HomeKit Accessory Validator Test Cases

Version 1.0

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Contents

1. Introduction

The test cases outlined in this document are only meant to be run in the HomeKit Accessory Validator (HAV) iOS app. These test cases are not official HomeKit certification test cases.

2. Test Cases

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV001	Functional Tests	Accessory must always successfully deliver event notifications for every characteristic that supports them when a single client has subscribed multiple times. Accessory will send notifications for registered characteristics when a state change is initiated.	**Perform this test case using HAV. User input and user interaction with the accessory are needed.** 1. Pair and discover accessory. 2. Enable event notification 3 times on characteristics that support event notifications. 3. Prompt there user to manually change the state of the accessory by physically altering the characteristic (e.g., manually turn the light off). 4. Verify that the new state is reflected on the controller for each characteristic state change and that 1 notification is received.
HAV002	Functional Tests	Accessory must always successfully unregister event notifications on every characteristic when a client deregisters for them after having subscribed multiple times. Accessory will no longer send notifications for the unregistered characteristics.	**Perform this test case using HAV. User input and user interaction with the accessory are needed.** 1. Pair and discover accessory. 2. Enable event notification 3 times on characteristics that support event notifications. 3. Disable event notifications for each characteristic that was subscribed for multiple times in step 2. 4. Prompt there user to manually change the state of the accessory by physically altering the characteristic (e.g., manually turn the light off). 5. Verify accessory does not send any notifications to controller.
HAV003	Functional Tests	Accessory must be able to demonstrate that each writable characteristics can be written 20 times.	**Perform this test case using HAV.** 1. Pair and discover accessory 2. Read the characteristics that support paired writes and paired reads. 3. Write a new value to each characteristic that supports writes and paired reads. 4. Read back each of these characteristic and verify the value matches as in step 4 5. Repeat steps 2 to 5, 20 times

