual)
- An iPod may not operate normally on low battery.
- Some iPod devices, such as the iPhone, can be connected through the Bluetooth® interface. The device must have audio Bluetooth® capability (such as for stereo headphone Bluetooth®). The device can play, but it will not be controlled by the audio system.

⚠ CAUTION IN USING THE iPod® DEVICE

- *The Hyundai iPod Power Cable is needed in order to operate iPod with the audio buttons on the audio system. The USB cable provided by Apple may cause malfunction and should not be used for Hyundai vehicles.*
  ✻ *The Hyundai iPod Power Cable may be purchased through your Hyundai Dealership.*
- *When connecting iPod with the iPod Power Cable, insert the connector to the multimedia socket completely. If not inserted completely, communications between iPod and audio may be interrupted.*
- *When adjusting the sound effects of the iPod and the audio system, the sound effects of both devices will overlap and might reduce or distort the quality of the sound.*
- *Deactivate (turn off) the equalizer function of an iPod when adjusting the audio system's volume, and turn off the equalizer of the audio system when using the equalizer of an iPod.*

(Continued)

(Continued)

- *When the iPod cable is connected, the system can be switched to AUX mode even without iPod device and may cause noise. Disconnect the iPod cable when you are not using the iPod device.*
- *When not using iPod with car audio, detach the iPod cable from iPod. Otherwise, iPod may remain in accessory mode, and may not work properly.*

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Claim	Support

MD_USA_iPod

Using iPod®

∗ iPod® is a trademark of Apple Inc.

1. CD/AUX Button (iPod)

If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod.
If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode.

2. TRACK Button

- Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played.
  Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track.
  Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed.
- Press the SEEK button for less than 0.8 seconds to move to the next track.
  Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed.

MD_USA_iPod

3. 1 Button (RANDOM)

- Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random)
- Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random)
- To cancel RANDOM Play, press this button again.

4. 2 Button (REPEAT)

Repeats the song currently played.

5. 3 Button (CATEGORY)

Moves to the upper category from currently played category of the iPod.
To move to (play) the category (song) displayed, MENU 3.
You will be able to search through the lower category of the selected category.

6. INFO Button

Displays the information of the file currently played in the order of
TITLE ➡ ARTIST ➡ ALBUM ➡ NORMAL DISPLAY ➡ TITLE... (Displays no information if the file has no song information.)

4 116

See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:97, 99, 115-16.

Claim	Support

iPod

Using iPod Devices

- iPod is a registered trademark of Apple Inc.
- iPod mode will not operate if the connected iPod cannot be recognized due to operation of unsupported versions that do not support related protocols, iPod abnormalities, or iPod device defects. Some iPods with unsupported communication protocols may not properly operate with the Multimedia system.
- For fifth generation iPod Nano devices, the iPod may not be recognized when the battery level is low. Please charge the iPod for use.
- Search/play orders shown within the iPod device may differ with the orders shown within the Multimedia system.
- If the iPod malfunctions due to an iPod device defect, reset the iPod and try again. (To learn more, refer to your iPod manual)
- If repeatedly connect and disconnect iPod/iPhone to the Multimedia system with USB cable in short time, it may cause abnormal operation.
- The time for recognition of iPod/iPhone may vary depending on device type, firmware version and iOS version.
- For some iPod Touch and iPhone devices, connecting Bluetooth® while the iPod is operating may result in discontinued iPod sound. When such devices with Bluetooth® support are connected, this problem occurs as the sound source is changed from the Dock Connector (USB connector cable) to Bluetooth.
- To prevent this symptom, Bluetooth Audio function in the Multimedia system is limited if iPod/iPhone is connected to the system through both cable and Bluetooth. To listen to the iPod sound, use either iPod menu with USB connection or Bluetooth Audio with Bluetooth connection.
- To listen to the iPod sound, reconnect the USB cable or change the audio output settings in iPod/iPhone to Dock.
- In order to use the iPod while operating the keys, you must use a dedicated iPod cable. (the cable that is supplied when purchasing iPod/ iPhone products)

※ During ACC ON state, connecting the iPod through the iPod cable (The cable that is supplied when purchasing iPod/ iPhone product.) will charge the iPod through the head unit.

※ **The use of genuine iPod cables supplied by Apple is recommended. (The use of other products may result in noise or abnormal operation.)**

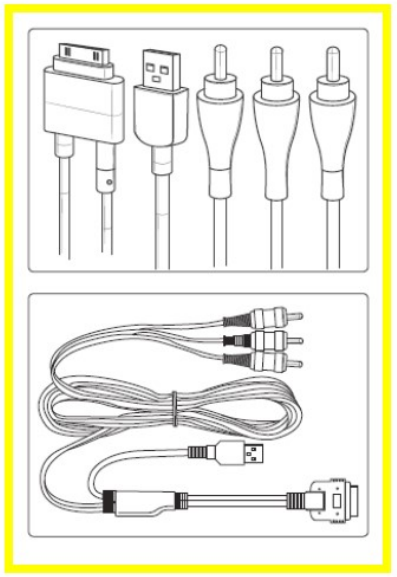
2-30 I AV

Claim	Support
	• When connecting with the iPod cable, make sure to fully insert the jack to prevent communication interference. If the iPod is connected to the vehicle while it is playing, a high pitch tone may sound for about 1~2 seconds immediately after connection. If possible, connect the iPod to the vehicle with the iPod stopped/ paused. • Within iPhones, streaming audio and iPod control may occasionally conflict. If problems persist, remove the iPhone and connect again. • When connecting to iPod Nano /Classic, the HYUNDAI Motor logo appears on the Apple device. For the iPod Nano 6 generation, however, the logo image does not appear since it is not supported. Also, all iPhone and iPod Touch products do not support this function. • In Apple's iOS 6.0 version or later, Podcast and Audiobook media files are designed to be played with the Podcasts and iBooks applications specifically designed for Apple products. If the Apple device does not provide the Podcast and Audiobook lists, the playlist may not be displayed and played in the AVN iPod mode. • If the Apple Podcasts and iBooks apps are not installed on the Apple device, but the Apple device provides the Podcast and Audiobook lists, you can play files in other categories in AVN iPod mode.

Claim	Support

Caution

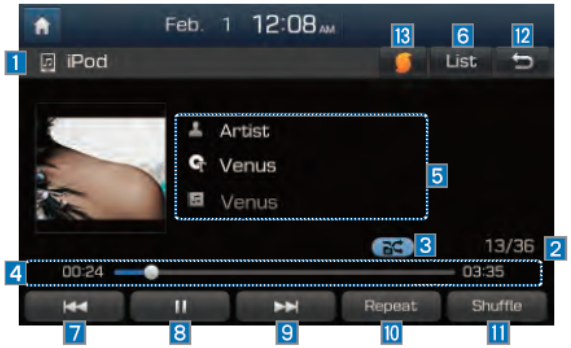
- If the iPhone/iPod Touch supports Bluetooth, it is unable to use Bluetooth Audio if the Apple device that is connected to the Multimedia system through both USB connection and Bluetooth. Disconnect the USB connection then use Bluetooth Audio
- If iPod/iPhone connected to the Multimedia system through both USB and AUX. iPod/iPhone keeps output sound via AUX, thus it may occur sound will not output in iPod mode.
- If AUX cable connected to iPod/iPhone but not connect to the Multimedia system, it may occur sound will not output in iPod mode due to iPod/iPhone's feature. Especially, if you use AUX cable like pictures, this problem may occur.
- Disconnect AUX cable from iPod/iPhone first, then connect to the Multimedia system via USB. Or change settings to "Dock" in iPod/iPhone.
- If connect to the Multimedia system while podcast or iTunes music downloading to iPod/iPhone, it may occur some problems when you select song in the list. Reconnect iPod/iPhone to the Multimedia system when downloading is finished or the file deleted.
- If connect to the Multimedia system while sync, it may occur some problems. Try to use iPod/iPhone connection after sync complete. (To learn more, refer to your iPod manual)
- iPhone and iPod Touch devices are guaranteed to work normally on iOS 7.0.6 or below. However, they may not work normally on future iOS versions as their operations have not yet been tested.



iPod I 2-33

Claim	Support

iPod



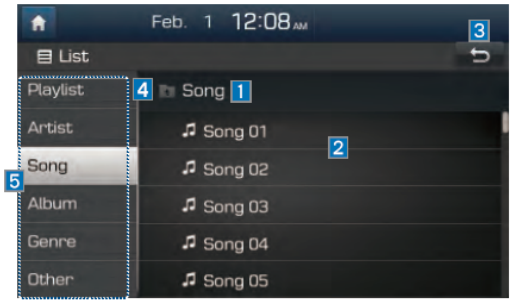
Features	Description
1 Mode	Displays current operating mode
2 Song Index	Shows the current song/total songs
3 Repeat/Shuffle	From Repeat/Shuffle, displays the current operating function
4 Play Time	Displays the current play time/total play time
5 Song Info	Displays the artist/song title/album info
6 List	Moves to the list screen

Features	Description
7 Previous File	If button is pressed (less than 0.8 seconds): Moves to the previous file or play the current file from the beginning (Depends on the play time) • If play time is less than 3 seconds, moves to previous file • If play time is over than 3 seconds, play the current file from the beginning If button is pressed (over than 0.8 seconds) it rewinds the track.
8 Play/Pause	Plays/pauses the current file
9 Next File	• If button is pressed (less than 0.8 seconds), Moves to the next file • If button is pressed (over than 0.8 seconds), it does fast-forward the track.
10 Repeat	Repeats the current file Press the Repeat button to switch between repeating 1 track, and turning repeat off
11 Shuffle	Plays files in random order When pressing Shuffle button, it changes to shuffle category → deactivate shuffle then repeat • Shuffle Category: Shuffle song in the current category
12 Back Button	Move to home/previous mode screen
13 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.

Claim	Support

Features	Description
14 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track
15 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. i If the ● TUNE knob is not pressed within 5 seconds of searching tracks, the track info for the current track is restored.

Claim	Support



Features	Description
1 Category Name	Displays the category name
2 Category List	Displays the contents of selected category ⓘ If there are many items in the list, items are added in order and the scroll bar on the right is adjusted accordingly.
3 Back Button	Converts to basic mode screen
4 Upper Folder	Moves to Upper Folder
5 Search Menu	Search tracks by the list type. Search songs according to Playlist, Artist, Song, Album, and Genre. ⓘ If access the search menu while playing a track, it moves to the previous search mode.
6 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track.
7 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. ⓘ If you do not anything with the knob for 5 seconds, the ● TUNE knob search will be terminated.

2-36 I AV

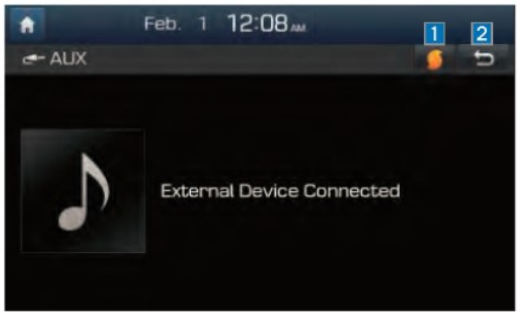
Claim	Support

AUX

Connecting an External Device

If an external device connector is connected with the AUX terminal, then AUX mode will automatically operate. Once the connector is disconnected, the previous mode will be restored.

- AUX mode can be used only when an external audio player has been connected.
- The AUX volume can also be controlled separately through the connected device.



Features	Description
1 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.
2 Back Button	Move to home/previous mode screen

Information

- SEEK TRACK key, TUNE is not supported.

NOTICE

- If only a cable is connected to the AUX without an external device, the mode will be changed to AUX, but noise may occur. When an external device is not being used, remove the connector jack.
- When the external device power is connected to the power jack, playing the external device may output noise. In such cases, disconnect the power connection before use.

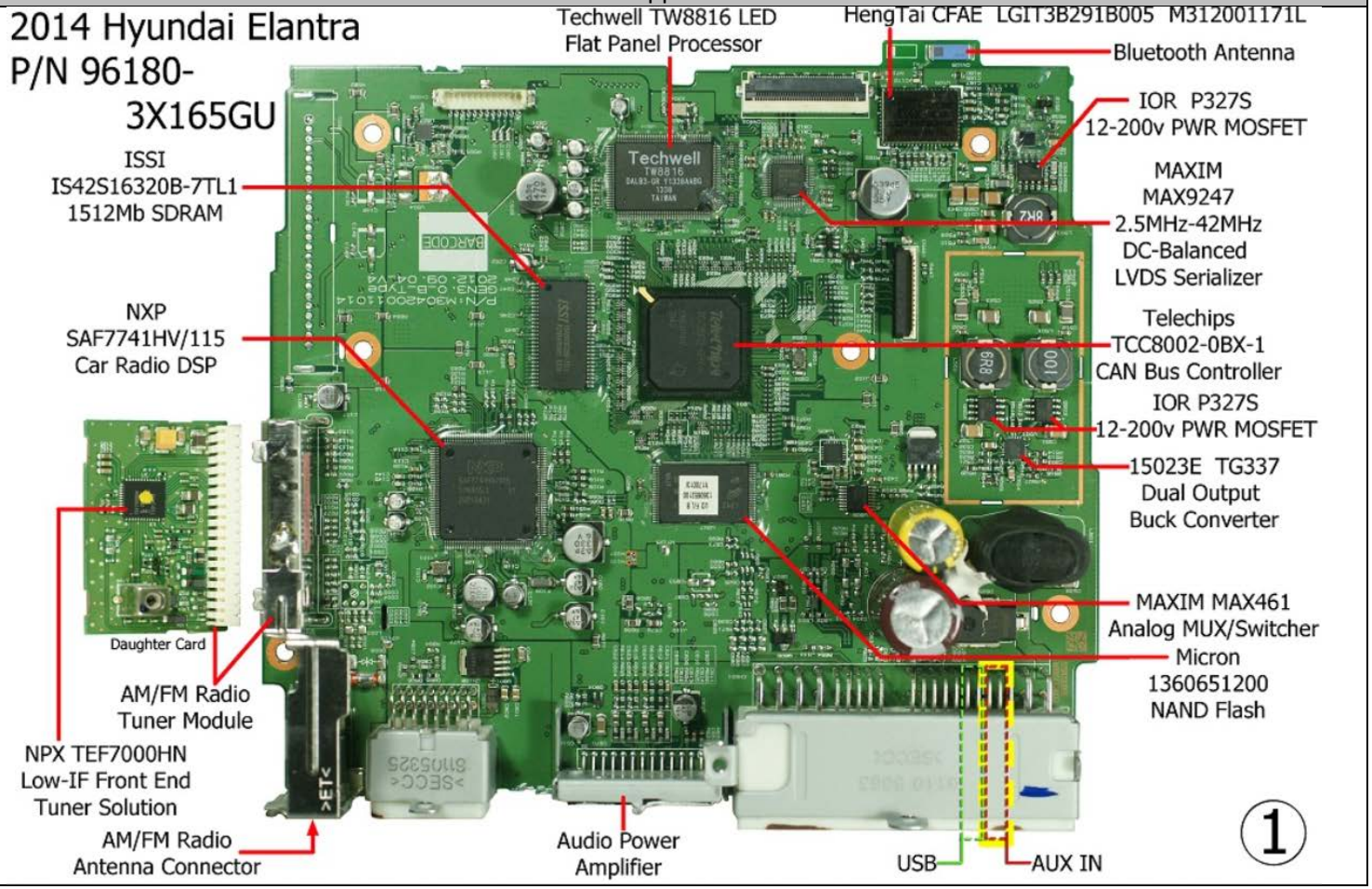
See, e.g., Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:30-37[3]

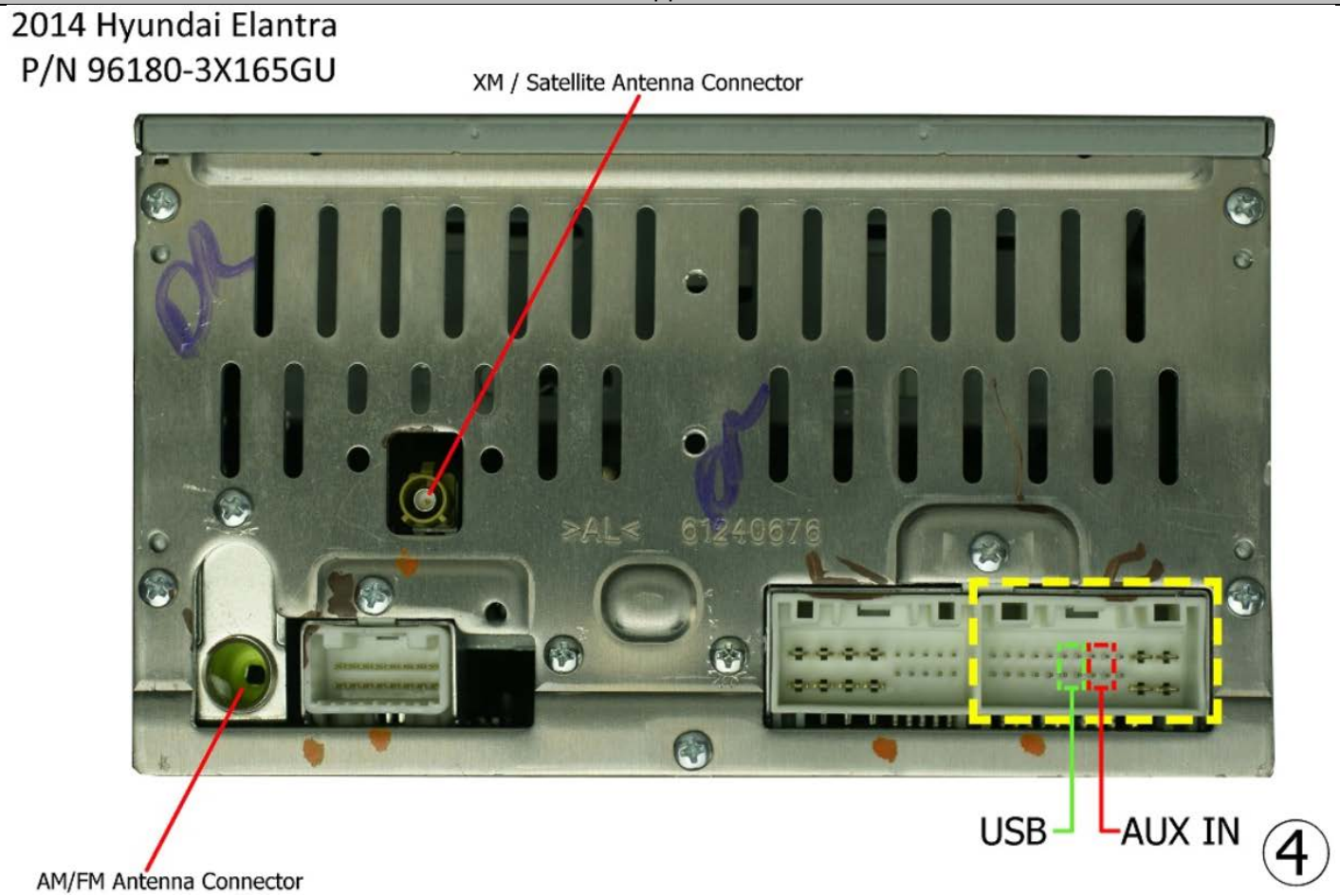
See also Ex. B (2016 Hyundai Sonata Android Audio);

See, e.g., 2012 Hyundai Veloster – Pandora: https://www.youtube.com/watch?v=eqvvfxgj2KQ; Hyundai i30 iPod demo: https://www.youtube.com/watch?v=Hty_7vvJtyw.

