



MFi

Suggested Test Cases

Version 2.1

The following tests do not cover all functionality nor do they represent all required testing. It is the responsibility of the MFi Licensee to ensure that all required and applicable tests are performed. This includes tests not specified within this document.

Test #	Area	Test Description
1	Accessory Power	If the Accessory uses the USB Device Mode transport, verify that the accessory does not draw more than 0 mA current from the Apple device when in low power mode.
2	Accessory Power	If the Accessory uses the USB Host Mode transport, verify that the accessory does not draw more than 10 mA current from the Apple device when in low power mode.
3	Accessory Power	If the Accessory uses the USB Host Mode transport, is an Audio device and requests Intermittent High Power Mode, verify that the accessory does not draw more than 100 mA current from the Apple device when the Apple device selects a nonzero bandwidth interface setting.
4	Accessory Power	If the Accessory uses the USB Host Mode transport, is a MIDI device and requests Intermittent High Power Mode, verify that the accessory does not draw more than 100 mA current from the Apple device when the Apple device starts polling a MIDI Streaming IN endpoint.
5	Accessory Power	If the Accessory uses the USB Host Mode transport, is an audio device and requests Intermittent High Power Mode, verify that the accessory returns to Low Power Mode with 1 second after The Apple device selects a zero bandwidth interface setting.
6	Accessory Power	If the Accessory uses the USB Host Mode transport, is a MIDI device and requests Intermittent High Power Mode, verify that the accessory returns to Low Power Mode with 1 second after The Apple device stops polling a MIDI Streaming IN endpoint.
7	Battery	Verify that when the battery pack is full its charging voltages are within spec: Power on accessory (if necessary) Charge the battery pack completely Attach ATS to the accessory Verify that USB Vbus voltage is within spec
8	Battery	Verify that when the battery pack is nearly fully depleted that the charging voltages are within spec: Turn accessory power on (if necessary) Deplete the battery pack to its lowest charge Attach ATS to the accessory Run USB Vbus load test in ATS (Tools > Run USB Vbus Load Test) Verify that USB Vbus voltage stays within spec under load. If Vbus voltage drops below 4.70V an error will be displayed in ATS. Note: ATS is unable to supply a 2.1 A load. However, to be compatible with iPads, the accessory must provide a minimum of 4.55 V and 2.1 A.
9	Cables / Connectors	Verify that the cables must meet or exceed all applicable USB-IF specifications
10	Cables / Connectors	Verify that the accessory works as expected when the C10 cable is inserted in both orientations. (Rotate Connector 180°)
11	Cables / Connectors	Insert and Remove Connector at various angles: left, right, up, down, straight - Verify that the accessory works as expected.
12	Cables / Connectors	Insert and Remove Connector several times slowly. - Verify that the accessory works as expected.
13	Cables / Connectors	Insert and Remove Connector several times rapidly. - Verify that the accessory works as expected.
14	Cables / Connectors	Verify that the connector fits securely into the Apple device.
15	Cables / Connectors	Verify that the reserved C10 connector pads are unconnected as per the specifications

16	Cables / Connectors	Verify that C10 connector pad 6 is floating.
17	Cables / Connectors	Verify that C10 Pad 1 and Pad 9 are permanently connected to the accessory's system ground. If accessory supports USB Host or Device Mode, a drain wire must be connected to C10 pad 1.
18	Cables / Connectors	Verify that the cables exhibit no more inductance than a simple ferrite bead on every circuit.
19	Cables / Connectors	Verify that to minimize power losses, every cable shield is be connected to the ground conductor at both ends.
20	Charging	Check to see if the accessory's USB resistor network is in spec with no device attached: Plug in accessory to wall outlet (if necessary) Turn accessory power on (if necessary) Attach ATS to the accessory Verify that D+ and D- voltages are within spec
21	Charging	If accessory power can be turned off, verify that the voltage is within spec when not charging the device: Plug in accessory to wall outlet (if necessary) Turn off accessory power (if necessary) Attach ATS to the accessory Check reserved pins in ATS Verify that the charging voltages are within spec either 0V or 4.75V to 5.25V Note: Many accessories will charge the device when the accessory power has been turned off.
22	General	1. Check to see if the accessory uses the correct Accessory ID (resistor): 2. Plug in accessory to wall outlet (if necessary) Turn accessory power on (if necessary) Attach ATS to the accessory Check Accessory ID (resistor) value in ATS Verify that the value is within spec for the type of accessory under test.
23	General	Check to see if the accessory grounds Accessory Detect properly: Plug in accessory to wall outlet (if necessary) Attach ATS to the accessory Check Accessory Detect "fall" value in ATS Detach ATS from the accessory Check Accessory Detect "rise" value in ATS Verify that if the accessory type requires accessory detect to be grounded that "fall" increase by one on each attach of ATS and "rise" increases by one on each detach of ATS.
24	General	Check to see if the accessory uses any reserved pins: Plug in accessory to wall outlet (if necessary) Turn accessory power on (if necessary) Attach ATS to the accessory Check reserved pins in ATS Verify that pins 14 and 17 have been left floating by the accessory

25	General	Verify that Apple Devices with Emoji characters used as the device name connect and function with the accessory as expected.
26	Head Units	<p>Apple device is recognized on Head Unit's display - Verify with ALL supported Apple devices</p> <p>1. Start playing music on Apple Device, then connect to HU</p> <p>RESULTS Verify Apple device is recognized on HU while in "iPod mode" (you may have to toggle the input/source on to "iPod" on the HU)</p>
27	Head Units	<p>Verify Audio routes from Apple device to Head Unit</p> <p>1. Start playing music on Apple Device, then connect to HU</p> <p>RESULTS Verify Audio playing on Apple device routes to HU speakers</p>
28	Head Units	<p>Verify music playback starts when connecting Apple device with empty 'playback engine'</p> <p>1. Reset Apple Device (to clear playback engine) 2. Connect Apple device to HU</p> <p>RESULTS Verify audio starts playing on HU when Apple device is connected (on some HUs you may need to change Source to "iPod" and/or manually select a song on the HU)</p>
29	Head Units	<p>Verify Music playback starts when connecting Apple device in Sleep mode</p> <p>1. Put Apple device in Airplane Mode. 2. Leave Apple device idle for 2 minutes (detach power, make sure currently playing track is PAUSED) 3. Connect Apple device to HU</p> <p>RESULTS: Verify audio resumes from last track played</p>
30	Head Units	<p>Verify Audio Podcast resumes when connected to Head Unit</p> <p>1. Play Audio Podcast on Apple device 2. Connect Apple device to HU</p> <p>RESULTS: Verify Audio Podcast resumes on HU</p>
31	Head Units	<p>Verify Audiobook resumes when connected to Head Unit</p> <p>1. Play Audiobook on Apple device 2. Connect Apple device to HU</p> <p>RESULTS: Verify Audiobook resumes playing on HU</p>