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV004	Functional Tests	If the accessory supports the “on” characteristic, verify that it retains its value/state after a power cycle.	**Perform this test case using HAV. User interaction with the accessory is needed** 1. Establish a pairing with the accessory / Validate that the accessory is in the home 2. Read the current value of the “On” characteristic 3. Write a value of 0 to the “On” characteristic 4. Prompt the user to power cycle the accessory and the AP. Allow 2 minutes for the AP to recover. 5. Read the value of the “On” characteristic after the user presses ok in step 4 and ensure that the value is set to 0 6. Write a value of 1 to the “On” characteristic 7. Prompt the user to power cycle the accessory and the AP. Allow 2 minutes for the AP to recover. 8. Read the value of the “On” characteristic after the user presses ok in step 4 and ensure that the value is set to 1
HAV005	Functional Tests	Accessory must always be reachable after a power-cycle.	**Perform this test case using HAV. User interaction with the accessory is needed** 1. Pair and discover accessory 2. Power accessory off and on. 3. Verify accessory is reachable before and after accessory is power cycled. 4. For IP accessories, power cycle router (AP) and verify accessory is reachable before and after router (AP) is power cycled.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV006	Accessory Information Service	Accessory information service must include all required characteristics and meet the spec. requirements. Details: Accessory must expose a single instance of Accessory Information Service with required characteristics: • Identify • Manufacturer • Model • Name • Serial number • Firmware revision The Accessory Information Service may optionally include: • Hardware revision • Accessory Flags	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. In left sidebar of Controllers window, select “Accessory Information Service.” 3. Verify required characteristics are included in Accessory Information Service. 4. Verify Serial Number length is greater than 1 5. Verify Model Name length is greater or equal to 1 6. Verify FW revision and Hardware revision (if applicable) is not null and is in the following format: x[.y[.z]] (e.g. “100.1.1"): <x> is the major version number, required. <y> is the minor version number, required if non-zero or <z> is present. <z> is the revision version number, required if non-zero. The firmware revision must follow the below rules: - <x> is incremented when there is a significant change. e.g.., 1.0.0, 2.0.0, 3.0.0, etc. - <y> is incremented when minor features are introduced such as 1.1.0, 2.1.0, 3.1.0, etc. - <z> is incremented when bug-fixes are introduced such as 1.0.1, 2.0.1, 3.0.1, etc. - Subsequent firmware updates can have a lower <y> version if <x> is incremented than the previous revision - Subsequent firmware updates can have a lower <z> version only if <x> or <y> is incremented than the previous revision For accessories having a different firmware version format than x.y.z, then following rules apply during next FW update: • “x” firmware version string is treated as "x.0.0" • “x.y" firmware version string is treated as "x.y.0" • “x.y.z;a" firmware version string is treated as “x.y.z" • "x.y.z.a.b[.c]" firmware version string is treated as “x.y.z”
HAV007	Accessory Attribute Database	Requirements for the value of Instance ID across all services must be met as per spec.	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify that accessory’s Accessory Information Service has an instance ID of “1”. 3. Verify that accessory’s other services have an instance ID larger than 1 4. Verify the accessory object does not contain services with duplicate instance IDs.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV008	Accessory Attribute Database	If accessory contains custom characteristics and/or services, custom UUID values must not contain the HAP base UUID.	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify that the custom UUIDs do not contain HAP base UUID: -0000-1000-8000-0026BB765291.
HAV009	Identify	Identify characteristic must only be included in Accessory Information Service.	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify identify characteristic is included in Accessory Information Service and is not located within any other service.
HAV010	Discovery	Accessory must contain an accessory category identifier value that advertises accessory's primary category.	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Check value for category identifier. 3. Verify that accessory category identifier properly identifies accessory and is not a reserved value (i.e., 18+).
HAV011	Accessory Information Service	If accessory information service includes apple defined characteristics or custom characteristics, the latter characteristics must meet the properties as per spec.	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify that there are no Apple-defined characteristics included in Accessory Information Service.
HAV012	Fan Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain a fan service must use characteristics: • On (r/w/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV013	Fan Service	Accessories that contain a fan service with Rotation Direction characteristic must have clockwise and counter-clockwise properly setup. Note: Fan direction based on perspective from below, looking up at ceiling-mounted fan.	**Perform this test case using HAV. User verification is needed.** 1. Pair and discover accessory. 2. Write "0" to fan service Rotation Direction characteristic. 3. Verify fan is rotating in the clockwise direction. 4. Write "1" to fan service Rotation Direction characteristic. 5. Verify fan is rotating in counterclockwise direction.
HAV014	Garage Door Opener Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Accessories that contain a garage door opener service must use characteristics: • Current Door State (r/ev*) • Target Door State (r/w/ev*) • Obstruction Detected (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV015	Lock Mechanism Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Accessories that contain a lock mechanism service must use characteristics: • Lock Current State (r/ev*) • Lock Target State (r/w/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected) No custom characteristics are allowed within the lock mechanism service	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV016	Outlet in Use	Accessories that contain the outlet service must update the value of Outlet In Use characteristic regardless of the On characteristic state.	**Perform this test case using HAV. User interaction with the accessory is needed.** 1. Set On characteristic to "1." 2. Plug appliance in to accessory. 3. Verify Outlet In Use characteristic equals "1." 4. Unplug appliance from accessory. 5. Verify Outlet In Use characteristic equals "0." 6. Set On characteristic to "0." 7. Plug appliance in to accessory. 8. Verify Outlet In Use characteristic equals "1." 9. Unplug appliance from accessory. 10. Verify Outlet In Use characteristic equals "0."