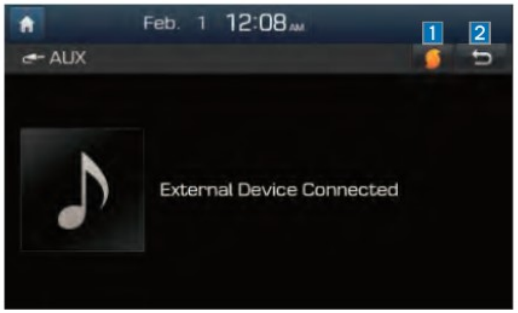
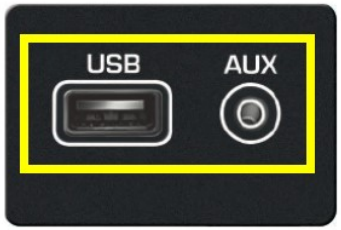
[3] Blitzsafe has produced Ex. C, 2016 Hyundai Sonata Multimedia System Manual, simultaneously with these Infringement Contentions as a document bearing production numbers BS-HK-0000386 – 693. All pin-cites are to manual pages.

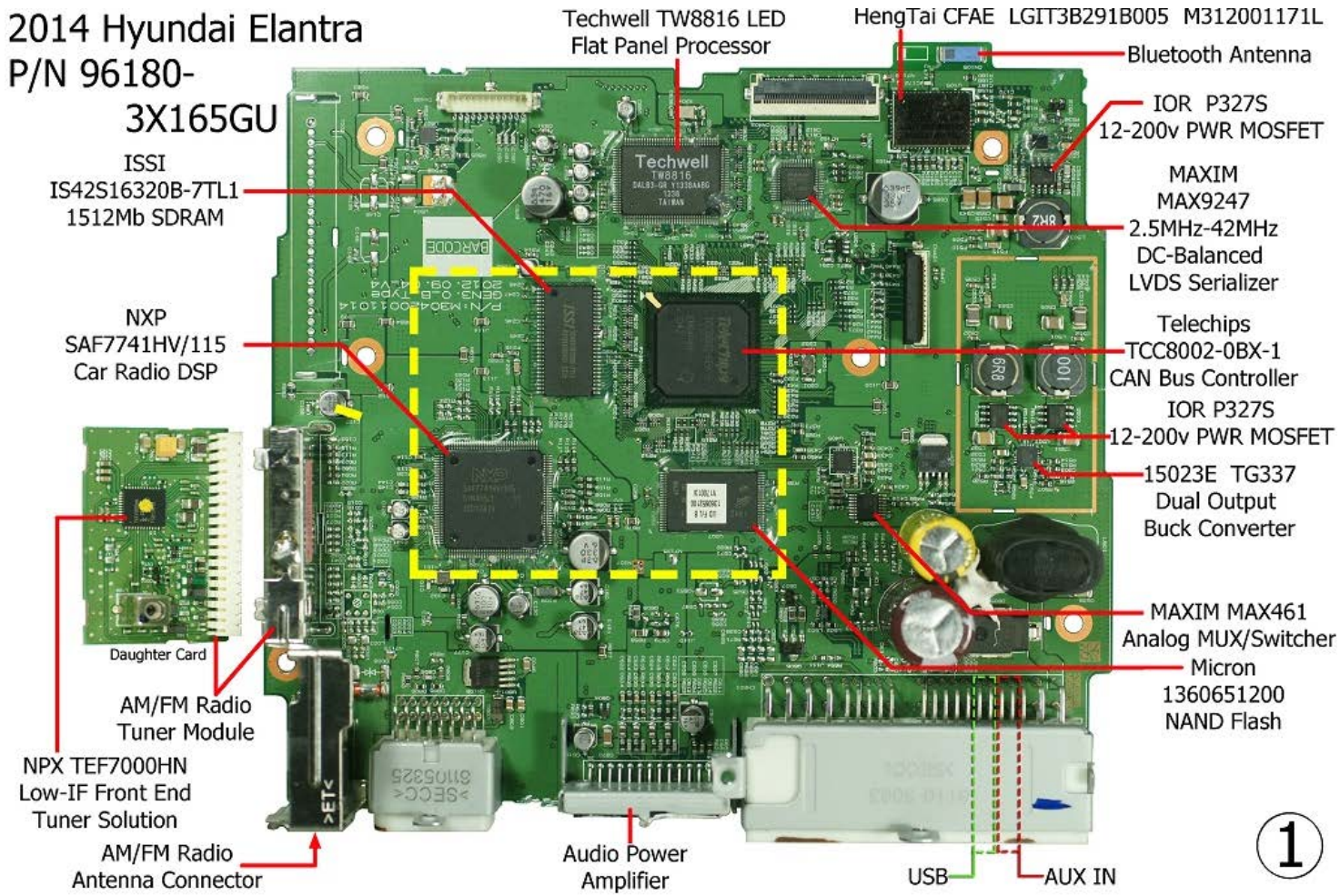
Claim	Support
[1C] a third connector electrically connectable to one or more auxiliary input sources external to the car stereo and the after-market audio device;	Each device integration system of accused Hyundai automobiles includes "a third connector electrically connectable to one or more auxiliary input sources external to the car stereo and the after-market audio device." Specifically, accused Hyundai automobiles are provided with an "AUX terminal" at one or more locations in the automobile, such as in the center console. The auxiliary input jack is connected via the third connector, which is believed to be included in one of the connectors within the yellow dashed box below, to the device integration system and permits audio from a device connected to the auxiliary input jack to be played through the automobile's speakers.

Claim	Support
	

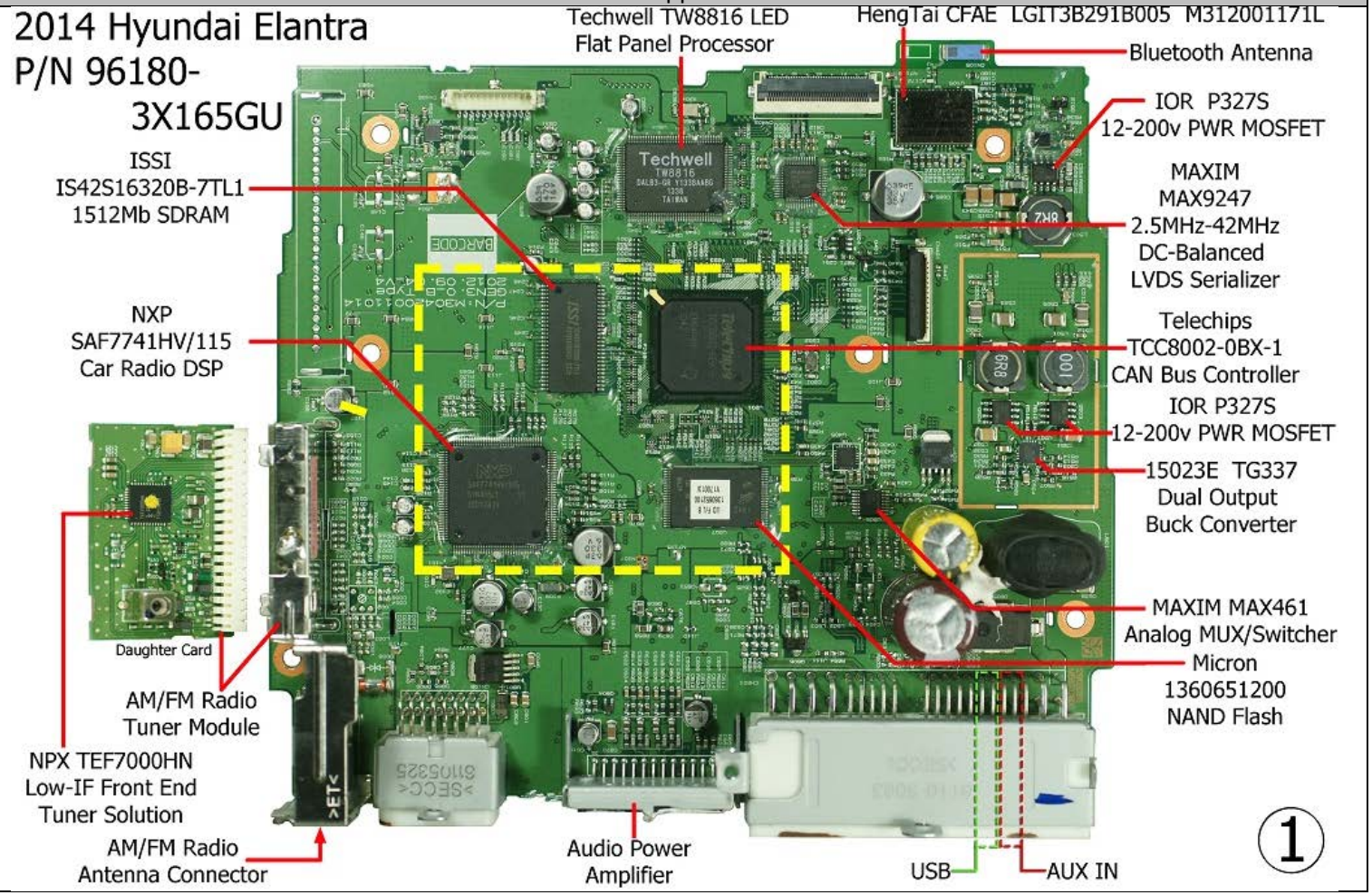
Claim	Support
	

Claim	Support
	Features of your vehicle **⚠ WARNING** **The following must be observed when installing ANY floor mat to the vehicle, so that it will not interfere with the pedal.** **• Ensure that the floor mats are securely attached to the vehicle's floor mat anchor(s) before driving the vehicle.** **• Do not use ANY floor mat that cannot be firmly attached to the vehicle's floor mat anchors.** **• Do not stack floor mats on top of one another (e.g. all-weather rubber mat on top of a carpeted floor mat). Only a single floor mat should be installed in each position.** **IMPORTANT – Your vehicle was manufactured with driver's side floor mat anchors that are designed to securely hold the floor mat in place. To avoid any interference with pedal operation, HYUNDAI recommends that only the HYUNDAI floor mat designed for use in your vehicle be installed.** **Aux, USB and iPod® port** If your vehicle has an aux and/or USB(universal serial bus) port or iPod port, you can use an aux port to connect audio devices and a USB port to plug in a USB, or use the HYUNDAI accessory ipod cable the plugs into both ports to connect an ipod. **✱ NOTICE** **When using a portable audio device connected to the power outlet, noise may occur during playback. If this happens, use the power source of the portable audio device.** ✻ iPod® is a trademark of Apple Inc. **Navigation system (if equipped)** The navigation system ascertains the present position of your vehicle by using information from satellites and guides you to the place you assign as the destination. Detailed information for the navigation system is described in a seperate manual. **Bluetooth hands-free (if equipped)** You can use the phone wirelessly by using the Bluetooth. Detailed information for the Bluetooth hands-free is described in the "Audio section" in this chapter or in the manual supplied separately. 4 97 *See, e.g.,* Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:97

Claim	Support
	AUX **Connecting an External Device** If an external device connector is connected with the AUX terminal, then AUX mode will automatically operate. Once the connector is disconnected, the previous mode will be restored. • AUX mode can be used only when an external audio player has been connected. • The AUX volume can also be controlled separately through the connected device.  Features / Description 1 SoundHound — Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part. 2 Back Button — Move to home/previous mode screen Information • SEEK TRACK key, TUNE is not supported. NOTICE • If only a cable is connected to the AUX without an external device, the mode will be changed to AUX, but noise may occur. When an external device is not being used, remove the connector jack. • When the external device power is connected to the power jack, playing the external device may output noise. In such cases, disconnect the power connection before use.  *See, e.g.,* Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:37.
[1D] an interface connected between said first and second electrical	Each device integration system of the accused Hyundai automobiles includes, among other things, an interface for connecting the car stereo to external audio devices via a USB connector. The interface contained within the device integration system (which interface comprises at least the software and hardware shown in the yellow dashed boxes below, including at least a Telechips microcontroller) is coupled to the USB connector (i.e., the second connector) as well as to at least one car stereo component via the first connector, such as via a circuit board connector, soldered connector, wired connector or software/virtual connector. The interface necessarily channels audio signals to the car stereo from the after-market audio device, as one of the primary functions of the infotainment system within accused Hyundai automobiles is to

Claim	Support
connectors for channeling audio signals to the car stereo from the after-market audio device,	permit audio stored on or streamed from an after-market audio device to play via the car stereo's speakers. 

Claim	Support
[1E] said interface including a microcontroller in electrical communication with said first and second electrical connectors, said microcontroller pre-programmed to execute:	The interface of each device integration system of the accused Hyundai automobiles includes one or more microcontrollers (including at least a Telechips microcontroller) in electrical communication with the first and second electrical connectors for controlling various operations of the infotainment system, such as the radio, display, and interface operations. At least the Telechips microcontroller of the interface (and potentially other microcontrollers on one or more circuit boards of the device integration system, some of which are shown in the yellow dashed box below) executes code to perform various interface functions and is, thus, "pre-programmed" to perform these functions. It is believed that this code is stored in onboard flash and/or other memory modules (such as the Micron flash memory module), and/or is contained within firmware elsewhere in the interface (such as within the Telechips microcontroller itself).

Claim	Support
	

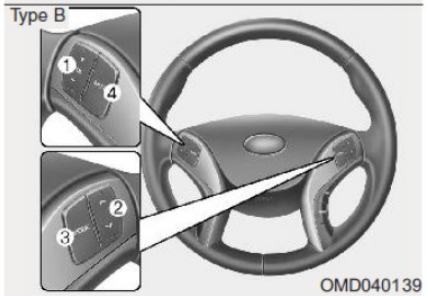
Claim	Support
	Features of your vehicle **⚠ WARNING** **The following must be observed when installing ANY floor mat to the vehicle, so that it will not interfere with the pedal.** **• Ensure that the floor mats are securely attached to the vehicle's floor mat anchor(s) before driving the vehicle.** **• Do not use ANY floor mat that cannot be firmly attached to the vehicle's floor mat anchors.** **• Do not stack floor mats on top of one another (e.g. all-weather rubber mat on top of a carpeted floor mat). Only a single floor mat should be installed in each position.** **IMPORTANT – Your vehicle was manufactured with driver's side floor mat anchors that are designed to securely hold the floor mat in place. To avoid any interference with pedal operation, HYUNDAI recommends that only the HYUNDAI floor mat designed for use in your vehicle be installed.** **Aux, USB and iPod® port** If your vehicle has an aux and/or USB(universal serial bus) port or iPod port, you can use an aux port to connect audio devices and a USB port to plug in a USB, or use the HYUNDAI accessory ipod cable the plugs into both ports to connect an ipod. **✱ NOTICE** **When using a portable audio device connected to the power outlet, noise may occur during playback. If this happens, use the power source of the portable audio device.** ⁂ iPod® is a trademark of Apple Inc. **Navigation system (if equipped)** The navigation system ascertains the present position of your vehicle by using information from satellites and guides you to the place you assign as the destination. Detailed information for the navigation system is described in a seperate manual. **Bluetooth hands-free (if equipped)** You can use the phone wirelessly by using the Bluetooth. Detailed information for the Bluetooth hands-free is described in the "Audio section" in this chapter or in the manual supplied separately. 4 97

Claim	Support

Type A

OMD040139N

Type B



OMD040139

Steering wheel audio control (if equipped)

The steering wheel may incorporate audio control buttons.

⚠ CAUTION

Do not operate audio remote control buttons simultaneously.

1. VOLUME (VOL+/-)

- Push the lever upward (+) to increase the volume.
- Push the lever downward (-) to decrease the volume.

2. PRESET/SEEK (∧ / ∨)

The SEEK/PRESET button has different functions based on the system mode.

For the following functions the button should be pressed for 0.8 second or more.

RADIO mode

It will function as the AUTO SEEK select button.

CD/USB/iPod mode

It will function as the FF/REW button.

If the SEEK/PRESET button is pressed for less than 0.8 second, it will work as follows in each mode.

RADIO mode

It will function as the PRESET STATION buttons.

CD/USB/iPod mode

It will function as TRACK UP/DOWN button.

3. MODE

Press the button to change audio source.

- FM(1~2)➡AM➡SAT(1~3)➡CD➡USB AUX(iPod) FM...

4. MUTE (if equipped)

- Press the button to mute the sound.
- Press the button to turn off the microphone during a telephone call.

Detailed information for audio control buttons are described in the following pages in this section.

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Claim	Support

✻ NOTICE FOR USING THE iPod® DEVICE

- Some iPod models might not support the communication protocol and the files will not be played.
  Supported iPod models:
  - iPod Mini
  - iPod 4th(Photo) ~ 6th(Classic) generation
  - iPod Nano 1st~4th generation
  - iPod Touch 1st~2nd generation
- The order of search or playback of songs in the iPod can be different from the order searched in the audio system.
- If the iPod disabled due to its own malfunction, reset the iPod. (Reset: Refer to iPod manual)
- An iPod may not operate normally on low battery.
- Some iPod devices, such as the iPhone, can be connected through the Bluetooth® interface. The device must have audio Bluetooth® capability (such as for stereo headphone Bluetooth®). The device can play, but it will not be controlled by the audio system.

⚠ CAUTION IN USING THE iPod® DEVICE

- *The Hyundai iPod Power Cable is needed in order to operate iPod with the audio buttons on the audio system. The USB cable provided by Apple may cause malfunction and should not be used for Hyundai vehicles.*
  ✻ *The Hyundai iPod Power Cable may be purchased through your Hyundai Dealership.*
- *When connecting iPod with the iPod Power Cable, insert the connector to the multimedia socket completely. If not inserted completely, communications between iPod and audio may be interrupted.*
- *When adjusting the sound effects of the iPod and the audio system, the sound effects of both devices will overlap and might reduce or distort the quality of the sound.*
- *Deactivate (turn off) the equalizer function of an iPod when adjusting the audio system's volume, and turn off the equalizer of the audio system when using the equalizer of an iPod.*

(Continued)

(Continued)

- *When the iPod cable is connected, the system can be switched to AUX mode even without iPod device and may cause noise. Disconnect the iPod cable when you are not using the iPod device.*
- *When not using iPod with car audio, detach the iPod cable from iPod. Otherwise, iPod may remain in accessory mode, and may not work properly.*

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Claim	Support

MD_USA_iPod

Using iPod®

∗ iPod® is a trademark of Apple Inc.

1. CD/AUX Button (iPod)

If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod.
If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode.

2. TRACK Button

- Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played.
  Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track.
  Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed.
- Press the SEEK button for less than 0.8 seconds to move to the next track.
  Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed.

MD_USA_iPod

3. 1 Button (RANDOM)

- Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random)
- Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random)
- To cancel RANDOM Play, press this button again.

4. 2 Button (REPEAT)

Repeats the song currently played.

5. 3 Button (CATEGORY)

Moves to the upper category from currently played category of the iPod.
To move to (play) the category (song) displayed, MENU 3.
You will be able to search through the lower category of the selected category.

6. INFO Button

Displays the information of the file currently played in the order of
TITLE → ARTIST → ALBUM → NORMAL DISPLAY → TITLE... (Displays no information if the file has no song information.)

4 116

See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:97, 99, 115-16.