32	Head Units	<p>Verify Genius Mixes resumes when connected to Head Unit</p> <ol style="list-style-type: none"> 1. Genius Mix is automatically generated by iTunes. Sync Genius Mix to Apple device. 2. Play Genius Mix track on Apple device 3. Connect Apple device to HU <p>RESULTS: Verify Genius Mixes resumes on HU</p>
33	Head Units	<p>Verify connectivity by DETACH and ATTACH Apple device 10 times (very quickly) from Head Unit</p> <ol style="list-style-type: none"> 1. DETACH and ATTACH Apple device from Head Unit 30-pin 10 times <p>RESULTS After 10 times, Verify Apple Device is recognized by the Head Unit and can play music Verify user is able to browse and select tracks</p>
34	Head Units	<p>Verify PLAY / PAUSE on the Head Unit work as expected</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU 2. Play track <p>RESULTS Verify Play/Pause works as expected</p>
35	Head Units	<p>Verify pressing NEXT track button on Head Unit skips to the next track</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU 2. Press Next Track button on HU <p>RESULTS: Verify music skips to the Next track</p>
36	Head Units	<p>Verify pressing PREVIOUS track button on Head Unit skips to the previous track (for songs playing < 2 seconds)</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU 2. Play track for less than 2 seconds 3. Press Previous Track button on HU <p>RESULTS: Verify music backs up to the beginning of previous track</p>
37	Head Units	<p>Verify PREVIOUS track button on Head Unit skips to beginning of current track (for songs playing > 2 seconds)</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU 2. Play track for more than 2 seconds 3. Press Previous track button on HU <p>RESULTS: Verify music backs up to the beginning of current track</p>

38	Head Units	<p>Verify pressing and holding down << and >> buttons scrubs within a track (not all HU support this feature)</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU 2. Hold down << button on HU 3. Hold down >> button on HU <p>RESULTS</p> <ol style="list-style-type: none"> 2. Verify holding down << button scrubs the track backwards 3. Verify holding down >> button scrubs the track backwards <p>** test only applicable if Head Unit supports this feature</p>
39	Head Units	<p>Verify Fast-Rewind all the way to the beginning of track</p> <ol style="list-style-type: none"> 1. Play track on HU 2. Hold down << to rewind to the beginning of the track <p>RESULTS</p> <p>Verify track can be scrubbed to the beginning of the track</p> <p>Verify track starts to play at regular speed when end-of-track is reached</p>
40	Head Units	<p>Verify Fast-Forward all the way to the end of track</p> <ol style="list-style-type: none"> 1. Play track on HU 2. Hold down >> to the end of the track <p>RESULTS:</p> <p>Verify track can be scrubbed forward to end of the track</p> <p>Verify next track begins playing at normal speed</p>
41	Head Units	<p>Verify Set Shuffle tracks (Toggle ON/OFF)</p> <ol style="list-style-type: none"> 1. Create Alphabetical or Numerical Playlist on iTunes and sync it to your Apple device 2. Connect Apple device to HU 3. On HU, set Shuffle tracks to ON <p>RESULTS</p> <p>Verify pressing >> button on HU shuffles the next track (tracks will play at non-alphabetical or non-numerical order since they are shuffled)</p>
42	Head Units	<p>Verify Set Shuffle Album (Toggle ON/OFF) - (if HU supports this feature)</p> <ol style="list-style-type: none"> 1. On HU, set Shuffle Albums to ON 2. Verify pressing >> on HU shuffles Albums 3. Navigate to Artists. 4. Play all tracks from Album "A_AlbumShuffle" test content (has five albums), then set shuffle Album. <p>RESULTS</p> <p>Verify that Album order is random, but tracks inside each Album should be in order of track numbers.</p>

43	Head Units	<p>Verify Shuffle ON/OFF in Podcast category and Podcast-only playlist</p> <ol style="list-style-type: none"> 1. On HU, browse to Podcast category 2. Set Shuffle ON <p>RESULTS Verify Podcast shuffle works in Podcast category Verify Podcast shuffle works in Podcast-only playlist</p>
44	Head Units	<p>Verify Shuffle ON/OFF in Audiobook category and Audiobook-only playlist</p> <ol style="list-style-type: none"> 1. On HU, browse to Audiobook category 2. Set Shuffle ON <p>RESULTS Verify Audiobook shuffle works in Audiobook category Verify Audiobook shuffle works in Audiobook-only playlist</p>
45	Head Units	<p>Verify Repeat One</p> <ol style="list-style-type: none"> 1. On HU, set Repeat One 2. Select music track in the list, then press NEXT track <p>RESULTS: Verify track repeats</p>
46	Head Units	<p>Verify Repeat All (when pressing Previous track)</p> <ol style="list-style-type: none"> 1. Set Repeat All on HU 2. Select the first track in the list, then hit 'Previous track' button <p>RESULTS: Verify the list wraps back to the last track</p>
47	Head Units	<p>Verify Repeat All (playing last track in the playlist)</p> <ol style="list-style-type: none"> 1. Set Repeat All on HU 2. Let the last track in the list play to the end <p>RESULTS: Verify the list wraps properly (should wrap around all the songs in the Playlist you are in)</p>
48	Head Units	<p>Verify Repeat All (pressing NEXT at last track)</p> <ol style="list-style-type: none"> 1. Set Repeat All on HU 2. Select the last track in the list, then hit 'Next' button on HU <p>RESULTS Verify the list wraps properly to first track</p>

49	Head Units	<p>Verify Audiobook resumes where it was interrupted</p> <ol style="list-style-type: none"> 1. Play Audiobook. Mark the time. 2. Select a different track in the music database, 3. Go back to the Audiobook <p>RESULTS: Verify Audiobook resumes where it was interrupted</p>
50	Head Units	Verify the song title that is displayed matches the song that's playing
51	Head Units	<p>Verify Track title / time / album / Artist art shows up properly on HU screen</p> <ol style="list-style-type: none"> 1. Start playing music on Apple Device, then connect to HU 2. View track information on HU <p>RESULTS: Verify track title / time / album art shows up properly (HU may not support all)</p> <p>* Podcasts dates might not display (shows zeros)</p>
52	Head Units	Verify elapsed/Remaining Time updates properly on HU
53	Head Units	Verify correct Artwork to song playing (must test with every supported Apple device)
54	Head Units	Verify the track title matches when Shuffling (Mixed playlist, Podcasts/Audiobooks)
55	Head Units	Verify chapter info (if HU supports)
56	Head Units	Verify elapsed time shows correctly in long Audiobooks, i.e hours, minutes, seconds (if HU supports)
57	Head Units	<p>Verify User is able to access to Playlists / Artists / Albums categories and select music on HU</p> <ol style="list-style-type: none"> 1. Navigate in and out of different Folders (Playlists, Artists etc) 2. Select track to play <p>Verify User is able to access to Playlists / Artists / Albums categories and select music</p>
58	Head Units	<p>Verify newly created Playlist shows up and is accessible</p> <ol style="list-style-type: none"> 1. Create a new playlist (Add Playlist...) on Apple device then connect to HU <p>RESULTS: Verify newly created Playlist shows up and is accessible</p>
59	Head Units	Verify that Movie, Music video and Video Podcasts contents are categorized correctly on the HU
60	Head Units	<p>Verify that Head Unit can handle a blank database on Apple device</p> <ol style="list-style-type: none"> 1. Attach Apple device without any content (don't synchronize any content to Apple device) <p>RESULTS: Verify HU handles it properly, there are no crashes or hangs on Apple device or HU</p>