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV017	Switch Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the switch service must use characteristics: • On (r/w/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV018	Cooling Threshold Temperature	Accessories that contain the thermostat service must represent the maximum temperature that must be reached before cooling is turned on via the Cooling Threshold Temperature characteristic.	**Perform this test case using HAV. User input and user interaction with the accessory are needed.** 1. Pair and discover accessory. 2. Read the current temperature characteristic. 3. Prompt the user to set the Cooling threshold temperature to a value greater than the one read in step 2. 4. Prompt the user to Heat the room/enclosure to a value greater than the cooling threshold temperature using implementation specific means. 5. Verify that cooling turns on when the maximum temperature is reached.
HAV019	Heating Threshold Temperature	Accessories that contain the thermostat service must represent the minimum temperature that must be reached before heating is turned on via the Heating Threshold Temperature characteristic.	**Perform this test case using HAV. User input and user interaction with the accessory are needed.** 1. Pair and discover accessory. 2. Read the current temperature characteristic. 3. Prompt the user to set the Heating threshold temperature to a value lower than the one read in step 2. 4. Prompt the user to Cool the room/enclosure to a value lower than the heating threshold temperature using implementation specific means. 5. Verify that heating turns on when the maximum temperature is reached.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV020	Air Quality Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the air quality sensor service must use characteristics: • Air Quality (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV021	Security System Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the security system service must use characteristics: • Security System Current State (r/ev*) • Security System Target State (r/w/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV022	Carbon Monoxide Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the carbon monoxide sensor service must use characteristics: • Carbon Monoxide Detected (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV023	Contact Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the contact sensor service, must use characteristics: • Contact Sensor State (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV024	Door Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the door service, must use characteristics: • Current Position(r/ev*) • Target Position (r/w/ev*) • Position State (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV025	Humidity Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the humidity sensor service must use characteristics: • Current Relative Humidity (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV026	Leak Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the leak sensor service must use characteristics: • Leak Detected (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV027	Light Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the light sensor service must use characteristics: • Current Ambient Light Level (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV028	Motion Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the motion sensor service must use characteristics: • Motion Detected (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV029	Occupancy Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the occupancy sensor service must use characteristics: • Occupancy Detected (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV030	Smoke Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the smoke sensor service must use characteristics: • Smoke Detected (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV031	Temperature Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the temperature sensor service must use characteristics: • Current Temperature (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV032	Window Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the window service must use characteristics: • Current Position(r/ev*) • Target Position (r/w/ev*) • Position State (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV033	Window Covering Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the window covering service must use characteristics: • Current Position(r/ev*) • Target Position (r/w/ev*) • Position State (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV034	Battery Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the battery service must use characteristics: • Battery Level (r/ev*) • Charging State (r/ev*) • Status Low Battery (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV035	Carbon Dioxide Sensor Service	Accessory services must include all required Apple defined characteristics. Accessory must respond correctly to read and write requests depending on the characteristic permissions. List of supported test cases: HAV012, HAV014, HAV015, HAV017, HAV020-HAV035 Details: Accessories that contain the carbon dioxide sensor service must use characteristics: • Carbon Dioxide Detected (r/ev*) • Name (r) *Event Notifications IP - ev BLE2.0 - Indicate / Indicate (Disconnected)	**Perform this test case using HAV.** 1. Pair and discover accessory. 2. Verify all required characteristics are included for each supported service type. 3. Read all required and optional characteristics that support paired read and paired read/write. Skip this step if the characteristic supports paired write only. 4. Write to all required and optional characteristics that support paired read, paired read/write and paired write. 5. Read back all required and optional characteristics that support paired read, paired read/write and paired write. 6. Verify proper values are returned for all Read Requests in step 5.
HAV036	Overview	Accessories that contain custom profiles must comply with requirements for paired Read and paired Write characteristics.	**Perform this test case as a user level test. Use the associated accessory application where necessary to expose custom service/ characteristic functionality.** 1. Verify that each characteristic performs its intended function and responds to Read and Write requests.

Test Case ID	Category	Test Case Description and Details	Test Steps
HAV037	Firmware Update Requirements	Accessory must increment the configuration number (CN) after a firmware update.	**Perform this test case using HAV. User interaction with the accessory is needed.** 1. Before FW update, pair and discover accessory. 2. Note the Configuration Number 3. Perform firmware update. 4. Verify Configuration Number incremented after a FW update.
HAV038		Accessory must pair with HAV using QR code scanning	**Perform this test case using HAV.** 1. Reset pairing of the accessory by performing factory reset 2. Verify remove pairing succeeds and SF changes to SF=1 on the accessory 3. Use HAV to scan the QR code on the accessory 4. Verify pairing succeeds and SF changes to SF=0 on the accessory

3. Revision History

Date	Description
February 2019	• Released initial version

Apple Inc.
One Apple Park Way
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408-996-1010