Claim	Support

iPod

Using iPod Devices

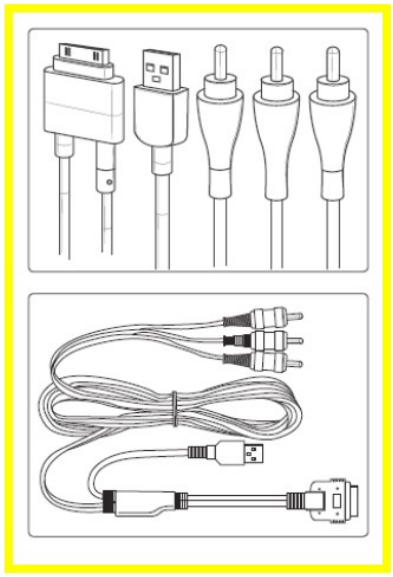
- iPod is a registered trademark of Apple Inc.
- iPod mode will not operate if the connected iPod cannot be recognized due to operation of unsupported versions that do not support related protocols, iPod abnormalities, or iPod device defects. Some iPods with unsupported communication protocols may not properly operate with the Multimedia system.
- For fifth generation iPod Nano devices, the iPod may not be recognized when the battery level is low. Please charge the iPod for use.
- Search/play orders shown within the iPod device may differ with the orders shown within the Multimedia system.
- If the iPod malfunctions due to an iPod device defect, reset the iPod and try again. (To learn more, refer to your iPod manual)
- If repeatedly connect and disconnect iPod/iPhone to the Multimedia system with USB cable in short time, it may cause abnormal operation.
- The time for recognition of iPod/iPhone may vary depending on device type, firmware version and iOS version.
- For some iPod Touch and iPhone devices, connecting Bluetooth® while the iPod is operating may result in discontinued iPod sound. When such devices with Bluetooth® support are connected, this problem occurs as the sound source is changed from the Dock Connector (USB connector cable) to Bluetooth.
- To prevent this symptom, Bluetooth Audio function in the Multimedia system is limited if iPod/iPhone is connected to the system through both cable and Bluetooth. To listen to the iPod sound, use either iPod menu with USB connection or Bluetooth Audio with Bluetooth connection.
- To listen to the iPod sound, reconnect the USB cable or change the audio output settings in iPod/iPhone to Dock.
- In order to use the iPod while operating the keys, you must use a dedicated iPod cable. (the cable that is supplied when purchasing iPod/ iPhone products)

※ During ACC ON state, connecting the iPod through the iPod cable (The cable that is supplied when purchasing iPod/ iPhone product.) will charge the iPod through the head unit.

※ **The use of genuine iPod cables supplied by Apple is recommended. (The use of other products may result in noise or abnormal operation.)**

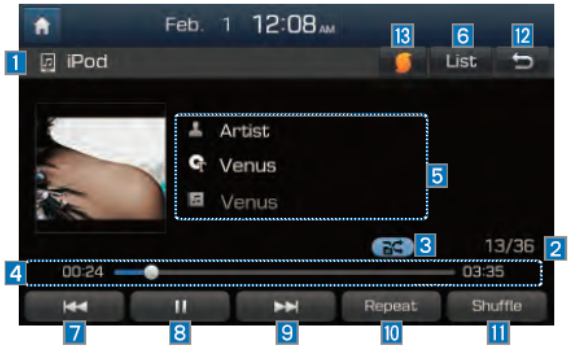
2-30 I AV

Claim	Support
	• When connecting with the iPod cable, make sure to fully insert the jack to prevent communication interference. If the iPod is connected to the vehicle while it is playing, a high pitch tone may sound for about 1~2 seconds immediately after connection. If possible, connect the iPod to the vehicle with the iPod stopped/ paused. • Within iPhones, streaming audio and iPod control may occasionally conflict. If problems persist, remove the iPhone and connect again. • When connecting to iPod Nano /Classic, the HYUNDAI Motor logo appears on the Apple device. For the iPod Nano 6 generation, however, the logo image does not appear since it is not supported. Also, all iPhone and iPod Touch products do not support this function. • In Apple's iOS 6.0 version or later, Podcast and Audiobook media files are designed to be played with the Podcasts and iBooks applications specifically designed for Apple products. If the Apple device does not provide the Podcast and Audiobook lists, the playlist may not be displayed and played in the AVN iPod mode. • If the Apple Podcasts and iBooks apps are not installed on the Apple device, but the Apple device provides the Podcast and Audiobook lists, you can play files in other categories in AVN iPod mode.

Claim	Support
	Caution • If the iPhone/iPod Touch supports Bluetooth, it is unable to use Bluetooth Audio if the Apple device that is connected to the Multimedia system through both USB connection and Bluetooth. Disconnect the USB connection then use Bluetooth Audio • If iPod/iPhone connected to the Multimedia system through both USB and AUX. iPod/iPhone keeps output sound via AUX, thus it may occur sound will not output in iPod mode. • If AUX cable connected to iPod/iPhone but not connect to the Multimedia system, it may occur sound will not output in iPod mode due to iPod/iPhone's feature. Especially, if you use AUX cable like pictures, this problem may occur. • Disconnect AUX cable from iPod/iPhone first, then connect to the Multimedia system via USB. Or change settings to "Dock" in iPod/iPhone. • If connect to the Multimedia system while podcast or iTunes music downloading to iPod/iPhone, it may occur some problems when you select song in the list. Reconnect iPod/iPhone to the Multimedia system when downloading is finished or the file deleted. • If connect to the Multimedia system while sync, it may occur some problems. Try to use iPod/iPhone connection after sync complete. (To learn more, refer to your iPod manual) • iPhone and iPod Touch devices are guaranteed to work normally on iOS 7.0.6 or below. However, they may not work normally on future iOS versions as their operations have not yet been tested.  iPod I 2-33

Claim	Support

iPod



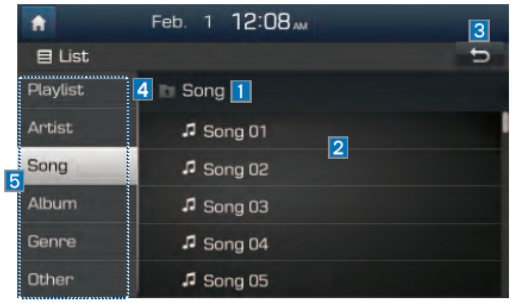
Features	Description
1 Mode	Displays current operating mode
2 Song Index	Shows the current song/total songs
3 Repeat/Shuffle	From Repeat/Shuffle, displays the current operating function
4 Play Time	Displays the current play time/total play time
5 Song Info	Displays the artist/song title/album info
6 List	Moves to the list screen

Features	Description
7 Previous File	If button is pressed (less than 0.8 seconds): Moves to the previous file or play the current file from the beginning (Depends on the play time) • If play time is less than 3 seconds, moves to previous file • If play time is over than 3 seconds, play the current file from the beginning If button is pressed (over than 0.8 seconds) it rewinds the track.
8 Play/Pause	Plays/pauses the current file
9 Next File	• If button is pressed (less than 0.8 seconds), Moves to the next file • If button is pressed (over than 0.8 seconds), it does fast-forward the track.
10 Repeat	Repeats the current file Press the Repeat button to switch between repeating 1 track, and turning repeat off
11 Shuffle	Plays files in random order When pressing Shuffle button, it changes to shuffle category → deactivate shuffle then repeat • Shuffle Category: Shuffle song in the current category
12 Back Button	Move to home/previous mode screen
13 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.

Claim	Support

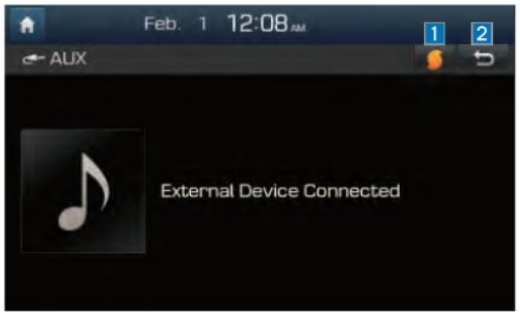
Features	Description
14 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track
15 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. i If the ● TUNE knob is not pressed within 5 seconds of searching tracks, the track info for the current track is restored.

Claim	Support

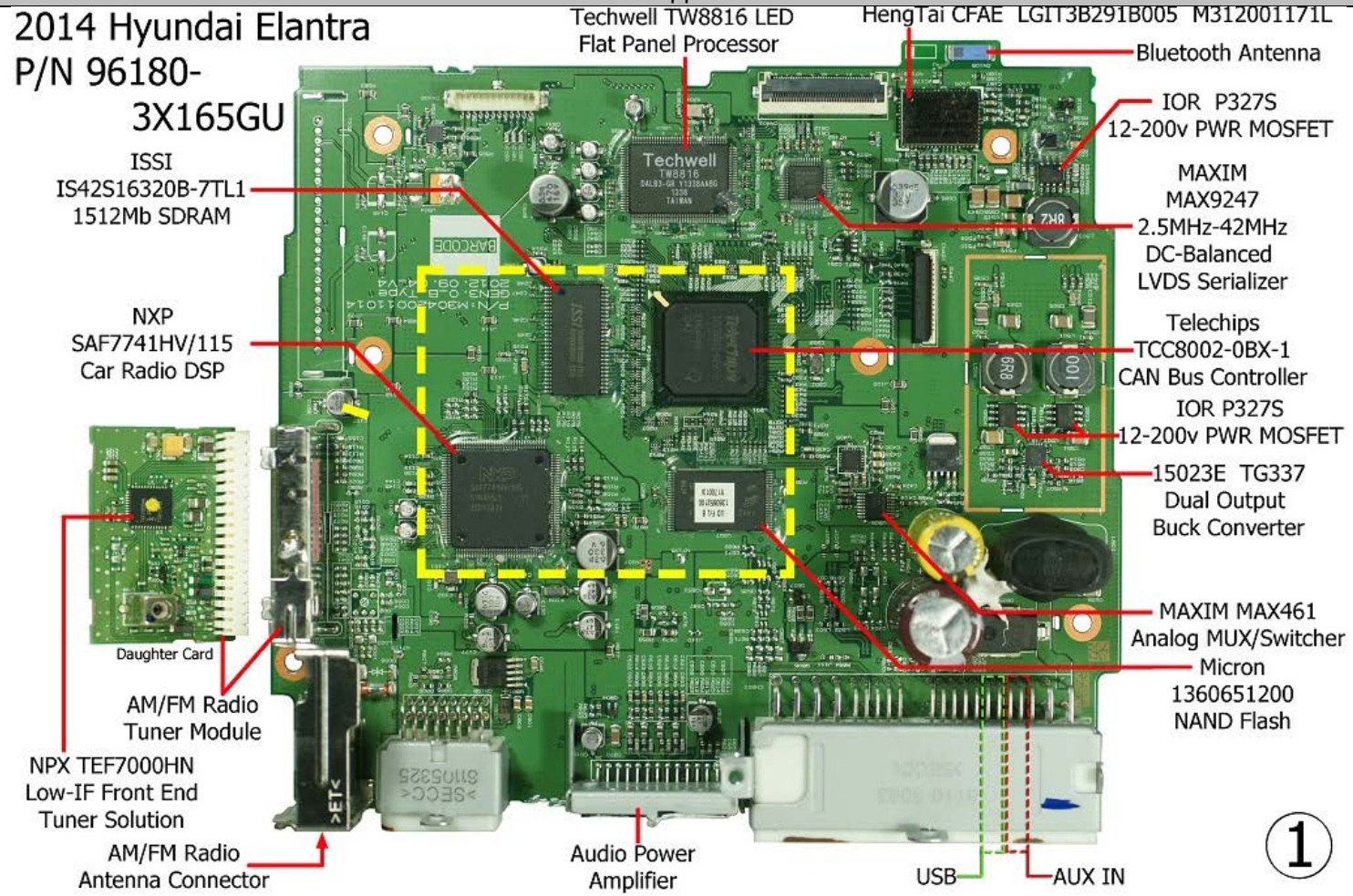


Features	Description
1 Category Name	Displays the category name
2 Category List	Displays the contents of selected category ⓘ If there are many items in the list, items are added in order and the scroll bar on the right is adjusted accordingly.
3 Back Button	Converts to basic mode screen
4 Upper Folder	Moves to Upper Folder
5 Search Menu	Search tracks by the list type. Search songs according to Playlist, Artist, Song, Album, and Genre. ⓘ If access the search menu while playing a track, it moves to the previous search mode.
6 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track.
7 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. ⓘ If you do not anything with the knob for 5 seconds, the ● TUNE knob search will be terminated.

2-36 I AV

Claim	Support
	AUX **Connecting an External Device** If an external device connector is connected with the AUX terminal, then AUX mode will automatically operate. Once the connector is disconnected, the previous mode will be restored. • AUX mode can be used only when an external audio player has been connected. • The AUX volume can also be controlled separately through the connected device.  Features / Description 1 SoundHound — Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part. 2 Back Button — Move to home/previous mode screen Information • SEEK TRACK key, TUNE is not supported. NOTICE • If only a cable is connected to the AUX without an external device, the mode will be changed to AUX, but noise may occur. When an external device is not being used, remove the connector jack. • When the external device power is connected to the power jack, playing the external device may output noise. In such cases, disconnect the power connection before use. *See, e.g.,* Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:30-2:37 *See also* Ex. B (2016 Hyundai Sonata Android Audio). *See, e.g.,* 2012 Hyundai Veloster – Pandora: https://www.youtube.com/watch?v=eqvvfxgj2KQ; Hyundai i30 iPod demo: https://www.youtube.com/watch?v=Hty_7vvJtyw.
[1F] a first pre-	The interface of each device integration system of the accused Hyundai automobiles is pre-programed to execute "a first

Claim	Support
programmed code portion for remotely controlling the after-market audio device using the car stereo by receiving a control command from the car stereo through said first connector in a format incompatible with the after-market audio device, processing the received control command into a formatted command compatible with the after-market audio device, and transmitting the formatted command to the after-	pre-programmed code portion for remotely controlling the after-market audio device using the car stereo by receiving a control command from the car stereo through said first connector in a format incompatible with the after-market audio device, processing the received control command into a formatted command compatible with the after-market audio device, and transmitting the formatted command to the after-market audio device through said second connector for execution by the after-market audio device." More specifically, once connected, commands are received from the car stereo and channeled through the first connector to the interface (including at least the Telechips microcontroller), where they are processed and converted using pre-programmed software from a format understandable and compatible with the car stereo and associated Hyundai protocols (i.e., a format incompatible with the after-market audio device) into formatted commands that are compatible with the after-market audio device (i.e., converted into USB and device-specific protocols understandable to the after-market audio device). These formatted commands are then transmitted to the after-market audio device via the USB connector (i.e., the second connector). The formatted commands are then executed by the after-market audio device. At least the Telechips microcontroller of the interface (and potentially other microcontrollers on one or more circuit boards of the device integration system) executes pre-programmed code to perform at least a portion of these functions. It is believed that this code is stored in onboard flash and/or other memory modules (such as the Micron flash memory module), and/or is contained within firmware elsewhere in the interface (such as within the Telechips microcontroller itself).

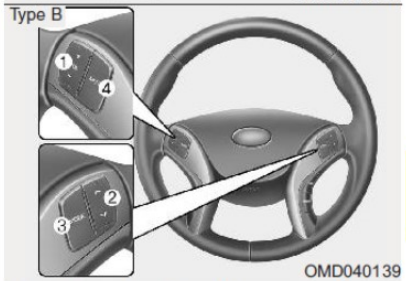
Claim	Support
market audio device through said second connector for execution by the after-market audio device;	

Claim	Support

Type A

OMD040139N

Type B



OMD040139

Steering wheel audio control (if equipped)

The steering wheel may incorporate audio control buttons.

⚠ CAUTION

Do not operate audio remote control buttons simultaneously.

1. VOLUME (VOL+/-)

- Push the lever upward (+) to increase the volume.
- Push the lever downward (-) to decrease the volume.

2. PRESET/SEEK (∧ / ∨)

The SEEK/PRESET button has different functions based on the system mode.
For the following functions the button should be pressed for 0.8 second or more.

RADIO mode

It will function as the AUTO SEEK select button.

CD/USB/iPod mode

It will function as the FF/REW button.

If the SEEK/PRESET button is pressed for less than 0.8 second, it will work as follows in each mode.

RADIO mode

It will function as the PRESET STATION buttons.

CD/USB/iPod mode

It will function as TRACK UP/DOWN button.

3. MODE

Press the button to change audio source.
- FM(1~2)➡AM➡SAT(1~3)➡CD➡USB AUX(iPod) FM...

4. MUTE (if equipped)

- Press the button to mute the sound.
- Press the button to turn off the microphone during a telephone call.

Detailed information for audio control buttons are described in the following pages in this section.

Claim	Support

MD_USA_iPod

Using iPod®

∗ iPod® is a trademark of Apple Inc.

1. CD/AUX Button (iPod)

If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod.
If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode.

2. TRACK Button

- Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played.
  Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track.
  Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed.
- Press the SEEK button for less than 0.8 seconds to move to the next track.
  Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed.

MD_USA_iPod

3. 1 Button (RANDOM)

- Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random)
- Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random)
- To cancel RANDOM Play, press this button again.

4. 2 Button (REPEAT)

Repeats the song currently played.

5. 3 Button (CATEGORY)

Moves to the upper category from currently played category of the iPod.
To move to (play) the category (song) displayed, MENU 3.
You will be able to search through the lower category of the selected category.

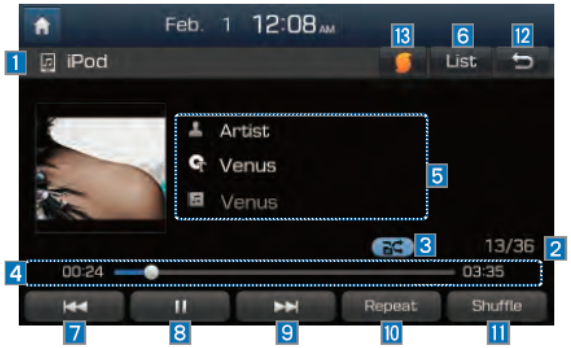
6. INFO Button

Displays the information of the file currently played in the order of
TITLE ➡ ARTIST ➡ ALBUM ➡ NORMAL DISPLAY ➡ TITLE... (Displays no information if the file has no song information.)

Claim	Support
	 7. Search Button Press the TUNE button to display the songs next to the currently played song. press the FILE button to display the songs before to the currently played song. **8. ENTER Button** Press the ENTER button to play the select song. *See, e.g.,* Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:99, 116-117.

Claim	Support

iPod



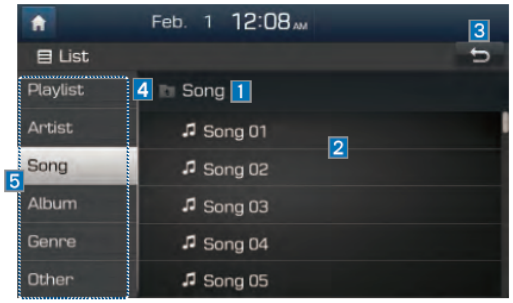
Features	Description
1 Mode	Displays current operating mode
2 Song Index	Shows the current song/total songs
3 Repeat/Shuffle	From Repeat/Shuffle, displays the current operating function
4 Play Time	Displays the current play time/total play time
5 Song Info	Displays the artist/song title/album info
6 List	Moves to the list screen

Features	Description
7 Previous File	If button is pressed (less than 0.8 seconds): Moves to the previous file or play the current file from the beginning (Depends on the play time) • If play time is less than 3 seconds, moves to previous file • If play time is over than 3 seconds, play the current file from the beginning If button is pressed (over than 0.8 seconds) it rewinds the track.
8 Play/Pause	Plays/pauses the current file
9 Next File	• If button is pressed (less than 0.8 seconds), Moves to the next file • If button is pressed (over than 0.8 seconds), it does fast-forward the track.
10 Repeat	Repeats the current file Press the Repeat button to switch between repeating 1 track, and turning repeat off
11 Shuffle	Plays files in random order When pressing Shuffle button, it changes to shuffle category → deactivate shuffle then repeat • Shuffle Category: Shuffle song in the current category
12 Back Button	Move to home/previous mode screen
13 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.

Claim	Support

Features	Description
14 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track
15 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. i If the ● TUNE knob is not pressed within 5 seconds of searching tracks, the track info for the current track is restored.