61	Head Units	<p>Verify Head Unit can handle loading of 4,000 tracks</p> <ol style="list-style-type: none"> 1. Synchronize “4000 tracks for Performance test to the Apple Device. 2. Attach Apple device to HU <p>RESULTS: Verify audio Playback should start within 15 seconds (Some HU require manually selecting and playing track. In this case, verify that you are able to manually select and play track within 15 seconds)</p>
62	Head Units	<p>Verify you can browse into Artist and Album with 4,000 tracks</p> <ol style="list-style-type: none"> 1. Synchronize “4k tracks for Performance test” files to the Apple device. 2. Attach Apple device to HU <p>RESULTS When browsing into Artists and Albums, verify all content in Artist and Album are listed in timely manner (within 3 seconds)</p>
63	Head Units	<p>Verify Head Unit doesn’t get into a bad state if categories are empty</p> <ol style="list-style-type: none"> 1. Synchronize Audio ONLY on an Apple device that supports video (so there should be no content in each area: Movie, Music Video, TV show and Video Podcast) 2. Attach Apple device to Head Unit <p>RESULTS: Verify that Movie, Music Video, TV show and Video Podcast categories are empty Verify HU doesn’t get into a bad state</p>
64	Head Units	<p>Verify that music pauses when the Head Unit is not in “iPod mode”</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU 2. Change audio source of head unit to non-iPod (CD/FM) <p>RESULTS: Verify that music pauses when the HU is not in iPod mode</p>
65	Head Units	<p>Verify switching Head Unit back to “iPod mode” resumes music</p> <ol style="list-style-type: none"> 1. Audio source of HU is non-iPod (CD/FM) 2. Switch HU back to iPod mode <p>RESULTS: Verify track resumes</p>
66	Head Units	<p>Verify Apple device pauses properly when turning ACC power OFF</p> <ol style="list-style-type: none"> 1. Apple device is attached to HU 2. Keep HU YELLOW cable attached to power, remove RED cable <p>RESULTS: Verify Apple devices pauses properly</p>

67	Head Units	<p>Verify iPod enumerates again and starts music properly when ACC power is turned ON</p> <ol style="list-style-type: none"> 1. HU ACC power is OFF 2. Wait a few minutes to let Apple device sleeps, then turn ACC power back ON (with YELLOW cable attached to power, connect RED cable) <p>RESULTS: Verify Apple device enumerates again and starts music properly Verify Apple device charges</p>
68	Head Units	<p>Verify Apple device is recognized when HU is turned ON</p> <ol style="list-style-type: none"> 1. Connect a sleeping/hibernating Apple device to a powered-off HU 2. Turn ON HU <p>RESULTS: Verify Apple device is recognized when HU is turned ON</p>
69	Head Units	<p>VIDEO: Repeat the same test case with TV Out set to "On".</p> <ol style="list-style-type: none"> 1. On Apple device, go to Settings -> TV Out, and select "On" 2. Attach Apple device to HU and playback video content via HU <p>RESULTS: Extended Interface mode should ignore TV-Out setting and output video playback to the HU</p>
70	Head Units	<p>VIDEO (run these tests if HU supports video browsing): Verify Extended Interface ignores Apple device's TV Out setting</p> <ol style="list-style-type: none"> 1. On Apple device, go to Settings -> TV Out, and select "Off" 2. Attach Apple device to HU and playback video content via HU <p>RESULTS Extended Interface mode should ignore TV-Out setting and output video playback to the HU</p>
71	Head Units	<p>VIDEO: Repeat the same test case with TV Out set to "Ask"</p> <ol style="list-style-type: none"> 1. On Apple device, go to Settings -> TV Out, and select "Ask" 2. Attach Apple device to HU and playback video content via HU <p>RESULTS: Extended Interface mode should ignore TV-Out setting and output video playback to the HU</p>
72	Head Units	<p>VIDEO: Test all video content plays (Movies, Music Videos, Video Podcasts, TV shows, Rentals)</p> <ol style="list-style-type: none"> 1. Browse into each category 2. Select and Play each video content <p>RESULTS: Verify all video content play on HU</p>

73	Head Units	<p>VIDEO: Verify that Extended Interface UI remains on Apple device screen when playing video through HU</p> <p>1. Play video on HU</p> <p>RESULTS</p> <p>1. Verify "Accessory Connected" lockout screen appears on iOS devices when launching iPod App</p> <p>2. Verify "Attached to accessory. OK to disconnect" appears on LCM for non-iOS devices (for example iPod Nano, iPod Classic).</p> <p>3. Verify click-wheel buttons are locked out for iPod Nano and iPod Classic</p>
74	Head Units	VIDEO: Verify that video playback fits on output screen.
75	Head Units	VIDEO: Verify that video playback is free of artifacts and noise
76	Head Units	VIDEO: Verify that video image and audio from video content are in sync
77	Head Units	VIDEO: Set TV screen to "Standard" (4:3) and verify that video output ratio is correct (if option is available)
78	Head Units	VIDEO: Set TV screen to "Widescreen" (16:9) and verify that video output ratio is correct (if option is available)
79	Head Units	<p>VIDEO: Attach Apple device to HU while playing video LCM. Verify video playback doesn't resume on HU</p> <p>1. Start playing video content on Apple device</p> <p>2. Connect Apple device to HU</p> <p>RESULTS:</p> <p>Verify video playback doesn't resume on HU</p>
80	Head Units	<p>VIDEO: Attach Apple device to a HU while playing music video. Verify only audio from music video playback resumes</p> <p>1. Start playing music video on Apple device</p> <p>2. Connect Apple device to HU</p> <p>RESULTS:</p> <p>Verify only audio from music video playback resumes on HU</p>
81	Head Units	<p>VIDEO: Verify video plays when Apple device is set to PAL</p> <p>1. On Apple device, set video playback to PAL</p> <p>2. Attach Apple device to HU, play video content</p> <p>RESULTS:</p> <p>Verify video plays</p>
82	Head Units	<p>VIDEO: Verify video plays when Apple device is set to NTSC</p> <p>1. On Apple device, set video playback to NTSC</p> <p>2. Attach Apple device to HU, play video content</p> <p>RESULTS:</p> <p>Verify video plays</p>
83	Head Units	VIDEO: Verify Play/Pause works on video playback for HUs that support "play/pause" function
84	Head Units	VIDEO: Verify NEXT / PREVIOUS works on video playback for HUs that support "Next / Previous" function
85	Head Units	VIDEO: Verify able to scrub video content with Fast Forward / REWIND video playback

86	Head Units	<p>VIDEO: Verify able to switch between music and video content</p> <ol style="list-style-type: none"> 1. Browse to music category on HU, select track 2. Browse to video category, select video track <p>RESULTS:</p> <ol style="list-style-type: none"> 1. Verify music plays 2. Verify Video plays
87	Head Units	<p>VIDEO: Verify car ignition pauses video playback</p> <ol style="list-style-type: none"> 1. Apple device is attached to HU 2. Play video content on HU 2. Keep HU YELLOW cable attached to power, remove RED cable <p>RESULTS:</p> <p>Verify Apple devices pauses video playback</p>
88	Head Units	<p>iPod Control Mode: (run these tests if HU supports iPod Control Mode): Verify music playback in and out of Extended Interface (switch from Extended Interface mode to iPod Control mode)</p> <p>(not all HU support iPod Control mode)</p>
89	Head Units	<p>iPod Control Mode: Verify Apple device switches to Music Player when attached playing another media App (example YouTube) - Test ONLY with iOS devices</p> <ol style="list-style-type: none"> 1. Run any media playback app (for example YouTube) without attaching to HU 2. Attach Apple device to HU <p>RESULTS:</p> <p>Verify Apple device goes back to MusicPlayer App (iPod App)</p>
90	Head Units	<p>iPod Control Mode: Verify PLAY / PAUSE on the HU work as expected</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU <p>RESULTS:</p> <p>Verify track controls work as expected</p>
91	Head Units	<p>iPod Control Mode: Verify Next Track skips to the next track</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU, play track 2. Press Next Track button on Apple device <p>RESULTS:</p> <p>Verify music skips to the Next track</p>

92	Head Units	<p>iPod Control Mode: Verify Previous Track button HU skips to the previous track (for songs playing < 2 seconds)</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU 2. Play track for less than 2 seconds 3. Press Previous Track on Apple device <p>RESULTS Verify music backs up to the beginning of previous track</p>
93	Head Units	<p>iPod Control Mode: Verify Previous Track button HU skips to beginning of current track (for > 2 seconds)</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU 2. Play track for more than 2 seconds 3. Press Previous Track on Apple device <p>RESULTS: Verify music backs up to the beginning of current track</p>
94	Head Units	<p>iPod Control Mode: Verify pressing and holding down << and >> buttons scrubs within a track</p> <ol style="list-style-type: none"> 1. Connect Apple device to HU 2. Hold down << and >> buttons on Apple device <p>RESULTS: Verify holding down buttons scrubs the track</p>
95	Head Units	<p>iPod Control Mode: Verify Fast rewind all the way to the beginning of track</p> <ol style="list-style-type: none"> 1. Play track on HU 2. Hold down << on Apple device to rewind to the beginning of the track <p>RESULTS Verify track can be scrubbed to the beginning of the track Verify track starts to play at regular speed when end-of-track is reached</p>
96	Head Units	<p>iPod Control Mode: Verify Fast Forward all the way to the end of track</p> <ol style="list-style-type: none"> 1. Hold down >> on Apple device to the end of the track <p>RESULTS: Verify track can be scrubbed forward to end of the track Verify new track begins playing at normal speed</p>
97	Headphone Remote and Mic	<p>Verify that there are no grounding issues, heavy static, audio interference or audio interference when headset is attached to Apple device</p> <ol style="list-style-type: none"> 1. Repeatedly plug the headset-pin in and out of the headphone jack, wiggle the connector, also touch the input connector to the rim of the headset <p>RESULTS Verify that there are no grounding issues, heavy static, audio interference or audio interference</p>

98	Headphone Remote and Mic	<p>Verify headset can be fully inserted into Apple device headphone-port</p> <p>1. Push 3.5mm jack into Apple device's headphone port</p> <p>RESULTS</p> <p>Verify jack can be fully inserted, there should be no physical defect in the 3.5mm jack</p>
99	Headphone Remote and Mic	<p>Verify Play / Pause works for song or video</p> <p>1. Press the center button once</p> <p>2. Song or video pauses</p> <p>3. Press again to resume playback</p> <p>RESULTS</p> <p>Verify Play / Pause works for song or video</p>
100	Headphone Remote and Mic	<p>Verify Skip to next song or chapter</p> <p>1. Press the center button twice quickly</p> <p>RESULTS</p> <p>Verify track skips to next song or chapter</p>
101	Headphone Remote and Mic	<p>Verify Fast-forward</p> <p>1. Press the center button twice quickly and hold down</p> <p>RESULTS</p> <p>Verify track is scrubbed forward</p>
102	Headphone Remote and Mic	<p>Verify Back to previous song or chapter</p> <p>1. Press the center button three times quickly</p> <p>RESULTS</p> <p>Verify track goes to previous song or chapter</p>
103	Headphone Remote and Mic	<p>Verify that pressing + button increases volume</p>
104	Headphone Remote and Mic	<p>Verify that pressing - button decreases volume</p>
105	Headphone Remote and Mic	<p>Verify that pressing center button once will Answer / End a call</p> <p>1. Call Apple device from another phone</p> <p>2. Press center button once to answer call</p> <p>3. Press center button once to end call</p> <p>RESULTS</p> <p>2. Verify call is answered</p> <p>3. Verify call is ended</p>

106	Headphone Remote and Mic	<p>Verify that holding down center button will decline a call</p> <ol style="list-style-type: none"> 1. Call Apple device from another phone 2. Hold down center button for about 2 seconds, then let go <p>RESULTS</p> <p>Verify you hear two low beeps to confirm that you declined call</p> <p>Verify call is declined</p>
107	Headphone Remote and Mic	<p>VOICEOVER: Verify Voiceover announces currently playing song title, artist name</p> <ol style="list-style-type: none"> 1. Play track on Apple device 2. Press-hold center button <p>RESULTS</p> <p>Verify song title and artist name are announced</p>
108	Headphone Remote and Mic	<p>VOICEOVER: Verify Voiceover announces currently playing song title, artist name and playlist</p> <ol style="list-style-type: none"> 1. Play track on Apple device 2. Press-hold center button, continue pressing until a tone is heard then release <p>RESULTS</p> <p>Verify Voiceover announces the current playlist, and then all playlists on the Apple device</p>
109	iAP	Verify that the iOS device launches the associated accessory app if installed on the device. (Applies if accessory supports AppLaunch feature only)
110	iAP	On the HID keyboard, press and verify functionality of the Play/Pause, left, right, Mute, Louder, Softer, etc buttons
111	iAP	On the Media Playback Remote, press and verify the functionality of the Play, Pause, Transport Right, Transport Left, repeat etc. buttons.
112	iAP	Verify that Media Library Playback messages are only generated after direct user action with the accessory.
113	iAP	Verify that the media being played on the Apple device matches the Now Playing metadata on the accessory.
114	iAP over UART	<ol style="list-style-type: none"> 1. Verify that the accessory communicates using either 19200 bps or 57600 bps: 2. Power on accessory (if necessary) 3. Attach device to ATS 4. Attach ATS to the accessory 5. Check the traffic window and summary panel in ATS <p>Verify that the accessory uses either 19200 bps or 57600 bps</p>
115	iAP over UART	<ol style="list-style-type: none"> 1. Verify that the accessory only uses one communication speed when attached to a device: 2. Power on accessory (if necessary) 3. Attach device to ATS 4. Attach ATS to the accessory 5. Uses the accessory to control the device (browse media, control media, transfer data, etc.) <p>Verify that the accessory choses a baud rate of 19200 bps or 57600 bps and does not change the communication speed while attached to the device</p>

116	iAP over UART	<p>Verify that the accessory's TX voltage stays within spec when communicating to a device:</p> <ol style="list-style-type: none"> 1. Power on accessory (if necessary) 2. Attach device to ATS 3. Attach ATS to the accessory 4. Uses the accessory to control the device (browse media, control media, transfer data, etc.) 5. Check the TX-to-iPod (pin 18) voltage in the summary panel of ATS <p>Verify that the TX-to-iPod (pin 18) value is shown in green while communicating with the device</p>
117	iTunes Tagging	<p>Verify that the accessory prompts the user when a radio station can be tagged:</p> <ol style="list-style-type: none"> 1. Power on accessory (if necessary) 2. Attach device to ATS 3. Attach ATS to the accessory 4. Tune the radio to an HD station with available tagging data <p>Verify that the accessory indicates when a tag is available to be stored onto the iPod. The accessory should display either text or a light that indicates a tag is available on the current station.</p>
118	iTunes Tagging	<p>Verify that the accessory does not prompt the user when a radio station can not be tagged:</p> <ol style="list-style-type: none"> 1. Power on accessory (if necessary) 2. Attach device to ATS 3. Attach ATS to the accessory 4. Tune the radio to a station that does not have tagging data (example: station with weak / no signal) <p>Verify that the accessory does not indicate that a tag is available to be stored onto the iPod</p>
119	iTunes Tagging	<p>Verify that the accessory can store tags when the device is not attached:</p> <ol style="list-style-type: none"> 1. Power on accessory (if necessary) 2. Tune the radio to an HD station with available tagging data 3. Wait for the accessory to indicate that a tag is available 4. Press the tag button on the accessory <p>Verify that the accessory displays that the tag was stored</p>
120	iTunes Tagging	<p>Verify that the accessory does not store the same tag twice when the button is pressed again:</p> <ol style="list-style-type: none"> 1. Power on accessory (if necessary) 2. Tune the radio to an HD station with available tagging data 3. Wait for the accessory to indicate that a tag is available 4. Press the tag button on the accessory 5. Wait for the accessory to prompt that the tag was stored 6. Press the tag button on the accessory again during the same song <p>Verify that the accessory does not store the tag again and displays that the tag was already stored</p>
121	iTunes Tagging	<p>Verify that the accessory can store at least 50 tags in its internal memory:</p> <ol style="list-style-type: none"> 1. Power on accessory (if necessary) 2. Tune the radio to an HD station with available tagging data 3. Wait for the accessory to indicate that a tag is available 4. Press the tag button on the accessory 5. Change to a different radio station 6. Wait for the accessory to indicate that a tag is available 7. Press the tag button on the accessory 9. Repeat steps five through seven 50 times <p>Verify that the accessory stores all 50 tags in its internal memory</p>