Claim	Support



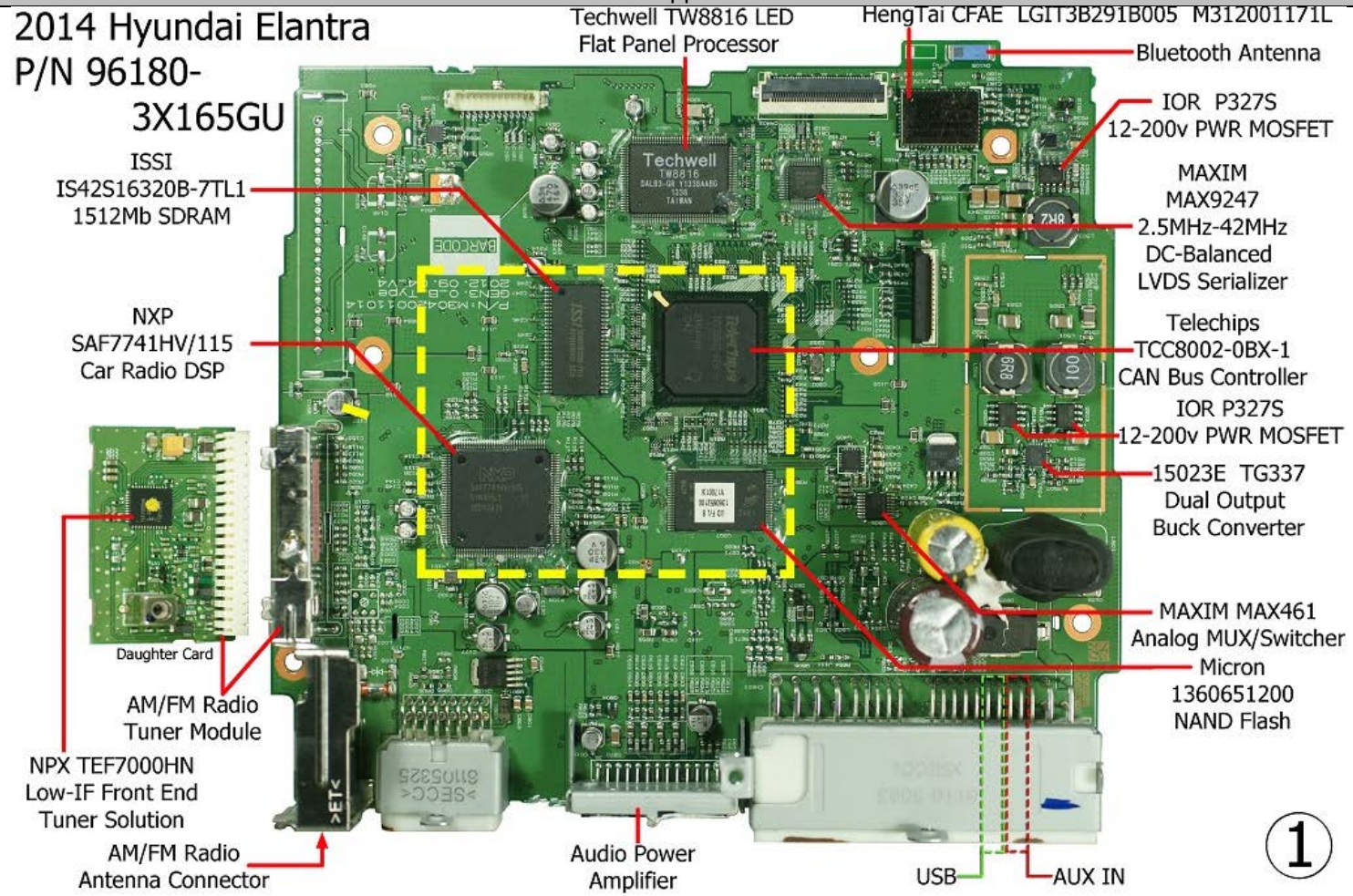
Features	Description
1 Category Name	Displays the category name
2 Category List	Displays the contents of selected category ⓘ If there are many items in the list, items are added in order and the scroll bar on the right is adjusted accordingly.
3 Back Button	Converts to basic mode screen
4 Upper Folder	Moves to Upper Folder
5 Search Menu	Search tracks by the list type. Search songs according to Playlist, Artist, Song, Album, and Genre. ⓘ If access the search menu while playing a track, it moves to the previous search mode.
6 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track.
7 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. ⓘ If you do not anything with the knob for 5 seconds, the ● TUNE knob search will be terminated.

2-36 I AV

See, e.g., Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:34-36.

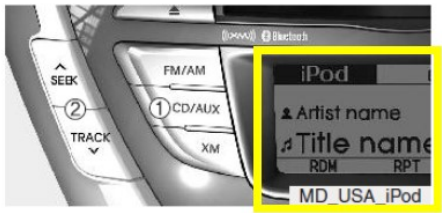
See also Ex. B (2016 Hyundai Sonata Android Audio);

Claim	Support
	See, e.g., 2012 Hyundai Veloster – Pandora: https://www.youtube.com/watch?v=eqvvfxgj2KQ; Hyundai i30 iPod demo: https://www.youtube.com/watch?v=Hty_7vvJtyw.
[1G] a second pre-programmed code portion for receiving data from the after-market audio device through said second connector in a format incompatible with the car stereo, processing the received data into formatted data compatible with the car stereo, and transmitting the formatted data to the car stereo through said first connector for display by the car stereo; and	The interface of each device integration system of the accused Hyundai automobiles is pre-programed to execute "a second pre-programmed code portion for receiving data from the after-market audio device through said second connector in a format incompatible with the car stereo, processing the received data into formatted data compatible with the car stereo, and transmitting the formatted data to the car stereo through said first connector for display by the car stereo." More specifically, in response to one or more formatted commands executed by the after-market audio device, the after-market audio device transmits data (such as audio, video, songs, album, track, cover art, genre and artist information) to the device integration system via the USB connector (i.e., the second connector). The data is then received by the interface of the device integration system (including at least the Telechips microcontroller), where the data is processed and converted using pre-programmed software from a format incompatible with the car stereo and understandable and compatible with the after-market audio device (i.e., USB and device-specific protocols understandable to the after-market audio device) into formatted data compatible with the car stereo (i.e., formatted data understandable and compatible with the car stereo and associated Hyundai protocols). The formatted data is then transmitted by the interface (including at least the Telechips microcontroller) to the car stereo via the first connector for display by the car stereo. At least the Telechips microcontroller of the interface (and potentially other microcontrollers on one or more circuit boards of the device integration system) executes pre-programmed code to perform at least a portion of these functions. It is believed that this code is stored in onboard flash and/or other memory modules (such as the Micron flash memory module), and/or is contained within firmware elsewhere in the interface (such as within the Telechips microcontroller itself).

Claim	Support
	

Claim	Support

Features of your vehicle



Using iPod®

* iPod® is a trademark of Apple Inc.

1. CD/AUX Button (iPod)

If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod.
If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode.

2. TRACK Button

- Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played.
  Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track.
  Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed.
- Press the SEEK button for less than 0.8 seconds to move to the next track.
  Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed.

3. 1 Button (RANDOM)

- Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random)
- Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random)
- To cancel RANDOM Play, press this button again.

4. 2 Button (REPEAT)

Repeats the song currently played.

5. 3 Button (CATEGORY)

Moves to the upper category from currently played category of the iPod.
To move to (play) the category (song) displayed, MENU 3.
You will be able to search through the lower category of the selected category.

6. INFO Button

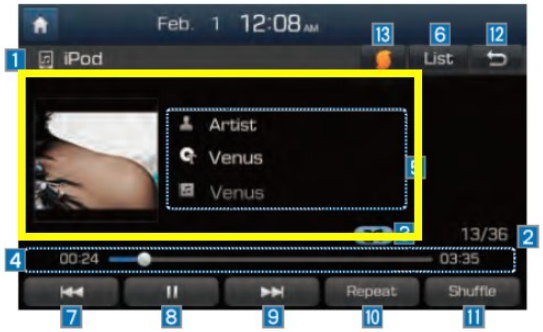
Displays the information of the file currently played in the order of
TITLE → ARTIST → ALBUM → NORMAL DISPLAY → TITLE... (Displays no information if the file has no song information.)

4 | 116

See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:116.

Claim	Support

iPod



Features	Description
1 Mode	Displays current operating mode
2 Song Index	Shows the current song/total songs
3 Repeat/Shuffle	From Repeat/Shuffle, displays the current operating function
4 Play Time	Displays the current play time/total play time
5 Song Info	Displays the artist/song title/album info
6 List	Moves to the list screen

Features	Description
7 Previous File	If button is pressed (less than 0.8 seconds): Moves to the previous file or play the current file from the beginning (Depends on the play time) • If play time is less than 3 seconds, moves to previous file • If play time is over than 3 seconds, play the current file from the beginning If button is pressed (over than 0.8 seconds) it rewinds the track.
8 Play/Pause	Plays/pauses the current file
9 Next File	• If button is pressed (less than 0.8 seconds), Moves to the next file • If button is pressed (over than 0.8 seconds), it does fast-forward the track.
10 Repeat	Repeats the current file Press the Repeat button to switch between repeating 1 track, and turning repeat off
11 Shuffle	Plays files in random order When pressing Shuffle button, it changes to shuffle category → deactivate shuffle then repeat • Shuffle Category: Shuffle song in the current category
12 Back Button	Move to home/previous mode screen
13 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.

2-34 I AV

Claim	Support

Features	Description
1 Category Name	Displays the category name
2 Category List	Displays the contents of selected category ⓘ If there are many items in the list, items are added in order and the scroll bar on the right is adjusted accordingly.
3 Back Button	Converts to basic mode screen
4 Upper Folder	Moves to Upper Folder
5 Search Menu	Search tracks by the list type. Search songs according to Playlist, Artist, Song, Album, and Genre. ⓘ If access the search menu while playing a track, it moves to the previous search mode.
6 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track.
7 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. ⓘ If you do not anything with the knob for 5 seconds, the ● TUNE knob search will be terminated.

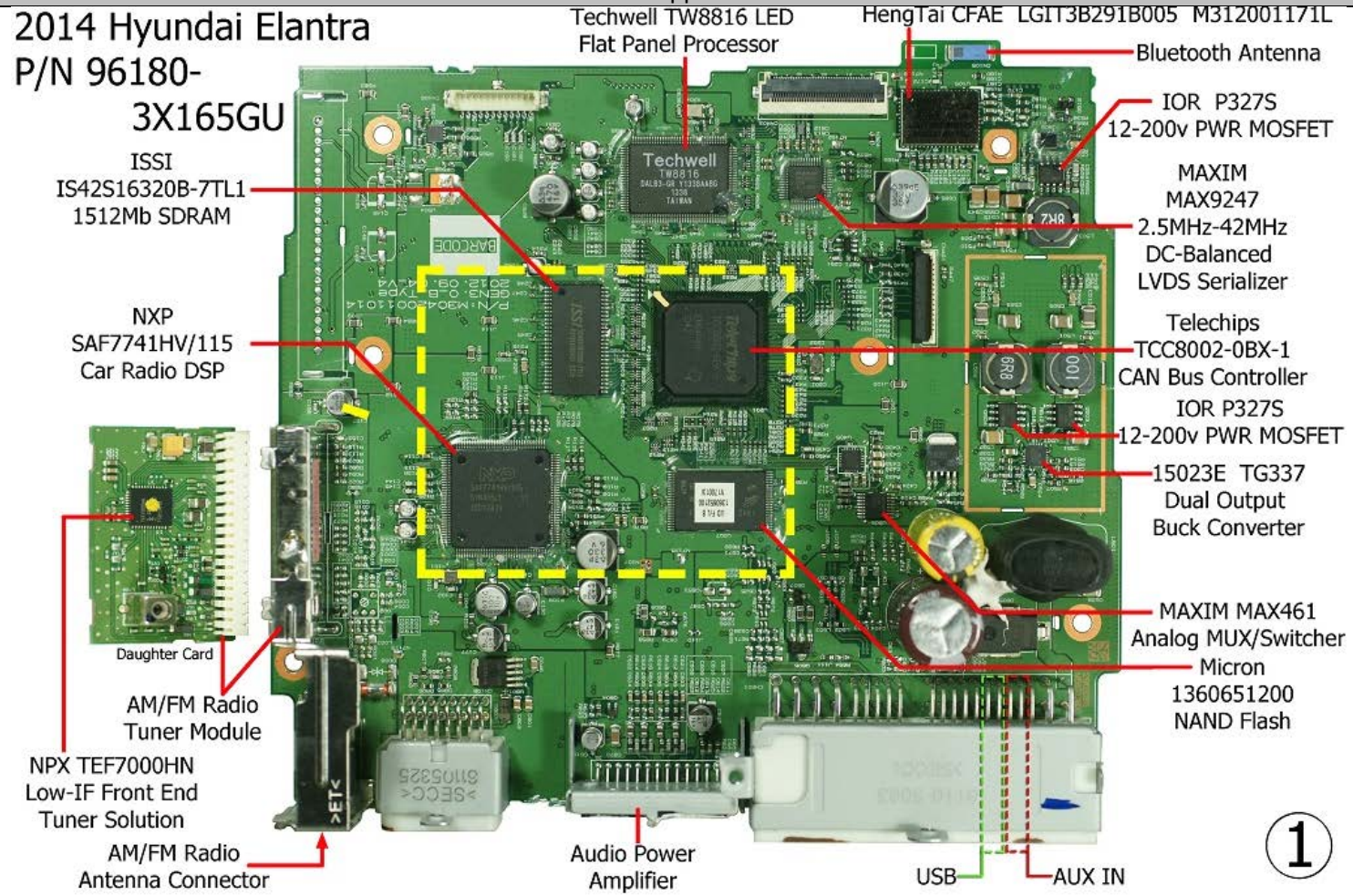
2-36 I AV

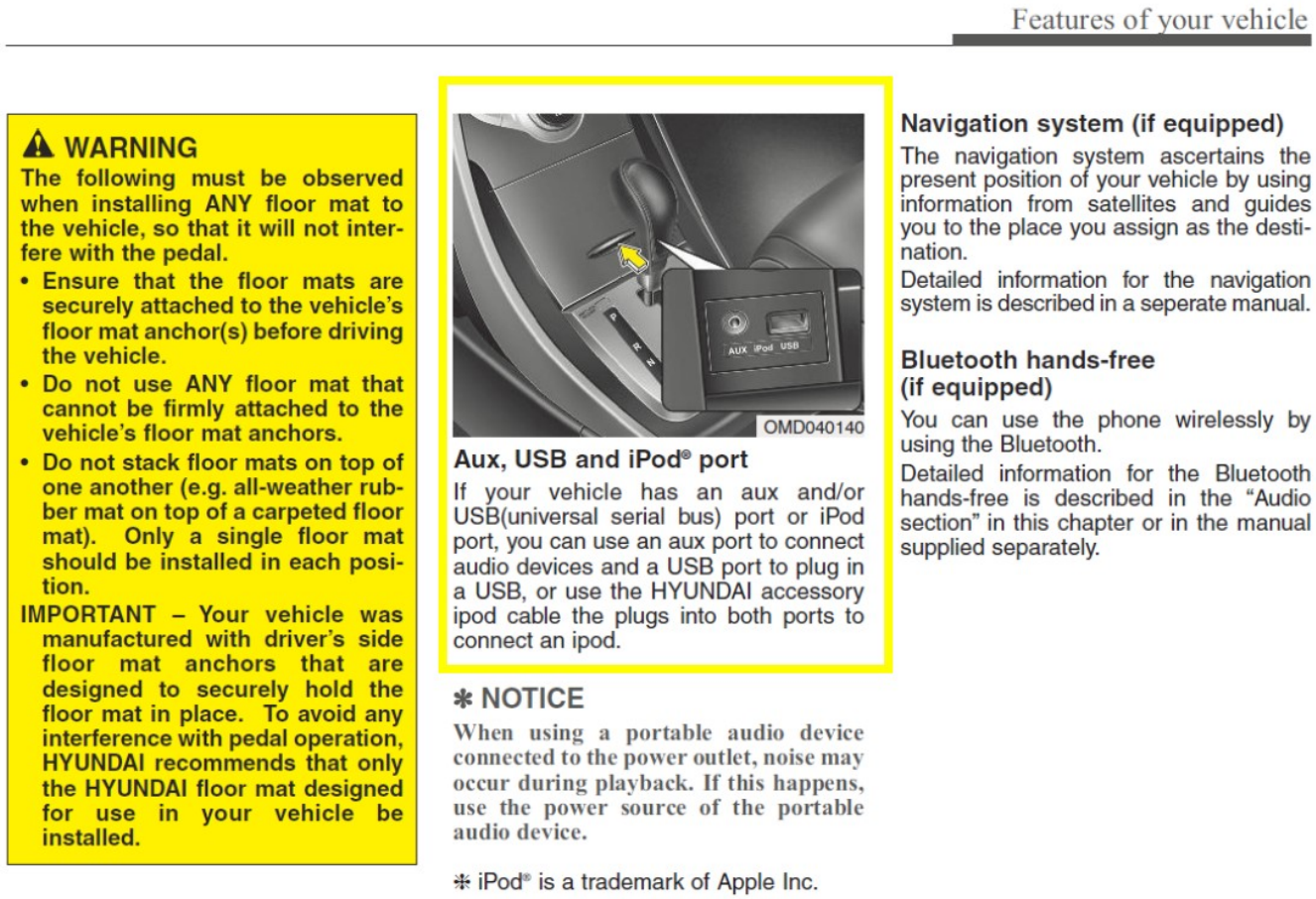
See, e.g., Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:34, 36.

See also Ex. B (2016 Hyundai Sonata Android Audio).

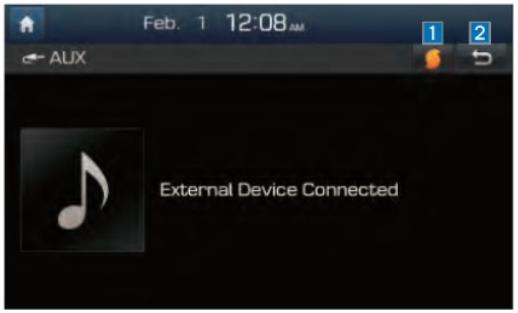
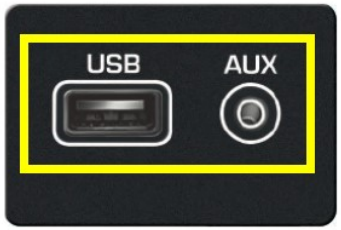
See, e.g., 2012 Hyundai Veloster – Pandora: https://www.youtube.com/watch?v=eqvvfxgj2KQ; Hyundai i30 iPod demo: https://www.youtube.com/watch?v=Hty_7vvJtyw.

Claim	Support
[1H] a third pre-programmed code portion for switching to one or more auxiliary input sources connected to said third electrical connector.	The interface of each device integration system of the accused Hyundai automobiles is pre-programed to execute "a third pre-programmed code portion for switching to one or more auxiliary input sources connected to said third electrical connector." At least the Telechips microcontroller of the interface (and potentially other microcontrollers on one or more circuit boards of the device integration system) executes pre-programmed code to perform at least a portion of this function. It is believed that this code is stored in onboard flash and/or other memory modules (such as the Micron flash memory module), and/or is contained within firmware elsewhere in the interface (such as within the Telechips microcontroller itself).