122	iTunes Tagging	<p>Verify that the accessory prompts the user to attach a device when its internal memory is full:</p> <ol style="list-style-type: none"> 1. Power on accessory (if necessary) 2. Tune the radio to an HD station with available tagging data 3. Wait for the accessory to indicate that a tag is available 4. Press the tag button on the accessory 5 Change to a different radio station 6 Wait for the accessory to indicate that a tag is available 7 Press the tag button on the accessory 8 Repeat steps five through seven until the accessory's memory is full <p>Verify that the accessory prompts the user to attach an iPod because the internal memory is full</p>
123	iTunes Tagging	<p>Verify that the accessory prompts the user if the attached device's memory is full and can not store tags:</p> <ol style="list-style-type: none"> 1 Completely fill the device with data (it may be required to fill the device with other files using USB mass storage) 2Power on accessory (if necessary) 3 Tune the radio to an HD station with available tagging data 4 Wait for the accessory to indicate that a tag is available 5 Attach device to ATS 6 Attach ATS to the accessory 7 Press the tag button on the accessory 8 Repeat the tagging steps as necessary to fill the device <p>Verify that the accessory prompts the user that the attached iPod's memory is full</p>
124	iTunes Tagging	<p>Verify that the device transfers all of the stored tag from the accessory to iTunes:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Wait for the accessory to prompt the user that the tags have been transferred 5 Disconnect the device from ATS 6 Attach the device to a computer with the latest version of iTunes installed <p>Verify that iTunes displays all of the tagged songs in the "Tagged" playlist. Check the accuracy of the tagged data (song name, artist name, etc).</p>
125	iTunes Tagging	<p>Verify that tag data can be transferred to the device in any accessory mode:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Tune the radio to an HD station with available tagging data 3 Wait for the accessory to indicate that a tag is available 4 Press the tag button on the accessory 5 Change the accessory to a different mode (CD, AUX, DVD, etc.) 6 Attach device to ATS 7 Attach ATS to the accessory 8 Wait for the accessory to prompt the user that the tags have been transferred 9 Disconnect the device from ATS 10 Attach the device to a computer with the latest version of iTunes installed <p>Verify that iTunes displays all of the tagged songs in the "Tagged" playlist. Check the accuracy of the tagged data (song name, artist name, etc). Tag data must be written to the iPod whenever the iPod is attached, regardless of what mode the accessory may be in. The user must never have to tell the accessory to write tag data nor have to change the accessory's mode to permit tag data to be written.</p>

126	iTunes Tagging	<p>Verify that ambiguous tag data is stored when the tag button is pressed after 5 seconds after the song starts:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Tune the radio to an HD station with available tagging data 3 Wait for the accessory to indicate that a tag is available 4 Wait for the song to change and verify that new song data is displayed 5 Wait 5 seconds 6 Press the tag button on the accessory 7 Attach device to ATS 8 Attach ATS to the accessory 9 Wait for the accessory to prompt the user that the tags have been transferred 10 Disconnect the device from ATS <p>Attach the device to a computer with the latest version of iTunes installed</p> <p>Verify that iTunes displays the song that was tagged and the previous (ambiguous) song in the “Tagged” playlist. Check the accuracy of the tagged data (song name, artist name, etc).</p>
127	iTunes Tagging	<p>Verify that tags can be stored when a device is attached to the accessory:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 ATS to the accessory 4 Tune the radio to an HD station with available tagging data 5 Wait for the accessory to indicate that a tag is available 6 Press the tag button on the accessory 7 Wait for the accessory to prompt the user that the tags have been transferred 8 Disconnect the device from ATS 9 Attach the device to a computer with the latest version of iTunes installed <p>Verify that iTunes displays all of the tagged songs in the “Tagged” playlist. Check the accuracy of the tagged data (song name, artist name, etc).</p>
128	Lingo - Digital Audio	<p>If applicable, verify that audio is not delayed during video playback:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Connect the accessory to an external monitor (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Play a video from the device <p>Verify that the audio from the device is not noticeably delayed during video playback.</p>
129	Lingo - Display Remote	<p>If applicable, verify that changing the accessory volume also changes the device volume slider:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Change the volume on the accessory <p>Verify that changing accessory’s volume on the accessory changes the device’s volume slider appropriately</p>

130	Lingo - Display Remote	<p>If applicable, verify that changing the accessory volume to its lowest setting changes the device volume slider:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Change the volume on the accessory to its lowest setting <p>Verify that when the accessory's volume is reduced to its lowest setting that the device's volume slider is also at the lowest setting. The volume from the accessory should no longer be audible.</p>
131	Lingo - Display Remote	<p>If applicable, verify that changing the accessory volume to its lowest setting changes the device volume slider:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Change the volume on the accessory to its lowest setting <p>Verify that when the accessory's volume is reduced to its lowest setting that the device's volume slider is also at the lowest setting. The volume from the accessory should no longer be audible.</p>
132	Lingo - Display Remote	<p>If applicable, verify that volume resumes when changing the accessory volume from its lowest setting to a normal setting:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device <p>Verify that the accessory volume is at its lowest setting Change the volume on the accessory to a normal setting Verify that when the accessory's volume is increased to a normal level that the music resumes to a normal listening level</p>
133	Lingo - Display Remote	<p>If applicable, verify that changing the accessory volume to its highest setting changes the device volume slider:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Pause music on the device (Warning make sure to stop audio playback before conducting this test) 5 Change the volume on the accessory to its highest setting <p>Verify that when the accessory's volume is raised to its highest setting that the device's volume slider is also at the highest setting</p>
134	Lingo - Display Remote	<p>If applicable, verify that changing the device volume to its lowest setting changes the accessory's volume:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Change the volume on the device to its lowest setting <p>Verify that when the device's volume slider is reduced to its lowest setting that the accessory's volume is also at the lowest setting. The volume from the accessory should no longer be audible.</p>

135	Lingo - Display Remote	<p>If applicable, verify that volume resumes when changing the device volume from its lowest setting to a normal setting:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Verify that the device volume is at its lowest setting 6 Change the volume on the device to a normal setting <p>Verify that when the device's volume is increased to a normal level that the music resumes to a normal listening level</p>
136	Lingo - Display Remote	<p>If applicable, verify that changing the device volume to its highest setting changes the accessory volume:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Pause music on the device (Warning make sure to stop audio playback before conducting this test) 5 Change the volume on the device to its highest setting <p>Verify that when the device volume slider is raised to its highest setting that the accessory volume is also at the highest setting</p>
137	Lingo - Display Remote	<p>If applicable, verify that the accessory displays the music track time position properly:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Fast forward, rewind, pause /resume the audio track, skip to the next and previous track <p>Verify that the track time position is always properly displayed and matches the actual information shown on the device</p>
138	Lingo - Display Remote	<p>If applicable, verify that changing shuffle state on the accessory properly changes the shuffle state on the device:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Change the shuffle state on the accessory 6 Check the shuffle state on the device <p>Verify that changing the shuffle state on the accessory properly changes the shuffle state on the device. This test must be repeated for each shuffle state (shuffle tracks, shuffle albums, shuffle off, etc).</p>
139	Lingo - Display Remote	<p>If applicable, verify that changing repeat state on the accessory properly changes the repeat state on the device:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Change the repeat state on the accessory Check the repeat state on the device <p>Verify that changing the repeat state on the accessory properly changes the repeat state on the device. This test must be repeated for each repeat state (repeat one, repeat all, repeat off, etc).</p>