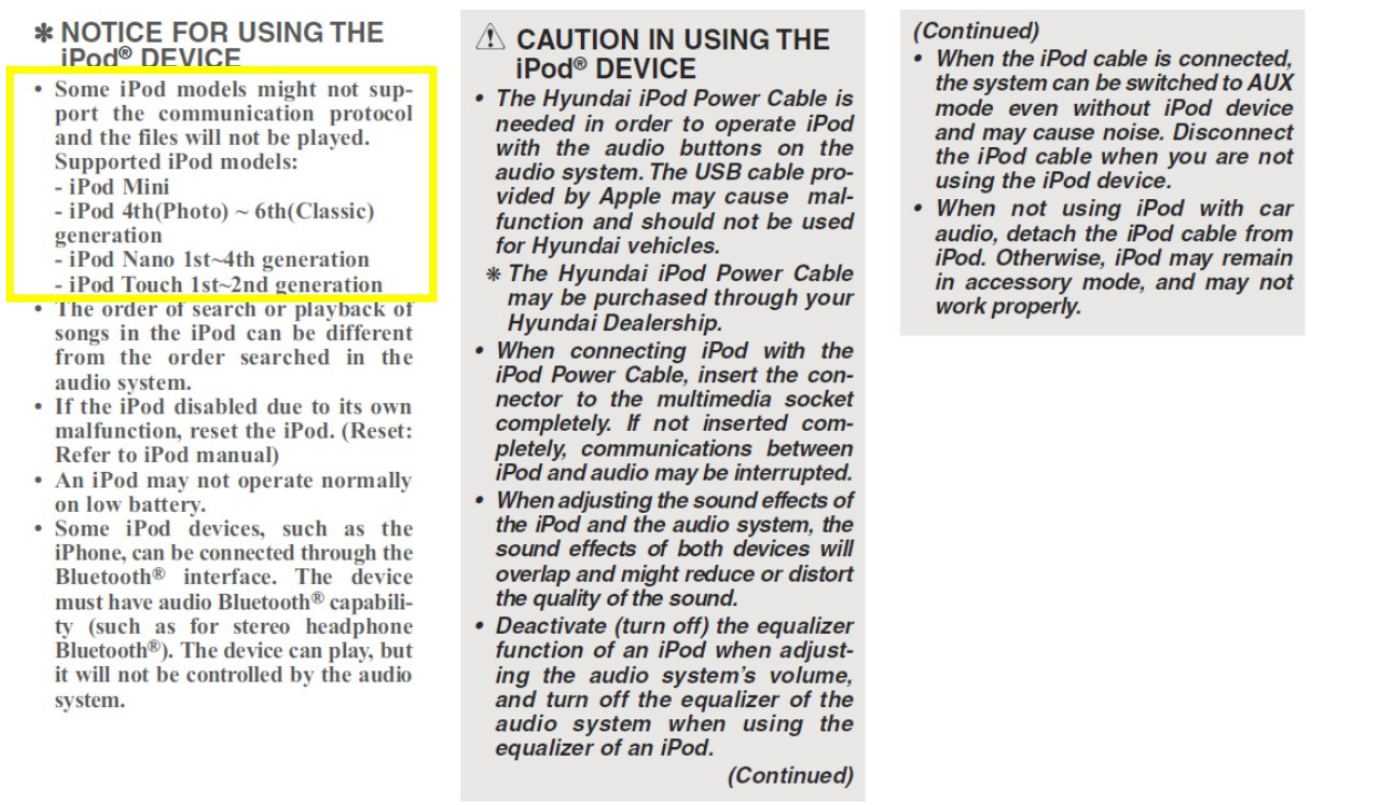
Claim	Support
	

Claim	Support
	

See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:97

Claim	Support
	AUX **Connecting an External Device** If an external device connector is connected with the AUX terminal, then AUX mode will automatically operate. Once the connector is disconnected, the previous mode will be restored. • AUX mode can be used only when an external audio player has been connected. • The AUX volume can also be controlled separately through the connected device.  Features / Description 1 SoundHound — Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part. 2 Back Button — Move to home/previous mode screen Information • SEEK TRACK key, TUNE is not supported. NOTICE • If only a cable is connected to the AUX without an external device, the mode will be changed to AUX, but noise may occur. When an external device is not being used, remove the connector jack. • When the external device power is connected to the power jack, playing the external device may output noise. In such cases, disconnect the power connection before use.  *See, e.g.,* Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:37.
2. The apparatus of claim 1, wherein the car stereo further	The device integration systems of accused Hyundai automobiles are manufactured for Hyundai by at least Hyundai Mobis Co., Ltd.

Claim	Support
comprises an Original Equipment Manufacturer (OEM) car stereo connected to said first electrical connector.	
4. The apparatus of claim 1, wherein the after-market audio device further	Each device integration system of the accused Hyundai automobiles allows for the connection of at least MP3 players (iPods), iPhones, Android devices and other smart devices.

Claim	Support
comprises a CD player, CD changer, MP3 player, Digital Audio Broadcast (DAB) receiver, or satellite receiver connected to said second electrical connector.	 ✱ NOTICE FOR USING THE iPod® DEVICE • Some iPod models might not support the communication protocol and the files will not be played. Supported iPod models: - iPod Mini - iPod 4th(Photo) ~ 6th(Classic) generation - iPod Nano 1st~4th generation - iPod Touch 1st~2nd generation • The order of search or playback of songs in the iPod can be different from the order searched in the audio system. • If the iPod disabled due to its own malfunction, reset the iPod. (Reset: Refer to iPod manual) • An iPod may not operate normally on low battery. • Some iPod devices, such as the iPhone, can be connected through the Bluetooth® interface. The device must have audio Bluetooth® capability (such as for stereo headphone Bluetooth®). The device can play, but it will not be controlled by the audio system. ⚠ CAUTION IN USING THE iPod® DEVICE • *The Hyundai iPod Power Cable is needed in order to operate iPod with the audio buttons on the audio system. The USB cable provided by Apple may cause malfunction and should not be used for Hyundai vehicles.* ✱ *The Hyundai iPod Power Cable may be purchased through your Hyundai Dealership.* • *When connecting iPod with the iPod Power Cable, insert the connector to the multimedia socket completely. If not inserted completely, communications between iPod and audio may be interrupted.* • *When adjusting the sound effects of the iPod and the audio system, the sound effects of both devices will overlap and might reduce or distort the quality of the sound.* • *Deactivate (turn off) the equalizer function of an iPod when adjusting the audio system's volume, and turn off the equalizer of the audio system when using the equalizer of an iPod.* *(Continued)* *(Continued)* • *When the iPod cable is connected, the system can be switched to AUX mode even without iPod device and may cause noise. Disconnect the iPod cable when you are not using the iPod device.* • *When not using iPod with car audio, detach the iPod cable from iPod. Otherwise, iPod may remain in accessory mode, and may not work properly.* 4 115 *See, e.g.,* Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:115.

<table>
<tr><th>Claim</th><th>Support</th></tr>
<tr><td></td><td>
<table>
<tr><td>Type</td><td>1G</td><td>2G</td><td>3G</td><td>4G</td><td>5G</td><td>6G</td><td>6.5G</td><td>7G</td></tr>
<tr><td>iPod Mini</td><td colspan="8">Not Supported</td></tr>
<tr><td>iPod Shuffle</td><td colspan="8">Not Supported</td></tr>
<tr><td>iPod Nano</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>Not released</td><td>○</td></tr>
<tr><td>iPod Touch</td><td>○ (iOS 1.1 not supported)</td><td>○</td><td>○</td><td>○</td><td>○</td><td colspan="3">Not released</td></tr>
<tr><td>iPad</td><td colspan="8">○ (Unable to charge, Not verified, Normal working not guaranteed)</td></tr>
<tr><td>iPad Mini</td><td colspan="8">○ (Unable to charge, Not verified, Normal working not guaranteed)</td></tr>
<tr><td>iPod Classic</td><td colspan="5">Not Supported</td><td>○ (iPod with Video)</td><td>○ (iPod Classic)</td><td>○ (iPod Classic)</td><td>Not released</td></tr>
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Normal working not guaranteed</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
</table>
See Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:32
See also Ex. B (2016 Hyundai Sonata Android Audio).
</td></tr>
<tr><td></td><td></td></tr>
<tr><td>5. The apparatus of claim 1, wherein said interface further comprises a plug-and-play mode for</td><td>Each device integration system of the accused Hyundai automobiles includes a plug-and-play module that automatically detects whether an iPhone/iPod or Android-powered device is attached to the USB port. For example, through Apple's MFi Program, third party-accessories, such as the device integration systems of the accused Hyundai automobiles, are licensed to connect electronically to Apple devices such as the iPhone and iPod. See, e.g., https://mfi.apple.com/MFiWeb/getFAQ.action. Apple provides a framework for communications between Apple devices and third-party accessories, such as the device integration systems of the accused Hyundai automobiles, which includes the requirement that the third-party accessory includes a chip to decode communications between the accessory and a device that has identified itself as an iPod or iPhone. See, e.g., http://www.objectpartners.com/2010/09/14/communicating-with-external-devices-from-the-iphone-and-ipad/.</td></tr>
</table>

Claim	Support
automatically detecting a device type of the after-market audio device connected to said second electrical connector and integrating the after-market audio device based upon the device type.	Similarly, Android provides tools for connecting Android-powered devices to third-party accessories using a USB connection, including a means for providing a notification that an Android-powered device is connected to the accessory. See, e.g., http://developer.android.com/guide/topics/connectivity/usb/accessory.html. The specific manner in which the interface implements the plug-and-play mode of this claim will be ascertainable by reviewing the source code of the interface in the accused Hyundai automobiles.

Claim	Support

Features of your vehicle

MD_USA_iPod

Using iPod®

* iPod® is a trademark of Apple Inc.

1. CD/AUX Button (iPod)

If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod.

If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode.

2. TRACK Button

- Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played.

  Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track.

  Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed.
- Press the SEEK button for less than 0.8 seconds to move to the next track.

  Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed.

MD_USA_iPod

3. 1 Button (RANDOM)

- Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random)
- Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random)
- To cancel RANDOM Play, press this button again.

4. 2 Button (REPEAT)

Repeats the song currently played.

5. 3 Button (CATEGORY)

Moves to the upper category from currently played category of the iPod.

To move to (play) the category (song) displayed, MENU 3.

You will be able to search through the lower category of the selected category.

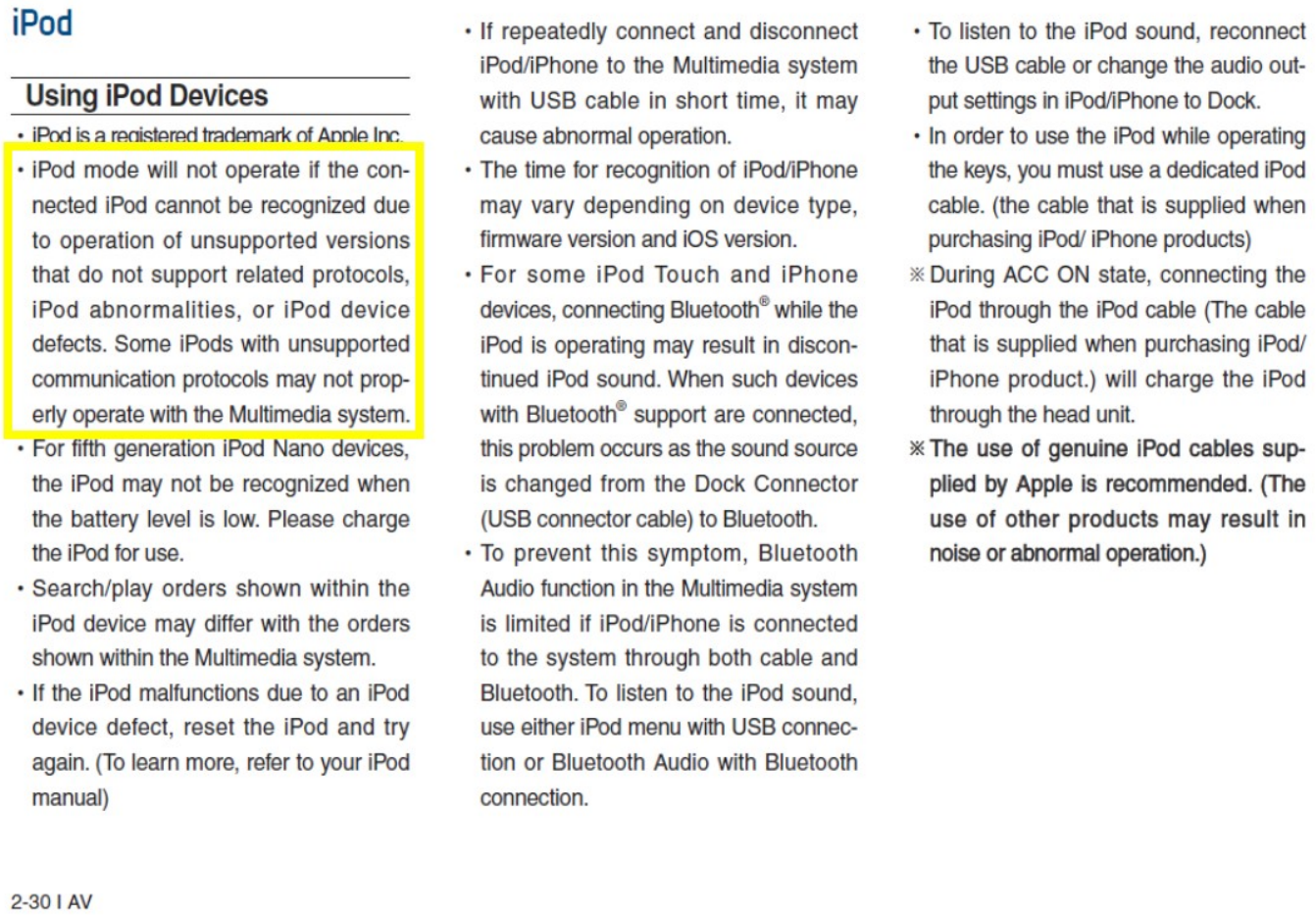
6. INFO Button

Displays the information of the file currently played in the order of

TITLE → ARTIST → ALBUM → NORMAL DISPLAY → TITLE... (Displays no information if the file has no song information.)

4 116

See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:116.

Claim	Support
	 iPod Using iPod Devices • iPod is a registered trademark of Apple Inc. • iPod mode will not operate if the connected iPod cannot be recognized due to operation of unsupported versions that do not support related protocols, iPod abnormalities, or iPod device defects. Some iPods with unsupported communication protocols may not properly operate with the Multimedia system. • For fifth generation iPod Nano devices, the iPod may not be recognized when the battery level is low. Please charge the iPod for use. • Search/play orders shown within the iPod device may differ with the orders shown within the Multimedia system. • If the iPod malfunctions due to an iPod device defect, reset the iPod and try again. (To learn more, refer to your iPod manual) • If repeatedly connect and disconnect iPod/iPhone to the Multimedia system with USB cable in short time, it may cause abnormal operation. • The time for recognition of iPod/iPhone may vary depending on device type, firmware version and iOS version. • For some iPod Touch and iPhone devices, connecting Bluetooth® while the iPod is operating may result in discontinued iPod sound. When such devices with Bluetooth® support are connected, this problem occurs as the sound source is changed from the Dock Connector (USB connector cable) to Bluetooth. • To prevent this symptom, Bluetooth Audio function in the Multimedia system is limited if iPod/iPhone is connected to the system through both cable and Bluetooth. To listen to the iPod sound, use either iPod menu with USB connection or Bluetooth Audio with Bluetooth connection. • To listen to the iPod sound, reconnect the USB cable or change the audio output settings in iPod/iPhone to Dock. • In order to use the iPod while operating the keys, you must use a dedicated iPod cable. (the cable that is supplied when purchasing iPod/ iPhone products) ※ During ACC ON state, connecting the iPod through the iPod cable (The cable that is supplied when purchasing iPod/ iPhone product.) will charge the iPod through the head unit. ※ **The use of genuine iPod cables supplied by Apple is recommended. (The use of other products may result in noise or abnormal operation.)** 2-30 I AV *See, e.g.,* Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:30.
6. The apparatus of claim 1,	Each device integration system of the accused Hyundai automobiles includes a device presence signal that "maintain[s] the car stereo in an operational state responsive to processed data and audio signals." Specifically, when an after-market audio device is plugged into the USB port that is connected to the USB connector in the device integration system (i.e., the second

Claim	Support
wherein said interface generates a device presence signal for maintaining the car stereo in a state responsive to processed data and audio signals.	electrical connector), a USB graphic appears indicating that a compatible device is connected and recognized. Once a compatible after-market audio device is connected and recognized, the device integration system maintains the car stereo responsive to processed data and audio signals from the portable device. The device presence signal is generated when at least the TeleChips microcontroller of the interface (and potentially other microcontrollers on one or more circuit boards of the device integration system) executes pre-programmed code stored in onboard flash and/or other memory modules (such as the Micron flash memory module), and/or within firmware elsewhere in the interface (such as within the Telechips microcontroller itself). The specific manner in which the interface implements the device presence signal of this claim will be ascertainable by reviewing the source code of the interface in the accused Hyundai automobiles.

Claim	Support

Features of your vehicle

MD_USA_iPod

Using iPod®

* iPod® is a trademark of Apple Inc.

1. CD/AUX Button (iPod)

If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod.
If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode.

2. TRACK Button

- Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played.
  Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track.
  Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed.
- Press the SEEK button for less than 0.8 seconds to move to the next track.
  Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed.

MD_USA_iPod

3. 1 Button (RANDOM)

- Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random)
- Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random)
- To cancel RANDOM Play, press this button again.

4. 2 Button (REPEAT)

Repeats the song currently played.

5. 3 Button (CATEGORY)

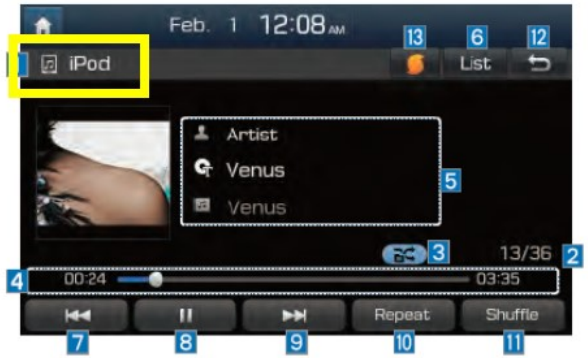
Moves to the upper category from currently played category of the iPod.
To move to (play) the category (song) displayed, MENU 3.
You will be able to search through the lower category of the selected category.

6. INFO Button

Displays the information of the file currently played in the order of
TITLE → ARTIST → ALBUM → NORMAL DISPLAY → TITLE... (Displays no information if the file has no song information.)

4 | 116

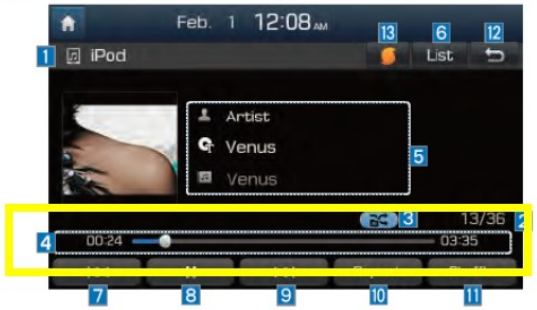
See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:116.

Claim	Support
	iPod  **Features** / **Description** 1 Mode — Displays current operating mode 2 Song Index — Shows the current song/total songs 3 Repeat/Shuffle — From Repeat/Shuffle, displays the current operating function 4 Play Time — Displays the current play time/total play time 5 Song Info — Displays the artist/song title/album info 6 List — Moves to the list screen 2-34 I AV *See, e.g.,* Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:34.
7. The apparatus of	Each device integration system of the accused Hyundai automobiles displays the track and time information of songs being played from a connected after-market audio device.

Claim	Support
claim 1, wherein said second pre-programmed code portion processes data generated by the after-market audio device including track and time information.	Features of your vehicle MD_USA_iPod **Using iPod®** * iPod® is a trademark of Apple Inc. **1. CD/AUX Button (iPod)** If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod. If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode. **2. TRACK Button** • Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played. Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track. Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed. • Press the SEEK button for less than 0.8 seconds to move to the next track. Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed. MD_USA_iPod **3. 1 Button (RANDOM)** • Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random) • Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random) • To cancel RANDOM Play, press this button again. **4. 2 Button (REPEAT)** Repeats the song currently played. **5. 3 Button (CATEGORY)** Moves to the upper category from currently played category of the iPod. To move to (play) the category (song) displayed, MENU 3. You will be able to search through the lower category of the selected category. **6. INFO Button** Displays the information of the file currently played in the order of TITLE → ARTIST → ALBUM → NORMAL DISPLAY → TITLE... (Displays no information if the file has no song information.) 4 116 *See, e.g.,* Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:116.