140	Lingo - Display Remote	<p>If applicable, verify that the accessory display shows the correct song name:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Check the song name displayed on the accessory 6 Change to a different music track 7 Check the song name displayed on the accessory <p>Verify that the accessory display always shows the correct song name</p>
141	Lingo - Display Remote	<p>If applicable, verify that the accessory display shows the correct artist name:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Check the artist name displayed on the accessory 6 Change to a music track with a different artist 7 Check the artist name displayed on the accessory <p>Verify that the accessory display always shows the correct artist name</p>
142	Lingo - Display Remote	<p>If applicable, verify that the accessory display shows the correct album name:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Check the album name displayed on the accessory 6 Change to a music track with a different album 7 Check the album name displayed on the accessory 8 Verify that the accessory display always shows the correct album name
143	Lingo - Display Remote	<p>If applicable, verify that the accessory display shows the correct album art:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Play music on the device 5 Check the album art displayed on the accessory 6 Change to a music track with different album art 7 Check the album art displayed on the accessory <p>Verify that the accessory display always shows the correct album art</p>
144	Lingo - Extended Interface	<p>Verify that the accessory displays the device's audio and video content:</p> <ol style="list-style-type: none"> 1 Attach an external monitor to the accessory (if necessary) 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the audio and video content on the accessory <p>Verify that the accessory displays the device's media content.</p>

145	Lingo - Extended Interface	<p>Verify that the accessory displays nested playlists from the device:</p> <ol style="list-style-type: none"> 1 Load the device with multiple nested playlists using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Music” option on the accessory menu 6 Select the “Playlists” option on the accessory menu 7 Navigate through the nested playlists <p>Verify that the accessory displays the nested playlists from the device. Check the name of each playlist and its associated contents to make sure that the accessory is displaying the proper information.</p>
146	Lingo - Extended Interface	<p>Verify that the accessory displays artists from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Music” option on the accessory menu 6 Select the “Artists” option on the accessory menu <p>Verify that the accessory displays the artists from the device. Check the name of each artist and its associated contents to make sure that the accessory is displaying the proper information.</p>
147	Lingo - Extended Interface	<p>Verify that the accessory displays songs from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Music” option on the accessory menu 6 Select the “Songs” option on the accessory menu 7 Verify that the accessory displays the songs from the device. Check the name of each song and make sure that the accessory is displaying the proper information.
148	Lingo - Extended Interface	<p>Verify that the accessory displays genres from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Music” option on the accessory menu 6 Select the “Genres” option on the accessory menu <p>Verify that the accessory displays the genres from the device. Check the name of each genre and its associated contents to make sure that the accessory is displaying the proper information.</p>

149	Lingo - Extended Interface	<p>Verify that the accessory displays composers from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Music” option on the accessory menu 6 Select the “Composer” option on the accessory menu <p>Verify that the accessory displays the composers from the device. Check the name of each composer and its associated contents to make sure that the accessory is displaying the proper information.</p>
150	Lingo - Extended Interface	<p>If applicable, verify that the accessory displays movies from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory <p>Select the “Videos” option on the accessory menu</p> <ol style="list-style-type: none"> 5 Select the “Movies” option on the accessory menu 6 Verify that the accessory displays the movies from the device. Check the name of each movie to make sure that the accessory is displaying the proper information.
151	Lingo - Extended Interface	<p>If applicable, verify that the accessory displays music videos from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Videos” option on the accessory menu 6 Select the “Music Videos” option on the accessory menu <p>Verify that the accessory displays the music videos from the device. Check the name of each music video to make sure that the accessory is displaying the proper information.</p>
152	Lingo - Extended Interface	<p>If applicable, verify that the accessory displays TV shows from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Videos” option on the accessory menu 6 Select the “TV shows” option on the accessory menu <p>Verify that the accessory displays the TV shows from the device. Check the name of each TV show to make sure that the accessory is displaying the proper information.</p>

153	Lingo - Extended Interface	<p>If applicable, verify that the accessory displays video podcasts from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Videos” option on the accessory menu 6 Select the “Video Podcasts” option on the accessory menu <p>Verify that the accessory displays the video podcasts from the device. Check the name of each video podcast to make sure that the accessory is displaying the proper information.</p>
154	Lingo - Extended Interface	<p>If applicable, verify that the accessory displays rentals from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Videos” option on the accessory menu 6 Select the “Rentals” option on the accessory menu <p>Verify that the accessory displays the rentals from the device. Check the name of each rental to make sure that the accessory is displaying the proper information.</p>
155	Lingo - Extended Interface	<p>If applicable, verify that the accessory displays podcasts from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Podcasts” option on the accessory menu <p>Verify that the accessory displays the podcasts from the device. Check the name of each podcast to make sure that the accessory is displaying the proper information.</p>
156	Lingo - Extended Interface	<p>If applicable, verify that the shuffle songs option on the accessory plays songs randomly from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Shuffle Songs” option on the accessory menu <p>Verify that the accessory plays songs randomly from the device. Check the song, artist and album name of the currently playing song to make sure that the accessory is displaying the proper information for the song that is playing.</p>

157	Lingo - Extended Interface	<p>If applicable, verify that the now playing option on the accessory displays the current media that is being played from the device:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Now Playing” option on the accessory menu <p>Verify that the accessory displays the currently playing media from the device. Check the media information (song, artist, etc) of the currently playing media to make sure that the accessory is displaying the proper information for the media that is playing.</p>
158	Lingo - Extended Interface	<p>Verify that the accessory displays the correct information for the current music that is being played:</p> <ol style="list-style-type: none"> 1 the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Music” option on the accessory menu 6 Select and play random music item <p>Verify that the accessory displays the currently playing media from the device. Check the media information (song, artist, etc) of the currently playing media to make sure that the accessory is displaying the proper information for the media that is playing.</p>
159	Lingo - Extended Interface	<p>Verify that the accessory displays the correct information for the current video that is being played:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Videos” option on the accessory menu 6 Select and play a random video <p>Verify that the accessory displays the currently playing media from the device. Check the media information (name, artist, etc) of the currently playing media to make sure that the accessory is displaying the proper information for the media that is playing.</p>
160	Lingo - Extended Interface	<p>If applicable, verify that the accessory displays the correct information for the current podcast that is being played:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the “Podcasts” option on the accessory menu 6 Select and play a random podcast <p>Verify that the accessory displays the currently playing media from the device. Check the media information (name, artist, etc) of the currently playing media to make sure that the accessory is displaying the proper information for the media that is playing.</p>

161	Lingo - Extended Interface	<p>Verify that the accessory displays the correct timestamp position for the media that is being played:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the "Music" option on the accessory menu 6 Select and play random music item 7 Check the current timestamp displayed from the accessory 8 Fast forward and rewind the currently playing media 9 Check the current timestamp displayed from the accessory <p>Verify that the accessory displays the correct timestamp position for the media that is being played</p>
162	Lingo - Extended Interface	<p>Verify that the accessory displays the correct media length for the media that is being played:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the "Music" option on the accessory menu 6 Select and play random music item 7 Check the total time length displayed from the accessory <p>Verify that the accessory displays the correct media length for the media that is being played. The actual media length can be determined by playing the same media item on the device when not attached to the accessory.</p>
163	Lingo - Extended Interface	<p>Verify that the accessory displays the track number for the media that is being played:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select the "Music" option on the accessory menu 6 Select and play random music item 7 Check the track number that is displayed from the accessory <p>Verify that the accessory displays the correct track number for the media that is being played</p>
164	Lingo - Extended Interface	<p>Verify that the accessory can navigate the media playback:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select and play media from the accessory menu 6 Press menu navigation buttons (Play/Pause, Fast Forward, Rewind, Next Track, Previous Track, etc.) <p>Verify that the accessory can navigate the media playback properly using the associated accessory buttons</p>