Claim	Support

iPod



Features	Description
1 Mode	Displays current operating mode
2 Song Index	Shows the current song/total songs
3 Repeat/Shuffle	From Repeat/Shuffle, displays the current operating function
4 Play Time	Displays the current play time/total play time
5 Song Info	Displays the artist/song title/album info
6 List	Moves to the list screen

Features	Description
7 Previous File	If button is pressed (less than 0.8 seconds): Moves to the previous file or play the current file from the beginning (Depends on the play time) • If play time is less than 3 seconds, moves to previous file • If play time is over than 3 seconds, play the current file from the beginning If button is pressed (over than 0.8 seconds) it rewinds the track.
8 Play/Pause	Plays/pauses the current file
9 Next File	• If button is pressed (less than 0.8 seconds), Moves to the next file • If button is pressed (over than 0.8 seconds), it does fast-forward the track.
10 Repeat	Repeats the current file Press the Repeat button to switch between repeating 1 track, and turning repeat off
11 Shuffle	Plays files in random order When pressing Shuffle button, it changes to shuffle category → deactivate shuffle then repeat • Shuffle Category: Shuffle song in the current category
12 Back Button	Move to home/previous mode screen
13 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.

2-34 I AV

See, e.g., Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:34).

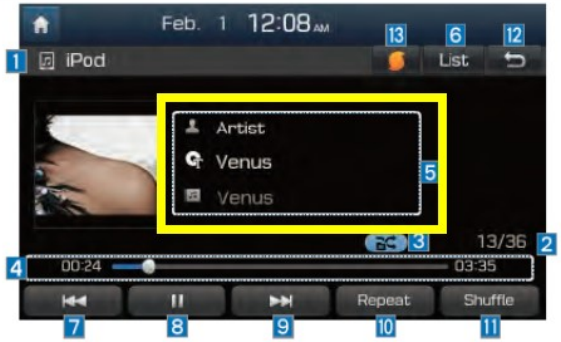
See also Ex. B (2016 Hyundai Sonata Android Audio).

See, e.g., 2012 Hyundai Veloster – Pandora: https://www.youtube.com/watch?v=eqvvfxgj2KQ; Hyundai i30 iPod demo: https://www.youtube.com/watch?v=Hty_7vvJtyw.

Claim	Support
8. The apparatus of claim 1, wherein said second pre-programmed code portion processes data generated by the after-market audio device including song title and artist information.	Each device integration system of the accused Hyundai automobiles displays the song title and artist information of songs being played from a connected after-market audio device. Features of your vehicle MD_USA_iPod **Using iPod®** * iPod® is a trademark of Apple Inc. **1. CD/AUX Button (iPod)** If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod. If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode. **2. TRACK Button** • Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played. Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track. Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed. • Press the SEEK button for less than 0.8 seconds to move to the next track. Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed. MD_USA_iPod **3. 1 Button (RANDOM)** • Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random) • Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random) • To cancel RANDOM Play, press this button again. **4. 2 Button (REPEAT)** Repeats the song currently played. **5. 3 Button (CATEGORY)** Moves to the upper category from currently played category of the iPod. To move to (play) the category (song) displayed, MENU 3. You will be able to search through the lower category of the selected category. **6. INFO Button** Displays the information of the file currently played in the order of TITLE → ARTIST → ALBUM → NORMAL DISPLAY → TITLE... (Displays no information if the file has no song information.) 4 116 *See, e.g.,* Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:116.

Claim	Support

iPod



Features	Description
1 Mode	Displays current operating mode
2 Song Index	Shows the current song/total songs
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Features	Description
7 Previous File	If button is pressed (less than 0.8 seconds): Moves to the previous file or play the current file from the beginning (Depends on the play time) • If play time is less than 3 seconds, moves to previous file • If play time is over than 3 seconds, play the current file from the beginning If button is pressed (over than 0.8 seconds) it rewinds the track.
8 Play/Pause	Plays/pauses the current file
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10 Repeat	Repeats the current file Press the Repeat button to switch between repeating 1 track, and turning repeat off
11 Shuffle	Plays files in random order When pressing Shuffle button, it changes to shuffle category → deactivate shuffle then repeat • Shuffle Category: Shuffle song in the current category
12 Back Button	Move to home/previous mode screen
13 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.

2-34 I AV

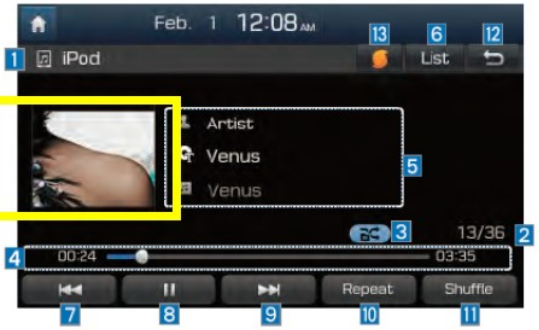
See, e.g., Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:34

See also Ex. B (2016 Hyundai Sonata Android Audio)

Claim	Support
	See, e.g., 2012 Hyundai Veloster – Pandora: https://www.youtube.com/watch?v=eqvvfxgj2KQ; Hyundai i30 iPod demo: https://www.youtube.com/watch?v=Hty_7vvJtyw.
10. The apparatus of claim 1, wherein said interface processes video information generated by the after-market audio device.	The device integration systems of the accused Hyundai automobiles display video information, such as cover art, generated by a connected after-market audio device.

<table>
<tr><th>Claim</th><th>Support</th></tr>
<tr><td></td><td>

iPod



Features	Description
1 Mode	Displays current operating mode
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Features	Description
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8 Play/Pause	Plays/pauses the current file
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12 Back Button	Move to home/previous mode screen
13 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.

2-34 I AV

See, e.g., Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:34.

</td></tr>
<tr><td></td><td></td></tr>
<tr><td>13. The apparatus of</td><td>Each device integration system of the accused Hyundai automobiles allows a user to control a connected after-market audio device via switches, presets, buttons and virtual controls displayed on a screen of the car stereo.</td></tr>
</table>

Claim	Support
claim 1, wherein commands are input by a user using one or more control buttons or presets on the car stereo.	Features of your vehicle MD_USA_iPod **Using iPod®** * iPod® is a trademark of Apple Inc. **1. CD/AUX Button (iPod)** If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod. If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode. **2. TRACK Button** • Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played. Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track. Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed. • Press the SEEK button for less than 0.8 seconds to move to the next track. Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed. MD_USA_iPod **3. 1 Button (RANDOM)** • Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random) • Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random) • To cancel RANDOM Play, press this button again. **4. 2 Button (REPEAT)** Repeats the song currently played. **5. 3 Button (CATEGORY)** Moves to the upper category from currently played category of the iPod. To move to (play) the category (song) displayed, MENU 3. You will be able to search through the lower category of the selected category. **6. INFO Button** Displays the information of the file currently played in the order of TITLE → ARTIST → ALBUM → NORMAL DISPLAY → TITLE... (Displays no information if the file has no song information.) 4 116

Claim	Support
	 7. Search Button Press the TUNE button to display the songs next to the currently played song. press the FILE button to display the songs before to the currently played song. **8. ENTER Button** Press the ENTER button to play the select song.

Claim	Support

MD_USA_XM

Using XM satellite Radio

Your vehicle is equipped with 3 months complimentary period of XM Satellite Radio. XM provides access to over 130 channels of music, information, and entertainment programming.

1. XM Button

Turns to XM Satellite Radio Mode. XM mode toggles in order to XM1→XM2→XM3→XM1... when the button is pressed each time.

2. SEEK Button

- Push TRACK button for less than 0.8 second to select previous channel.
- Push TRACK button for 0.8 second or longer to continuously move to previous channel.
- Push SEEK button for less than 0.8 second to select next channel.
- Push SEEK button for 0.8 second or longer to continuously move to next channel.
- Radio ID : Seek or Tune to XM channel 0 to display the Radio ID.

3. PRESET Buttons

Push 1 ~ 6 buttons less than 0.8 second to play the channel saved in each button. Push Preset button for 0.8 second or longer to save current channel to the respective button with a beep.

MD_USA_XM

4. SCAN Button

Press to hear a brief sampling of all channel. To cancel the scan mode, press the button once again.

5. INFO Button

Displays the information of the current channel in the order of Artist/Song title→Category/Channel name→Current Play Channel→Artist/Song title→Category/Channel name... when the button is pressed each time. The complete text information is not displayed, rotate the tune button to see the next page.

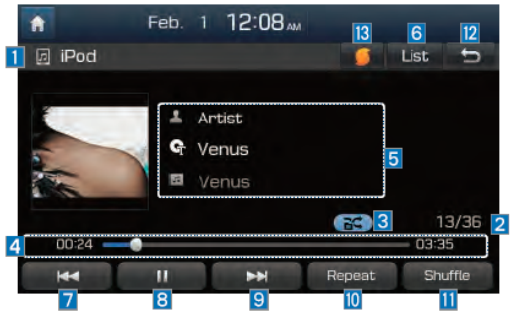
6. CAT Button (CATEGORY)

- Press CAT, FLDR buttons to enter the Category List Mode.
  The display will indicate the category items, highlight the category that the current channel belongs to.

Claim	Support
	• In the Category List Mode, press these buttons to navigate category list. • Press ENTER button to select the lowest channel in highlighted category. • If channel is selected by selecting category "CATEGORY" Icon is displayed at the top of the screen. **7. Search Button** Press the TUNE button to display the songs next to the currently played song. press the FILE button to display the songs before to the currently played song. **8. ENTER Button** Press the ENTER button to play the select song. *See* Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:116-119.

Claim	Support

iPod



Features	Description
1 Mode	Displays current operating mode
2 Song Index	Shows the current song/total songs
3 Repeat/Shuffle	From Repeat/Shuffle, displays the current operating function
4 Play Time	Displays the current play time/total play time
5 Song Info	Displays the artist/song title/album info
6 List	Moves to the list screen

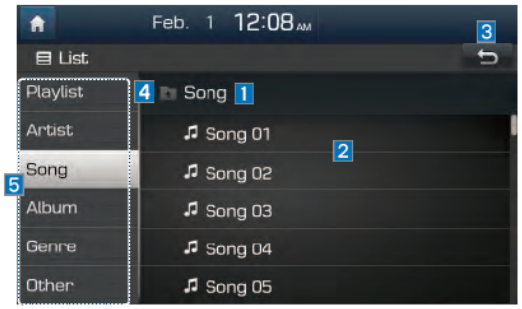
Features	Description
7 Previous File	If button is pressed (less than 0.8 seconds): Moves to the previous file or play the current file from the beginning (Depends on the play time) • If play time is less than 3 seconds, moves to previous file • If play time is over than 3 seconds, play the current file from the beginning If button is pressed (over than 0.8 seconds) it rewinds the track.
8 Play/Pause	Plays/pauses the current file
9 Next File	• If button is pressed (less than 0.8 seconds), Moves to the next file • If button is pressed (over than 0.8 seconds), it does fast-forward the track.
10 Repeat	Repeats the current file Press the Repeat button to switch between repeating 1 track, and turning repeat off
11 Shuffle	Plays files in random order When pressing Shuffle button, it changes to shuffle category → deactivate shuffle then repeat • Shuffle Category: Shuffle song in the current category
12 Back Button	Move to home/previous mode screen
13 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.

2-34 I AV

Claim	Support

Features	Description
14 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track
15 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. ⓘ If the ● TUNE knob is not pressed within 5 seconds of searching tracks, the track info for the current track is restored.

Claim	Support



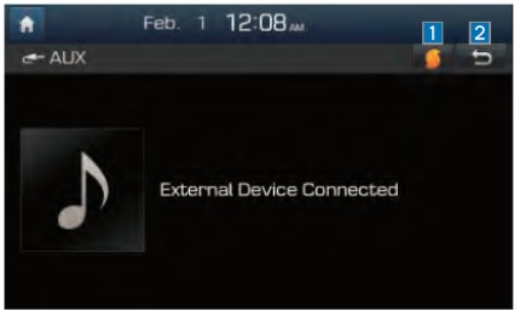
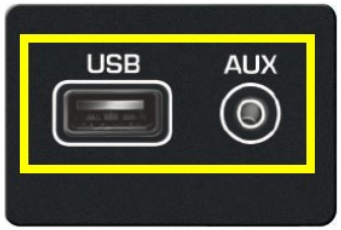
Features	Description
1 Category Name	Displays the category name
2 Category List	Displays the contents of selected category If there are many items in the list, items are added in order and the scroll bar on the right is adjusted accordingly.
3 Back Button	Converts to basic mode screen
4 Upper Folder	Moves to Upper Folder
5 Search Menu	Search tracks by the list type. Search songs according to Playlist, Artist, Song, Album, and Genre. If access the search menu while playing a track, it moves to the previous search mode.
6 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track.
7 TUNE	Turn the TUNE knob to search a desired track. If the desired track is displayed, press the TUNE knob to play the track. If you do not anything with the knob for 5 seconds, the TUNE knob search will be terminated.

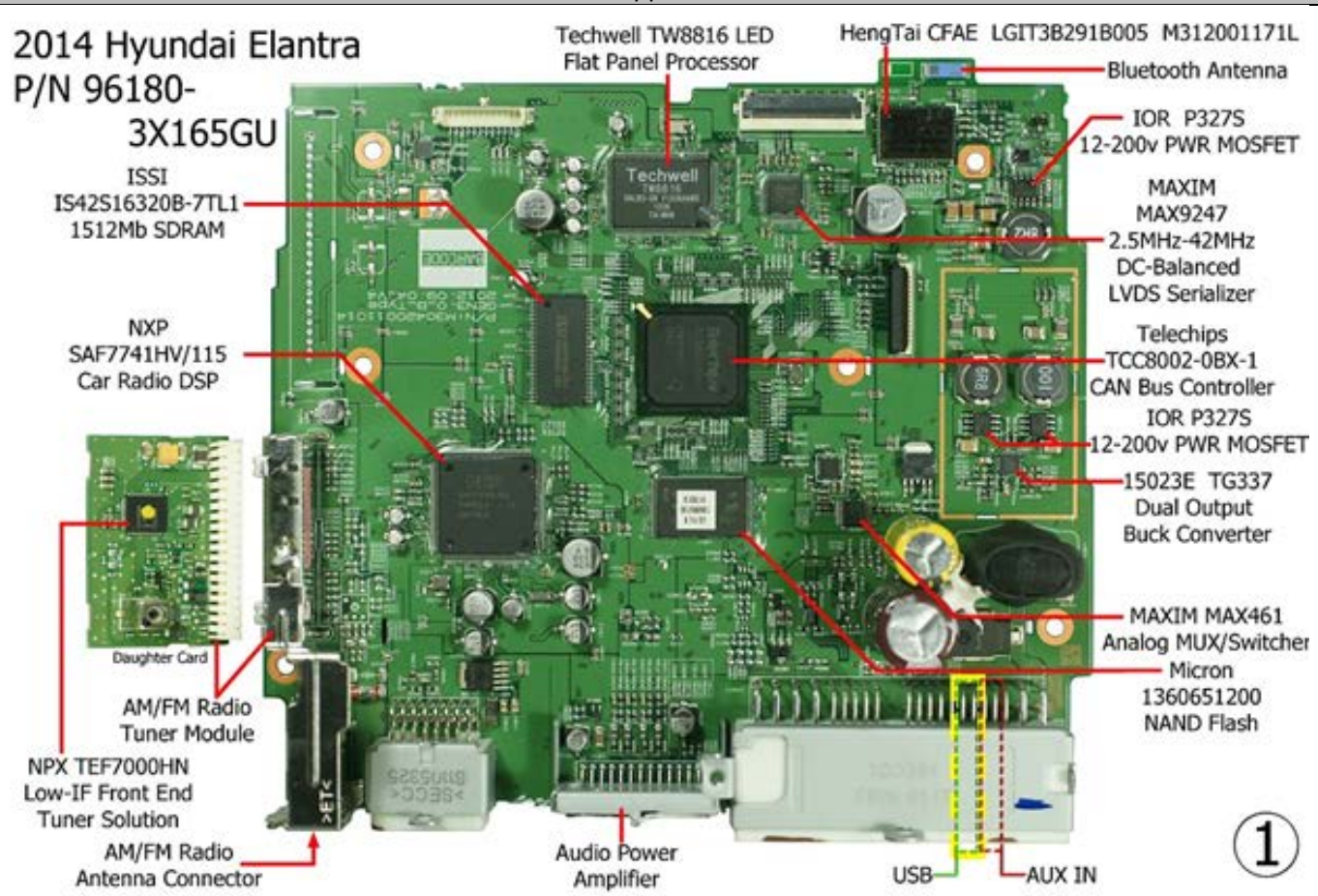
2-36 I AV

See Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:34-36; *see also* Ex. B (2016 Hyundai Sonata Android Audio);

See, e.g., 2012 Hyundai Veloster – Pandora: https://www.youtube.com/watch?v=eqvvfxgj2KQ; Hyundai i30 iPod demo: https://www.youtube.com/watch?v=Hty_7vvJtyw.

Claim	Support
14. The apparatus of claim 1, wherein audio signals from the one or more auxiliary input sources are selectively channeled to the car stereo by said interface.	Each device integration system of the accused Hyundai automobiles also allows for various input sources to be connected to an auxiliary input electrical connector and played through the car speakers. Features of your vehicle **⚠ WARNING** **The following must be observed when installing ANY floor mat to the vehicle, so that it will not interfere with the pedal.** • **Ensure that the floor mats are securely attached to the vehicle's floor mat anchor(s) before driving the vehicle.** • **Do not use ANY floor mat that cannot be firmly attached to the vehicle's floor mat anchors.** • **Do not stack floor mats on top of one another (e.g. all-weather rubber mat on top of a carpeted floor mat). Only a single floor mat should be installed in each position.** **IMPORTANT – Your vehicle was manufactured with driver's side floor mat anchors that are designed to securely hold the floor mat in place. To avoid any interference with pedal operation, HYUNDAI recommends that only the HYUNDAI floor mat designed for use in your vehicle be installed.** OMD040140 **Aux, USB and iPod® port** If your vehicle has an aux and/or USB(universal serial bus) port or iPod port, you can use an aux port to connect audio devices and a USB port to plug in a USB, or use the HYUNDAI accessory ipod cable the plugs into both ports to connect an ipod. **✻ NOTICE** When using a portable audio device connected to the power outlet, noise may occur during playback. If this happens, use the power source of the portable audio device. ❉ iPod® is a trademark of Apple Inc. **Navigation system (if equipped)** The navigation system ascertains the present position of your vehicle by using information from satellites and guides you to the place you assign as the destination. Detailed information for the navigation system is described in a seperate manual. **Bluetooth hands-free (if equipped)** You can use the phone wirelessly by using the Bluetooth. Detailed information for the Bluetooth hands-free is described in the "Audio section" in this chapter or in the manual supplied separately. 4 97 *See, e.g.,* Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:97

Claim	Support
	AUX **Connecting an External Device** If an external device connector is connected with the AUX terminal, then AUX mode will automatically operate. Once the connector is disconnected, the previous mode will be restored. • AUX mode can be used only when an external audio player has been connected. • The AUX volume can also be controlled separately through the connected device.  Features / Description 1 SoundHound — Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part. 2 Back Button — Move to home/previous mode screen Information • SEEK TRACK key, TUNE is not supported. NOTICE • If only a cable is connected to the AUX without an external device, the mode will be changed to AUX, but noise may occur. When an external device is not being used, remove the connector jack. • When the external device power is connected to the power jack, playing the external device may output noise. In such cases, disconnect the power connection before use.  *See, e.g.,* Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:37.
23. The apparatus of claim 1, further comprising a bus connection established between the	Each device integration system of the accused Hyundai automobiles connects to after-market audio devices using a USB bus connector (i.e., second electrical connector) for connecting, via a cable, to an after-market audio device external to the car stereo, such as a MP3 player or iPhone. The USB connector communicates using the Universal Serial Bus protocol.

Claim	Support
after-market audio device and said interface. 24. The apparatus of claim 23, wherein the bus connection comprises a Universal Serial Bus (USB) connection.	

Claim	Support

⚠ WARNING

The following must be observed when installing ANY floor mat to the vehicle, so that it will not interfere with the pedal.

- **Ensure that the floor mats are securely attached to the vehicle's floor mat anchor(s) before driving the vehicle.**
- **Do not use ANY floor mat that cannot be firmly attached to the vehicle's floor mat anchors.**
- **Do not stack floor mats on top of one another (e.g. all-weather rubber mat on top of a carpeted floor mat). Only a single floor mat should be installed in each position.**

IMPORTANT – Your vehicle was manufactured with driver's side floor mat anchors that are designed to securely hold the floor mat in place. To avoid any interference with pedal operation, HYUNDAI recommends that only the HYUNDAI floor mat designed for use in your vehicle be installed.