165	Lingo - Extended Interface	<p>Verify that pressing the menu button on the accessory navigates backwards through the media hierarchy:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 ATS to the accessory 5 Select and play media from the accessory menu 6 Press menu button (or similar) on the accessory <p>Verify that pressing menu button on the accessory navigates backwards through the media hierarchy. Note that pressing the menu button at the top level menu will have no effect.</p>
166	Lingo - Extended Interface	<p>Verify that shuffle option on the accessory works as expected:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select and play media from the accessory menu 6 Press shuffle option on the accessory 7 Press the next track button <p>Verify that shuffle option on the accessory works as expected. Note the shuffle option may have multiple states (shuffle songs, shuffle albums, shuffle off, etc) that each need to be tested.</p>
167	Lingo - Extended Interface	<p>Verify that repeat option on the accessory works as expected:</p> <ol style="list-style-type: none"> 1 Load the device with the appropriate media content using iTunes 2 Power on accessory (if necessary) 3 Attach device to ATS 4 Attach ATS to the accessory 5 Select and play media from the accessory menu 6 Press repeat option on the accessory 7 Press the next track button <p>Verify that repeat option on the accessory works as expected. Note the repeat option may have multiple states (repeat song, repeat album, repeat off, etc) that each need to be tested.</p>
168	Lingo - Extended Interface	<p>If applicable, verify that the accessory display shows the correct album art:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Select and play media from the accessory menu 5 Check the album art displayed on the accessory 6 Change the media to something with different album art 7 Check the album art displayed on the accessory <p>Verify that the accessory display always shows the correct album art.</p>

169	Lingo - Location	<p>Verify GPS data is timely and accurate received for Factory Cold start (within 2 minutes)</p> <ol style="list-style-type: none"> 1. Restore Apple device with latest production iOS build 2. Turn off cellular data and WiFi on Apple device 3. Attach Apple device to GPS Accessory <p>RESULTS</p> <p>Verify accessory gets a signal lock and provides a correct GPS location to the system (must test outside of building) within 2 minutes</p>
170	Lingo - Location	<p>Verify GPS data is timely and accurate for Hot start (less than a minute)</p> <ol style="list-style-type: none"> 1. Turn off cellular data and WiFi on Apple device 2. Attach Apple device to GPS Accessory 3. Verify GPS accessory gets a signal lock and provides a correct GPS location to the system 4. Quit Maps app, relaunch Maps app <p>RESULTS</p> <p>Verify accessory gets a signal lock and provides a correct GPS location to the system (must test outside of building) in less than a minute</p>
171	Lingo - Location	<p>Verify GPS data is timely and accurate after a reboot (less than a minute)</p> <ol style="list-style-type: none"> 1. Turn off cellular data and WiFi on Apple device 2. Attach Apple device to GPS Accessory 3. Verify GPS accessory gets a signal lock and provides a correct GPS location to the system 4. Reboot Apple device, relaunch Maps app <p>RESULTS</p> <p>Verify accessory gets a signal lock and provides a correct GPS location to the system (must test outside of building) in less than a minute</p>
172	Lingo - RF Tuner	<p>Verify that if the device is reset that the accessory's audio output has been turned off:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 If necessary, attach headphones to the accessory 5 On the main menu of the iPod select the Radio option 6 Select a radio station from the iPod UI 7 Reset the device <p>Verify that when the device is reset that the accessory's audio is turned off</p>

173	Lingo - RF Tuner	<p>Verify that the accessory supports the proper frequency range:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 On the main menu of the iPod select the Radio option 5 Scan to the lowest frequency radio station 6 Scan to the highest frequency radio station <p>Verify that US / Europe devices support 87.5–108.0 MHz and Japan devices support 76.0–90.0 MHz</p>
174	Lingo - RF Tuner	<p>Verify that the accessory can scan both up and down through the available radio stations:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 If necessary, attach headphones to the accessory 5 On the main menu of the iPod select the Radio option 6 Press and the associated accessory button to scan down through the different radio stations 7 Press and the associated accessory button to scan up through the different radio stations <p>Verify that the scan up and down buttons work as expected</p>
175	Lingo - Simple Remote	<p>Verify that each button press works as expected:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Press a button on the accessory (example: next track button) 5 Verify that the iPod behaves as expected when the button is pressed (example: pressing the next track button skips to the next song 6 when playing iPod music). Also, verify that the expected command is displayed in ATS <p>Perform this test for all buttons on the accessory.</p>
176	Lingo - Simple Remote	<p>Verify that each button press and hold works as expected:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to ATS 3 Attach ATS to the accessory 4 Press and hold a button on the accessory (example: next track button) <p>Verify that the iPod behaves as expected when the button is pressed and held (example: pressing and holding the next track button could fast forward a song when playing iPod music). Also, verify that the expected command is displayed in ATS Note that press and hold functionality is not required for accessories that support Simple Remote lingo</p> <p>Perform this test for all buttons on the accessory.</p>
177	Other	<p>Verify that Apple Devices with Emoji characters used in song titles play and display as expected when connected to the accessory.</p>
178	Power	<p>If the accessory provides power to the Apple device, verify that power is supplied at all times while the accessory is on.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory and verify that USB Vbus voltage is within spec via the ATS Measurements view. 3. Fully exercise all of the accessories functions and user scenarios and verify that USB Vbus voltage remains within spec at all times.
179	Power	<p>If the accessory implements an iAP2 connection and draws power from a wall socket, verify that the iAP2 PowerSourceUpdate message is sent when an unplugged accessory is plugged back into power.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory. 3. Unplug the accessory from its power source. 4. Reconnect the accessory to its power source. In ATS, verify that the iAP2 PowerSourceUpdate message is sent from the accessory.