Aux, USB and iPod® port

If your vehicle has an aux and/or USB(universal serial bus) port or iPod port, you can use an aux port to connect audio devices and a USB port to plug in a USB, or use the HYUNDAI accessory ipod cable the plugs into both ports to connect an ipod.

✱ NOTICE

When using a portable audio device connected to the power outlet, noise may occur during playback. If this happens, use the power source of the portable audio device.

✱ iPod® is a trademark of Apple Inc.

Navigation system (if equipped)

The navigation system ascertains the present position of your vehicle by using information from satellites and guides you to the place you assign as the destination.

Detailed information for the navigation system is described in a seperate manual.

Bluetooth hands-free (if equipped)

You can use the phone wirelessly by using the Bluetooth.

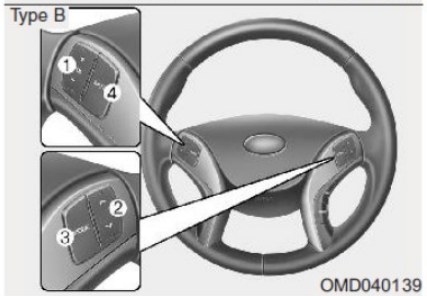
Detailed information for the Bluetooth hands-free is described in the "Audio section" in this chapter or in the manual supplied separately.

Claim	Support

Type A

OMD040139N

Type B



OMD040139

Steering wheel audio control (if equipped)

The steering wheel may incorporate audio control buttons.

⚠ CAUTION

Do not operate audio remote control buttons simultaneously.

1. VOLUME (VOL+/-)

- Push the lever upward (+) to increase the volume.
- Push the lever downward (-) to decrease the volume.

2. PRESET/SEEK (∧ / ∨)

The SEEK/PRESET button has different functions based on the system mode.

For the following functions the button should be pressed for 0.8 second or more.

RADIO mode

It will function as the AUTO SEEK select button.

CD/USB/iPod mode

It will function as the FF/REW button.

If the SEEK/PRESET button is pressed for less than 0.8 second, it will work as follows in each mode.

RADIO mode

It will function as the PRESET STATION buttons.

CD/USB/iPod mode

It will function as TRACK UP/DOWN button.

3. MODE

Press the button to change audio source.

- FM(1~2)➡AM➡SAT(1~3)➡CD➡USB AUX(iPod) FM...

4. MUTE (if equipped)

- Press the button to mute the sound.
- Press the button to turn off the microphone during a telephone call.

Detailed information for audio control buttons are described in the following pages in this section.

4 | 99

Claim	Support

✱ NOTICE FOR USING THE iPod® DEVICE

- Some iPod models might not support the communication protocol and the files will not be played.
  Supported iPod models:
  - iPod Mini
  - iPod 4th(Photo) ~ 6th(Classic) generation
  - iPod Nano 1st~4th generation
  - iPod Touch 1st~2nd generation
- The order of search or playback of songs in the iPod can be different from the order searched in the audio system.
- If the iPod disabled due to its own malfunction, reset the iPod. (Reset: Refer to iPod manual)
- An iPod may not operate normally on low battery.
- Some iPod devices, such as the iPhone, can be connected through the Bluetooth® interface. The device must have audio Bluetooth® capability (such as for stereo headphone Bluetooth®). The device can play, but it will not be controlled by the audio system.

⚠ CAUTION IN USING THE iPod® DEVICE

- *The Hyundai iPod Power Cable is needed in order to operate iPod with the audio buttons on the audio system. The USB cable provided by Apple may cause malfunction and should not be used for Hyundai vehicles.*
  ✱ *The Hyundai iPod Power Cable may be purchased through your Hyundai Dealership.*
- *When connecting iPod with the iPod Power Cable, insert the connector to the multimedia socket completely. If not inserted completely, communications between iPod and audio may be interrupted.*
- *When adjusting the sound effects of the iPod and the audio system, the sound effects of both devices will overlap and might reduce or distort the quality of the sound.*
- *Deactivate (turn off) the equalizer function of an iPod when adjusting the audio system's volume, and turn off the equalizer of the audio system when using the equalizer of an iPod.*

(Continued)

(Continued)

- *When the iPod cable is connected, the system can be switched to AUX mode even without iPod device and may cause noise. Disconnect the iPod cable when you are not using the iPod device.*
- *When not using iPod with car audio, detach the iPod cable from iPod. Otherwise, iPod may remain in accessory mode, and may not work properly.*

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Claim	Support

MD_USA_iPod

Using iPod®

∗ iPod® is a trademark of Apple Inc.

1. CD/AUX Button (iPod)

If iPod is connected, it switches to the iPod mode from the previous mode to play the song files stored in the iPod.
If there is no iPod connected, then it displays the message "No Media" for 3 seconds and returns to the previous mode.

2. TRACK Button

- Press the TRACK button for less than 0.8 seconds to play from the beginning of the song currently played.
  Press the button for less than 0.8 seconds and press it again within 1 second to move to and play the previous track.
  Press the button for 0.8 seconds or longer to play the song in reverse direction in fast speed.
- Press the SEEK button for less than 0.8 seconds to move to the next track.
  Press the button for 0.8 seconds or longer to play the song in forward direction in fast speed.

MD_USA_iPod

3. 1 Button (RANDOM)

- Press this button for less than 0.8 seconds to shuffle order of all songs in current category. (Song Random)
- Press this button for 0.8 seconds or longer to shuffle order of albums in current category. (Album Random)
- To cancel RANDOM Play, press this button again.

4. 2 Button (REPEAT)

Repeats the song currently played.

5. 3 Button (CATEGORY)

Moves to the upper category from currently played category of the iPod.
To move to (play) the category (song) displayed, MENU 3.
You will be able to search through the lower category of the selected category.

6. INFO Button

Displays the information of the file currently played in the order of
TITLE ➡ ARTIST ➡ ALBUM ➡ NORMAL DISPLAY ➡ TITLE... (Displays no information if the file has no song information.)

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See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:97, 99, 115-16.

Claim	Support

iPod

Using iPod Devices

- iPod is a registered trademark of Apple Inc.
- iPod mode will not operate if the connected iPod cannot be recognized due to operation of unsupported versions that do not support related protocols, iPod abnormalities, or iPod device defects. Some iPods with unsupported communication protocols may not properly operate with the Multimedia system.
- For fifth generation iPod Nano devices, the iPod may not be recognized when the battery level is low. Please charge the iPod for use.
- Search/play orders shown within the iPod device may differ with the orders shown within the Multimedia system.
- If the iPod malfunctions due to an iPod device defect, reset the iPod and try again. (To learn more, refer to your iPod manual)
- If repeatedly connect and disconnect iPod/iPhone to the Multimedia system with USB cable in short time, it may cause abnormal operation.
- The time for recognition of iPod/iPhone may vary depending on device type, firmware version and iOS version.
- For some iPod Touch and iPhone devices, connecting Bluetooth® while the iPod is operating may result in discontinued iPod sound. When such devices with Bluetooth® support are connected, this problem occurs as the sound source is changed from the Dock Connector (USB connector cable) to Bluetooth.
- To prevent this symptom, Bluetooth Audio function in the Multimedia system is limited if iPod/iPhone is connected to the system through both cable and Bluetooth. To listen to the iPod sound, use either iPod menu with USB connection or Bluetooth Audio with Bluetooth connection.
- To listen to the iPod sound, reconnect the USB cable or change the audio output settings in iPod/iPhone to Dock.
- In order to use the iPod while operating the keys, you must use a dedicated iPod cable. (the cable that is supplied when purchasing iPod/ iPhone products)

※ During ACC ON state, connecting the iPod through the iPod cable (The cable that is supplied when purchasing iPod/ iPhone product.) will charge the iPod through the head unit.

※ **The use of genuine iPod cables supplied by Apple is recommended. (The use of other products may result in noise or abnormal operation.)**

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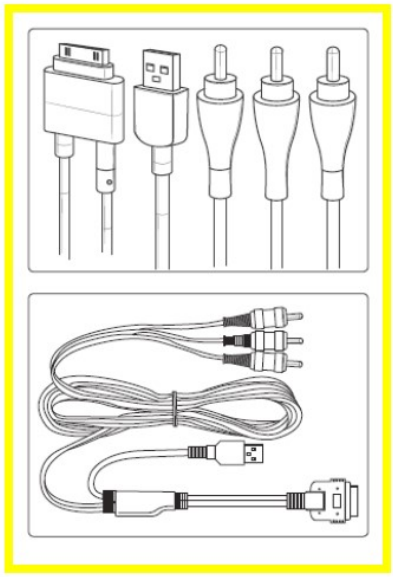
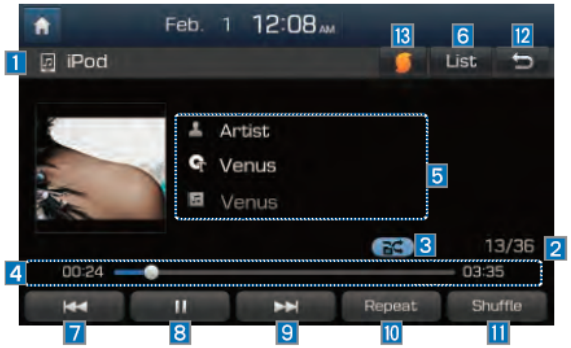
Claim	Support
	• When connecting with the iPod cable, make sure to fully insert the jack to prevent communication interference. If the iPod is connected to the vehicle while it is playing, a high pitch tone may sound for about 1~2 seconds immediately after connection. If possible, connect the iPod to the vehicle with the iPod stopped/ paused. • Within iPhones, streaming audio and iPod control may occasionally conflict. If problems persist, remove the iPhone and connect again. • When connecting to iPod Nano /Classic, the HYUNDAI Motor logo appears on the Apple device. For the iPod Nano 6 generation, however, the logo image does not appear since it is not supported. Also, all iPhone and iPod Touch products do not support this function. • In Apple's iOS 6.0 version or later, Podcast and Audiobook media files are designed to be played with the Podcasts and iBooks applications specifically designed for Apple products. If the Apple device does not provide the Podcast and Audiobook lists, the playlist may not be displayed and played in the AVN iPod mode. • If the Apple Podcasts and iBooks apps are not installed on the Apple device, but the Apple device provides the Podcast and Audiobook lists, you can play files in other categories in AVN iPod mode.

Claim	Support
	Caution • If the iPhone/iPod Touch supports Bluetooth, it is unable to use Bluetooth Audio if the Apple device that is connected to the Multimedia system through both USB connection and Bluetooth. Disconnect the USB connection then use Bluetooth Audio • If iPod/iPhone connected to the Multimedia system through both USB and AUX. iPod/iPhone keeps output sound via AUX, thus it may occur sound will not output in iPod mode. • If AUX cable connected to iPod/iPhone but not connect to the Multimedia system, it may occur sound will not output in iPod mode due to iPod/iPhone's feature. Especially, if you use AUX cable like pictures, this problem may occur. • Disconnect AUX cable from iPod/iPhone first, then connect to the Multimedia system via USB. Or change settings to "Dock" in iPod/iPhone. • If connect to the Multimedia system while podcast or iTunes music downloading to iPod/iPhone, it may occur some problems when you select song in the list. Reconnect iPod/iPhone to the Multimedia system when downloading is finished or the file deleted. • If connect to the Multimedia system while sync, it may occur some problems. Try to use iPod/iPhone connection after sync complete. (To learn more, refer to your iPod manual) • iPhone and iPod Touch devices are guaranteed to work normally on iOS 7.0.6 or below. However, they may not work normally on future iOS versions as their operations have not yet been tested.  iPod I 2-33

Claim	Support

iPod



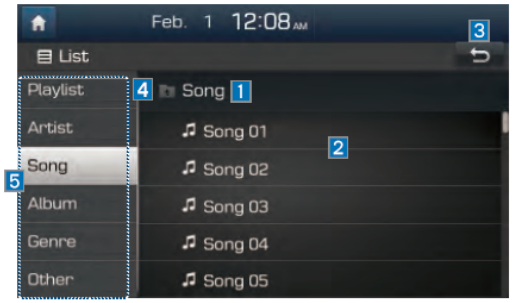
Features	Description
1 Mode	Displays current operating mode
2 Song Index	Shows the current song/total songs
3 Repeat/Shuffle	From Repeat/Shuffle, displays the current operating function
4 Play Time	Displays the current play time/total play time
5 Song Info	Displays the artist/song title/album info
6 List	Moves to the list screen

Features	Description
7 Previous File	If button is pressed (less than 0.8 seconds): Moves to the previous file or play the current file from the beginning (Depends on the play time) • If play time is less than 3 seconds, moves to previous file • If play time is over than 3 seconds, play the current file from the beginning If button is pressed (over than 0.8 seconds) it rewinds the track.
8 Play/Pause	Plays/pauses the current file
9 Next File	• If button is pressed (less than 0.8 seconds), Moves to the next file • If button is pressed (over than 0.8 seconds), it does fast-forward the track.
10 Repeat	Repeats the current file Press the Repeat button to switch between repeating 1 track, and turning repeat off
11 Shuffle	Plays files in random order When pressing Shuffle button, it changes to shuffle category → deactivate shuffle then repeat • Shuffle Category: Shuffle song in the current category
12 Back Button	Move to home/previous mode screen
13 SoundHound	Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part.

Claim	Support

Features	Description
14 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track
15 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. ⓘ If the ● TUNE knob is not pressed within 5 seconds of searching tracks, the track info for the current track is restored.

Claim	Support



Features	Description
1 Category Name	Displays the category name
2 Category List	Displays the contents of selected category ⓘ If there are many items in the list, items are added in order and the scroll bar on the right is adjusted accordingly.
3 Back Button	Converts to basic mode screen
4 Upper Folder	Moves to Upper Folder
5 Search Menu	Search tracks by the list type. Search songs according to Playlist, Artist, Song, Album, and Genre. ⓘ If access the search menu while playing a track, it moves to the previous search mode.
6 SEEK/TRACK	If button is pressed (less than 0.8 seconds) moves to previous/next file or play the current song from the beginning • If play time is less than 3 seconds, moves to previous/next file • If play time is over than 3 seconds, plays the current file from the beginning If button is pressed (over than 0.8 seconds) it will rewind/fast-forward the track.
7 TUNE	Turn the ● TUNE knob to search a desired track. If the desired track is displayed, press the ● TUNE knob to play the track. ⓘ If you do not anything with the knob for 5 seconds, the ● TUNE knob search will be terminated.

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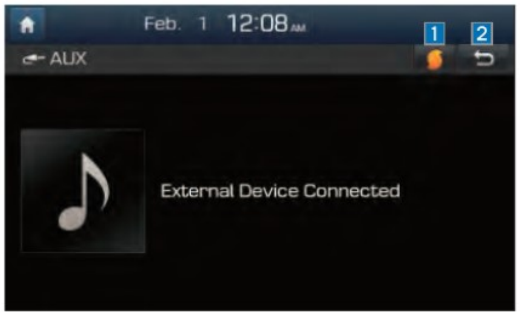
Claim	Support
	AUX **Connecting an External Device** If an external device connector is connected with the AUX terminal, then AUX mode will automatically operate. Once the connector is disconnected, the previous mode will be restored. • AUX mode can be used only when an external audio player has been connected. • The AUX volume can also be controlled separately through the connected device.  Features / Description 1 SoundHound — Runs the SoundHound feature. For more detailed feature, please refer to SoundHound section in Info part. 2 Back Button — Move to home/previous mode screen Information • SEEK TRACK key, TUNE is not supported. NOTICE • If only a cable is connected to the AUX without an external device, the mode will be changed to AUX, but noise may occur. When an external device is not being used, remove the connector jack. • When the external device power is connected to the power jack, playing the external device may output noise. In such cases, disconnect the power connection before use. *See, e.g.,* Ex. C (2016 Hyundai Sonata Multimedia System Manual) at 2:30-2:37. *See also* Ex. B (2016 Hyundai Sonata Android Audio). *See, e.g.,* 2012 Hyundai Veloster – Pandora: https://www.youtube.com/watch?v=eqvvfxgj2KQ; Hyundai i30 iPod demo: https://www.youtube.com/watch?v=Hty_7vvJtyw.

Claim	Support
44. An apparatus for docking a portable device for integration with a car stereo comprising:	*See* preamble [1P] support.
a storage area remote from a car stereo for storing the portable device;	The accused Hyundai automobiles include "storage areas remote from the car stereo for storing the portable device," including glove boxes, center consoles and dash receptacles.

Claim	Support

⚠ WARNING

The following must be observed when installing ANY floor mat to the vehicle, so that it will not interfere with the pedal.

- **Ensure that the floor mats are securely attached to the vehicle's floor mat anchor(s) before driving the vehicle.**
- **Do not use ANY floor mat that cannot be firmly attached to the vehicle's floor mat anchors.**
- **Do not stack floor mats on top of one another (e.g. all-weather rubber mat on top of a carpeted floor mat). Only a single floor mat should be installed in each position.**

IMPORTANT – Your vehicle was manufactured with driver's side floor mat anchors that are designed to securely hold the floor mat in place. To avoid any interference with pedal operation, HYUNDAI recommends that only the HYUNDAI floor mat designed for use in your vehicle be installed.

Aux, USB and iPod® port

If your vehicle has an aux and/or USB(universal serial bus) port or iPod port, you can use an aux port to connect audio devices and a USB port to plug in a USB, or use the HYUNDAI accessory ipod cable the plugs into both ports to connect an ipod.

✻ NOTICE

When using a portable audio device connected to the power outlet, noise may occur during playback. If this happens, use the power source of the portable audio device.

⁜ iPod® is a trademark of Apple Inc.

Navigation system (if equipped)

The navigation system ascertains the present position of your vehicle by using information from satellites and guides you to the place you assign as the destination.

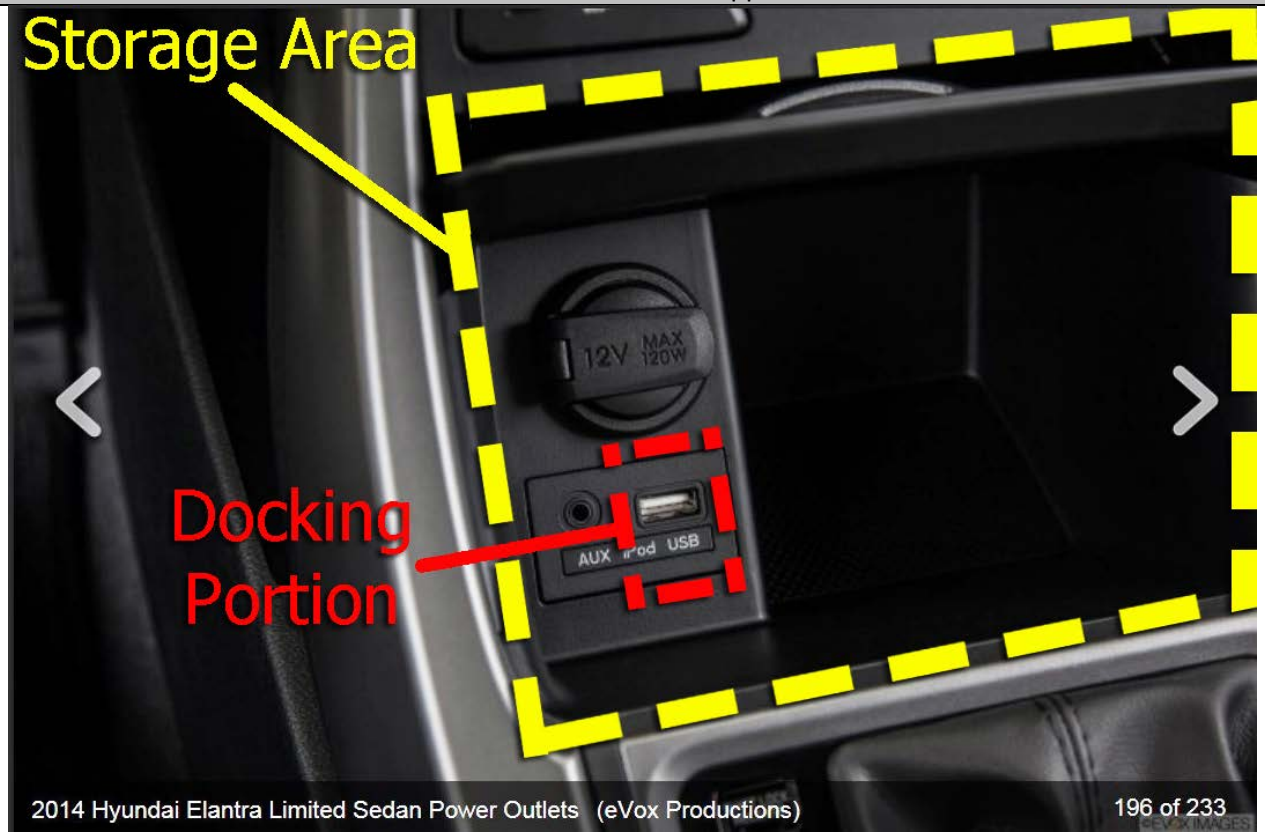
Detailed information for the navigation system is described in a seperate manual.