180	Power	<p>If the accessory is self-powered and implements an iAP2 connection, verify that the PowerSourceUpdate message is sent to the Apple device.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory. 3. Unplug the accessory from its power source. 4. Reconnect the accessory to its power source. In ATS, verify that the iAP2 PowerSourceUpdate message is sent from the accessory when the power is both disconnected and reconnected.
181	Power	<p>If the accessory is self-powered and does not implement an iAP2 connection, verify that the USB D+ and USB D- pins are connected to resistor networks.</p> <p>TBD</p>
182	Power	<p>If the accessory uses more than one Apple device-compatible connector that uses D+ / D- resistors, verify that each connector has its own set of resistors.</p> <p>TBD</p>
183	Power	<p>If the accessory uses more than one Apple device-compatible connector that uses D+ / D- resistors, verify that each connector supplies the total current required when all connectors are in use, regardless of whether the ports are compatible with Apple devices or not.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS via one of the connectors. 2. If necessary, turn-on the accessory and verify that USB Vbus voltage is within spec via the ATS Measurements view. 3. Fully exercise all of the accessories functions and user scenarios and verify that USB Vbus voltage remains within spec at all times. 4. Repeat for all of the connectors.
184	Power	<p>If the accessory has standard USB type-A connectors supplying 500 mA that could be used to provide power to an Apple device in addition to Apple device-compatible USB type-A connectors, verify that the standard USB type-A connectors supplying 500 mA are labeled using the USB icon.</p>
185	Power	<p>If the accessory has standard USB type-A connectors supplying 500 mA that could be used to provide power to an Apple device in addition to Apple device-compatible USB type-A connectors, verify that the Apple device-compatible USB type-A connectors are labeled, either singly or in groups, with the text 'iPod/iPhone'.</p>
186	Power	<p>If the accessory has a passthrough power source component, verify that the USB D+ , D- , and VBUS (Device Power) pads are connected to the external power supply.</p> <ol style="list-style-type: none"> 1. Plug in accessory to wall outlet (if necessary) 2. Turn accessory power on (if necessary) 3. Attach ATS to the accessory 4. Verify that D+ and D- voltages are within spec.
187	Power	<p>If the accessory has a passthrough power source component, verify that the accessory does not contain a USB Device Mode or USB Host Mode transport component.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory. 3. View the ATS capture window and verify that no USB iAP events are present.
188	Power	<p>If the accessory has a passthrough power source component, verify that the accessory ensures that the external USB data signals and VBUS power are passed to the Apple device without interference, and without violating the USB Specification in such areas as voltage tolerance on the VBUS line and rise time, eye diagrams, and monotonicity requirements on the D+ /D- data lines.</p>
189	Power	<p>If the accessory has a passthrough power source component combined with a built-in power source and if the built-in power source uses the USB D+ and D- lines to inform the Apple device of available power with an external port that can be connected to a PC, verify that the accessory detects the presence of the computer and disables or removes the resistors from the D+ / D- lines electronically.</p> <ol style="list-style-type: none"> 1. Power on accessory (if necessary) 2. Attach ATS to the accessory 3. Check that D+ and D- values in the summary panel of ATS (should be approximately 2V or 2.7V) 4. Plug the USB connector into a computer 5. Check the D+ and D- values in the summary panel of ATS 6. Verify that D+ and D- values are 0V when the USB cable is attached to a computer.

190	Power	<p>If the accessory provides power to the Apple device and uses an Apple Lightning connector, verify that the accessory supplies 1.0A at 4.70 V to iPhone and iPod. Connect the accessory and the Apple device to ATS.</p> <p>If necessary, turn-on the accessory and verify that USB Vbus voltage is within spec via the ATS Measurements view.</p> <p>Fully exercise all of the accessories functions and user scenarios and verify that USB Vbus voltage remains within spec at all times.</p>
191	Power	<p>If the accessory provides power to the Apple device via connectors designed for use with a separate cable that terminates in a Apple Lightning connector, verify that the connector supplies 1.0A at 4.90 V to iPhone and iPod.</p> <ol style="list-style-type: none"> 1. Connect the accessory and applicable cables to the Apple device and ATS. 2. If necessary, turn-on the accessory and verify that USB Vbus voltage is within spec via the ATS Measurements view. 3. Fully exercise all of the accessories functions and user scenarios and verify that USB Vbus voltage remains within spec at all times.
192	Power	<p>If the accessory uses self-powered connectors (such as USB Type A receptacle) verify that the cables meet or exceed all applicable USB-IF specifications, for both mechanical and electrical (Or only electrical if the connector is not a standard USB connector).</p> <ol style="list-style-type: none"> 1. The cables must have proof of compliance by a USB
193	Power	TBD - Chris U. To provide
194	Power	<p>If the accessory does not use an iAP2 transport, verify that 0 mA are drawn from the Apple device.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory. 3. View the ATS measurements window and verify that Accessory Power Current Max and Average = 0 mA
195	Power	<p>If the accessory uses the Serial iAP2 transport, verify that no more than 5 mA are drawn from the Apple device. Connect the accessory and the Apple device to ATS.</p> <ol style="list-style-type: none"> 1. If necessary, turn-on the accessory. 2. After the accessory has authenticated, view the ATS measurements window and verify that Accessory Power Current Max and Average < 6 mA
196	Power	<p>If the accessory uses the USB Device Mode iAP2 transport, verify that 0 mA are drawn from the Apple device.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory. 3. View the ATS measurements window and verify that Accessory Power Current Max and Average = 0 mA
197	Power	<p>If the accessory uses the Bluetooth iAP2 transport, verify that 0 mA are drawn from the Apple device .</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory. 3. View the ATS measurements window and verify that Accessory Power Current Max and Average = 0 mA
198	Power	<p>If the accessory uses the USB Host Mode iAP2 transport, verify that no more than 10 mA are drawn from the Apple device unless the accessory is in Intermittent High Power Mode.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory. 3. After the accessory has authenticated, view the ATS measurements window and verify that Accessory Power Current Max and Average < 11 mA
199	Power	<p>If the accessory uses Intermittent High Power Mode, verify that it identifies its maximum possible current draw in Intermittent High Power Mode via the MaximumCurrentDrawnFromDevice parameter.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory. 3. Begin the functionality that causes the accessory to enter Intermittent High Power Mode. (See Table 19-5) 4. View the ATS transaction window and verify that the accessory sent MaximumCurrentDrawnFromDevice

200	Power	<p>If the accessory uses Intermittent High Power Mode, verify that it begins in Low Power Mode.</p> <ol style="list-style-type: none"> 1. Connect the accessory and the Apple device to ATS. 2. If necessary, turn-on the accessory. 3. Before beginning the functionality that causes the accessory to enter Intermittent High Power Mode (See Table 19-5), view the ATS measurements window and verify that Accessory Power Current Max and Average < 6 mA
201	Power	<p>Verify that if an Apple device is in USB Host mode, an attached accessory in Intermittent High Power Mode must re-enter Low Power Mode within 1 second after all of the USB events that permitted Intermittent High Power Mode are negated by one or more of the following USB events: Audio (The Apple device selects a zero bandwidth interface setting), EA Native Transport (The Apple device selects a zero bandwidth interface setting) or MIDI (The Apple device stops polling a MIDI Streaming IN endpoint.)</p>
202	Speaker	<p>If the accessory has stereo sound, verify that left and right audio channels work properly:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to the accessory 3 Play stereo music file <p>Verify that the left and right channel are playing audio properly.</p>
203	Speaker	<p>Verify that changing the accessories volume up and down changes the volume level as expected:</p> <ol style="list-style-type: none"> 1 Power on accessory (if necessary) 2 Attach device to the accessory 3 Play a music file 4 Change the volume up and down <p>Verify that volume from the accessory properly increases and decreases as expected.</p>
204	Speaker	<p>Verify that the default volume level is not too loud.</p> <ol style="list-style-type: none"> 1 Disconnect Power from accessory 2 Connect power to accessory, turn on. 3 Attach device to the accessory 4 Play a music file <p>Verify that audio plays at a volume level that is not loud by default.</p>
205	Syncing	<p>Verify that the accessory is able to sync with a computer:</p> <ol style="list-style-type: none"> 1 Plug the USB connector into a computer 2 Attach device to the 30-pin connector 3 Open iTunes on the computer <p>Verify that the device shows up in iTunes and is able to sync media</p>
206	Video-Out	<p>Verify that the accessory is able to play video content from the device using each video connector:</p> <p>Power on accessory (if necessary)</p> <ol style="list-style-type: none"> 1 Attach device to ATS 2 Attach ATS to the accessory 3 Connect the video output connector (example: HDMI, component, composite, etc.) to a TV 4 Select and play a video file on the device <p>Verify that the video that was selected on the device is properly played on the TV using the accessory.</p> <p>This test needs to be repeated for each video out connector (example: HDMI, component, composite, etc.) on the accessory.</p>