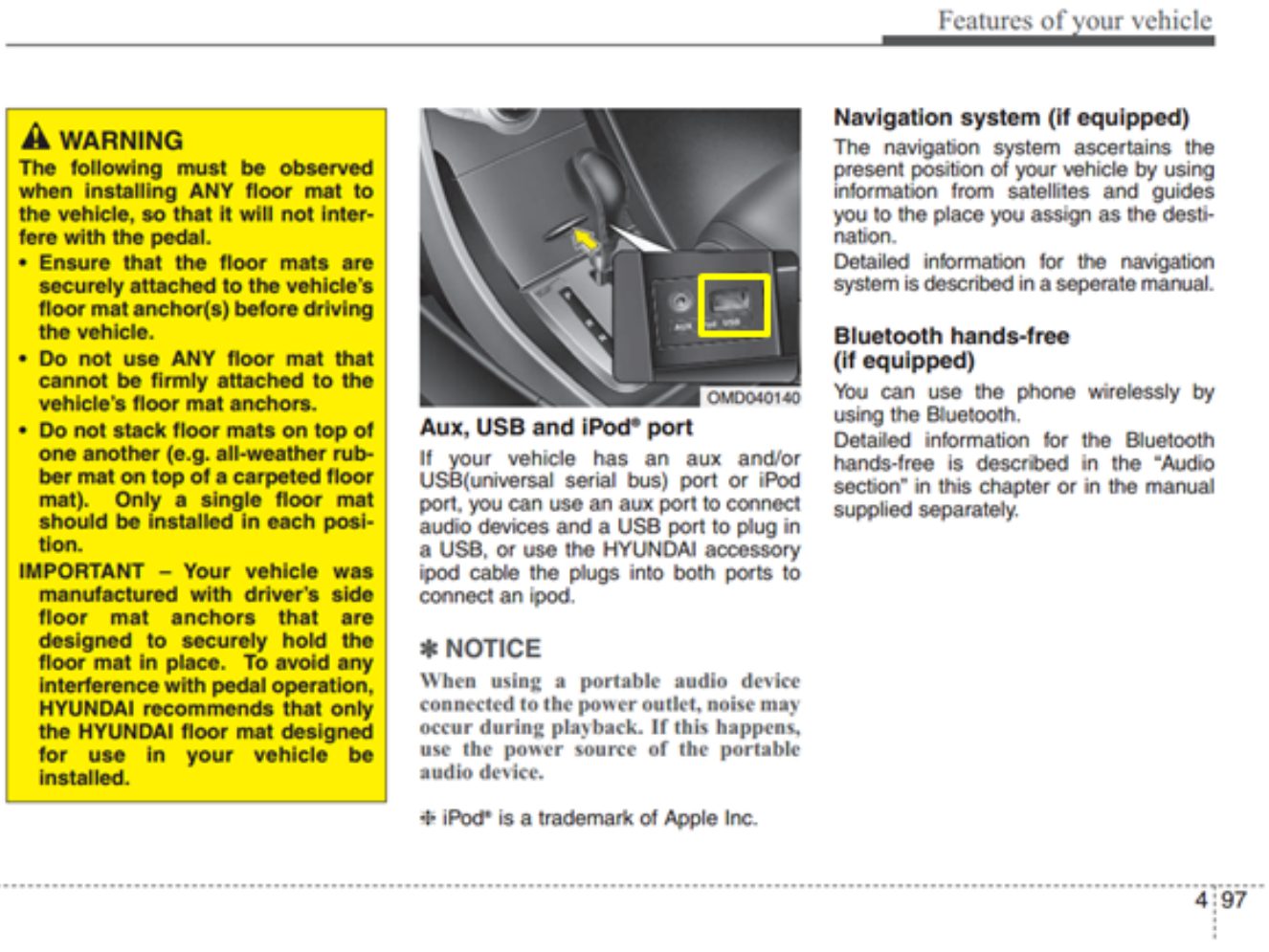
Bluetooth hands-free (if equipped)

You can use the phone wirelessly by using the Bluetooth.

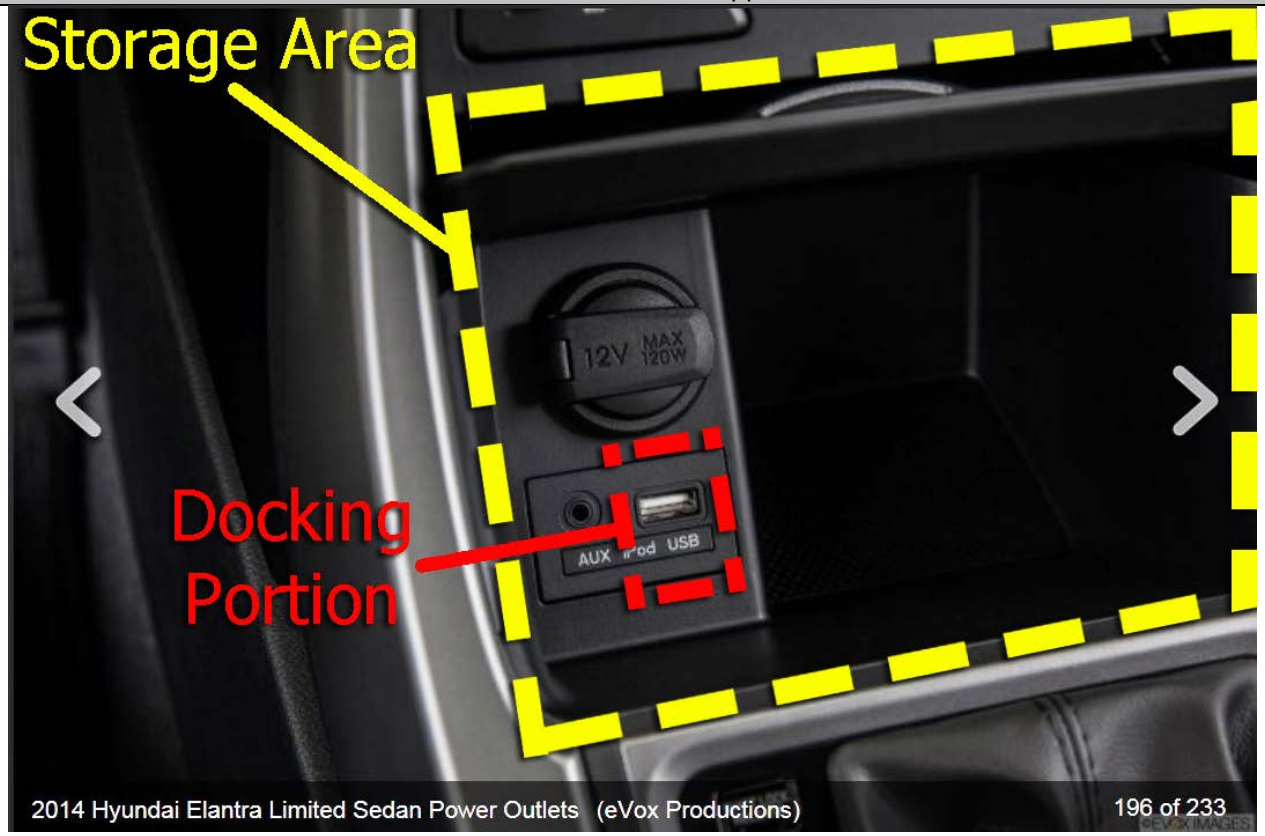
Detailed information for the Bluetooth hands-free is described in the "Audio section" in this chapter or in the manual supplied separately.

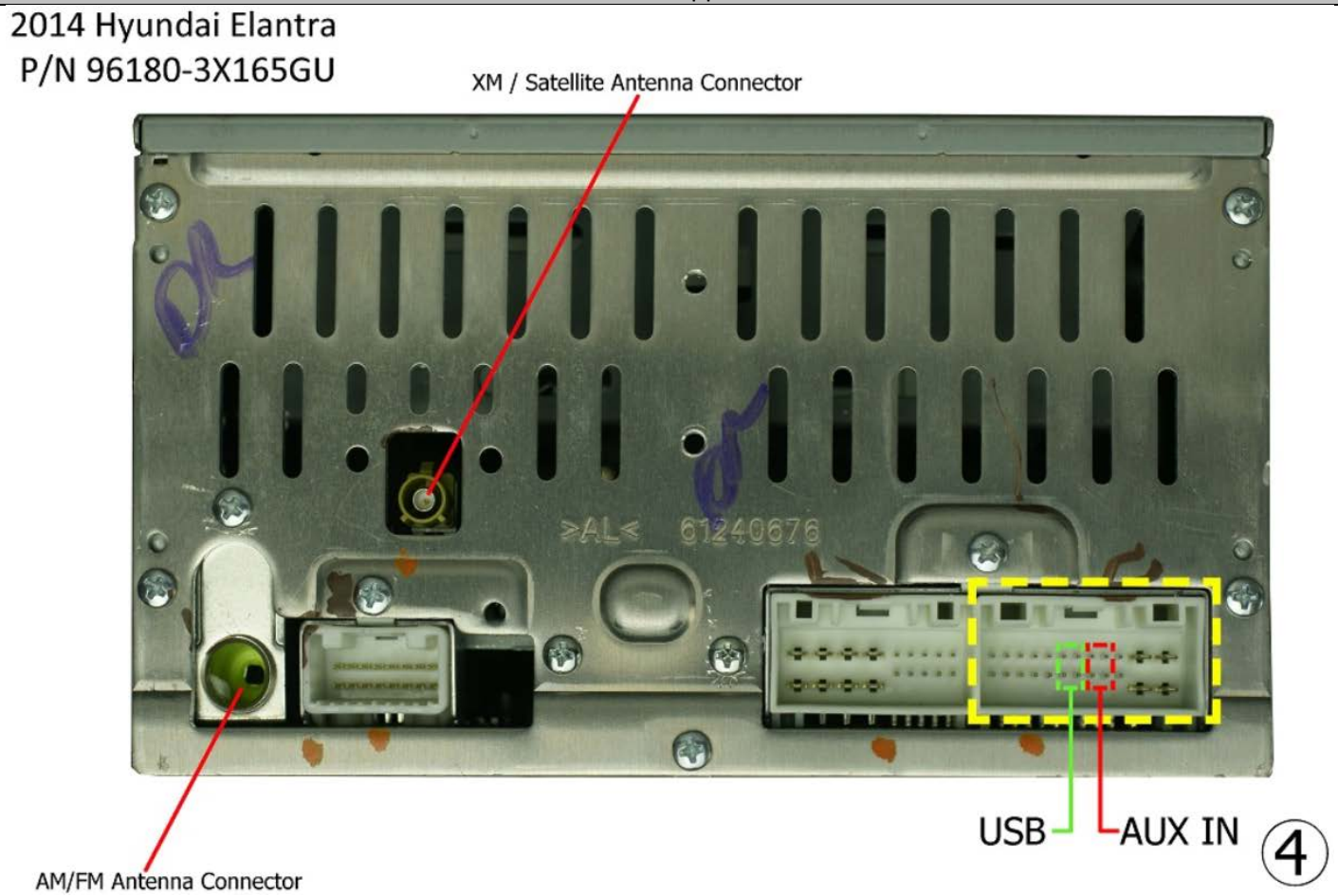
See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:97.

Claim	Support
	 *See, e.g.,* http://www.edmunds.com/hyundai/elantra/2014/?sub=sedan&src=1446768239048, photo 196 of 233 (captured 11/5/2015).
a docking portion within the storage area for communicating and physically	Each accused Hyundai automobile includes a "docking portion within the storage area for communicating and physically mating with the portable device." The USB port itself may be considered a "docking portion." The after-market audio device may also be stored in various locations throughout the vehicle when connected to the USB port, including in the central portion of the dashboard.

Claim	Support
mating with the portable device;	

See, e.g., Ex. A (2011 Hyundai Elantra Owner's Manual) at 4:97.

Claim	Support
	 *See, e.g.,* http://www.edmunds.com/hyundai/elantra/2014/?sub=sedan&src=1446768239048, photo 196 of 233 (captured 11/5/2015).
a data port in communication with the docking portion, the data port	Each accused Hyundai automobile includes a data port (USB port) attached to a cable from the back side of the "docking portion" for integrating portable devices (such as MP3 players, iPhones, iPads, and other smart devices) with the car stereo.

Claim	Support
connectable with a device for integrating the portable device with the car stereo; and	
an interface connected to said data port and to the car stereo, said interface	Each device integration system of the accused Hyundai automobiles includes "an interface connected to said data port and to the car stereo, said interface channeling audio from the portable device to the car stereo." *See* element [1D] support.

Claim	Support
channeling audio from the portable device to the car stereo	
said interface including a microcontroller in electrical communication with the portable device through said data port and the car stereo,	*See* element [1E] support.
said microcontroller pre-programmed to execute first program code for remotely controlling the portable device using the car stereo by processing control commands generated by the car stereo in a format incompatible	At least the Telechips microcontroller of each device integration system of the accused Hyundai automobiles is "pre-programmed to execute first program code for remotely controlling the portable device using the car stereo by processing control commands generated by the car stereo in a format incompatible with the portable device into formatted control commands compatible with the portable device, and dispatching formatted control commands to the portable device for execution thereby." *See* element [1F] support.

Claim	Support
with the portable device into formatted control commands compatible with the portable device, and dispatching formatted control commands to the portable device for execution thereby.	
47. The apparatus of claim 44, wherein the data port comprises an RS-232 or Universal Serial Bus (USB) port.	The data port of each accused Hyundai automobile "comprises [a] Universal Serial Bus (USB) port." *See* claims 23 and 24 support.
57. An audio device integration system comprising:	*See* preamble [1P] support.

Claim	Support
a first electrical connector connectable to a car stereo;	*See* element [1A] support.
a second electrical connector connectable to a portable MP3 player external to the car stereo	*See* element [1B] support.
an interface connected between said first and second electrical connectors for transmitting audio from a portable MP3 player to a car stereo,	*See* element [1D] support.
said interface including a microcontroller in electrical communication with said first and second electrical connectors,	*See* element [1E] support.

Claim	Support
said microcontroller pre-programmed to execute:	
a first pre-programmed code portion for generating a device presence signal and transmitting the signal to the car stereo to maintain the car stereo in an operational state; and	*See* claim 6 support.
a second pre-programmed code portion for remotely controlling the MP3 player using the car stereo by receiving a control command from the car stereo through said first electrical	*See* element [1F] support.

Claim	Support
connector in a format incompatible with the MP3 player, processing the control command into a formatted control command compatible with the MP3 player, and transmitting the formatted control command to the MP3 player through said second electrical connector for execution by the MP3 player.	
58. The apparatus of claim 57, wherein the car stereo further	*See* claim 2 support.

Claim	Support
comprises an Original Equipment Manufacturer (OEM) car stereo connected to the first electrical connector.	
60. The system of claim 57, wherein said microcontroller is pre-programmed to execute a third code portion for receiving data from the MP3 player in a format incompatible with the car stereo, processing received data into formatted data compatible with the car	*See* element [1G] support.

Claim	Support
stereo, and transmitting formatted data to the car stereo for display thereby.	
61. The apparatus of claim 60, wherein said third code portion processes data generated by the MP3 player including track and time information.	*See* claim 7 support.
62. The apparatus of claim 60, wherein said third code portion processes data generated by the MP3 player including song title and artist information.	*See* claim 8 support.

Claim	Support
63. The apparatus of claim 60, wherein commands are input by a user using one or more control buttons or presets on the car stereo.	*See* claim 13 support.
64. The apparatus of claim 57, further comprising a bus connection established between the MP3 player and said interface. 65. The apparatus of claim 64, wherein the bus connection comprises a Universal Serial Bus (USB)	*See* claims 23 and 24 support.

Claim	Support
connection.	
86. A device for integrating video information for use with a car stereo, comprising:	*See* preamble [1P] support.
a first electrical connector connectable to a car stereo;	*See* element [1A] support.
a second electrical connector connectable to an after-market video device external to the car stereo;	*See* element [1B] support.
an interface connected between said first and second electrical connectors for transmitting video information from the after-	*See* element [1D] support.

Claim	Support
market video device to the car stereo,	
the interface including a microcontroller in electrical communication with said first and second electrical connectors, said microcontroller pre-programmed to execute:	*See* element [1E] support.
a first pre-programmed code portion for generating a device presence signal and transmitting the signal to the car stereo through said first electrical connector to maintain the car stereo in an operational	*See* claim 6 support.

Claim	Support
state responsive to signals generated by the after-market video device.	
88. The apparatus of claim 86, further comprising a bus connection established between the video device and said interface. 89. The apparatus of claim 88, wherein the bus connection comprises a Universal Serial Bus (USB) connection.	*See* claims 23 and 24 support.
90. The apparatus of claim 86,	*See* element [1F] support.

Claim	Support
wherein said microcontroller is pre-programmed to execute a second code portion for receiving a control signal from the car stereo in a format incompatible with the video device, processing a received control signal into a formatted control signal compatible with the video device, and transmitting the formatted control signal to the video device for execution thereby.	
91. The	*See* element [1G] support.

Claim	Support
apparatus of claim 90, wherein said microcontroller is pre-programmed to execute a third code portion for receiving data from the video device incompatible with the car stereo, processing received data into formatted data compatible with the car stereo, and transmitting formatted data to the car stereo for display thereon.	
92. An audio device integration system	*See* preamble [1P] support.

Claim	Support
comprising:	
a car stereo; a portable audio device external to the car stereo;	*See* element [1A] support.
an interface connected between the car stereo and the portable audio device,	*See* elements [1A] and [1D] support.
the interface including a microcontroller pre-programmed to execute:	*See* element [1E] support.
first pre-programmed means for generating a device presence signal and transmitting the signal to the car stereo to maintain the car stereo in an operational state;	*See* claim 6 support.
second pre-	*See* element [1F] support.

Claim	Support
programmed means for remotely controlling the portable audio device using the car stereo by receiving a control command from the car stereo in a format incompatible with the portable audio device, processing the control command into a formatted control command compatible with the portable audio device, and transmitting the formatted control command to the portable audio device for execution	

Claim	Support
thereby; and	
means for transmitting audio from the portable audio device to the car stereo.	*See* element [1G] support.
94. The apparatus of claim 92, wherein the portable audio device comprises a portable MP3 player.	*See* preamble [1P] support.
97. The apparatus of claim 92, wherein the second electrical connector comprises further comprising a bus connection established between the portable audio device and said	*See* claims 23 and 24 support.

Claim	Support
interface. 98. The apparatus of claim 97, wherein the bus connection comprises a Universal Serial Bus (USB) connection.	