IPK-1

Test Plan

Test plan version: 1.1

# Version History

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| --- | --- | --- | --- |
| Version | Author | Revision Date | Reason |
| 1.0 | Ed H | 3/15/2021 | Initial Draft |
| 1.1 | Ed H | 3/29/2021 | * Update TC-404 to include using *EVENT firmwareUpdate* to initiate a manual OTA. * Added TC-406 for testing an automatic OTA * Added TC-407 and TC-408 for testing DHCP |

# Test Details

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| --- | --- |
| Test date | 4/12/2021 |
| Tester | Ed |
| Software Version | 1.00.07.00001 |
| Reason for release | • modify blink yellow(2Hz) when not paired  • fix usb upgrade led issue  • fix flashLed issue according to FlashLED.pdf document  • add indication of Favorite Saved  • add IPK recover connect from MBX device reboot  • add Pairing Accepted indication |

# Results Key

|  |  |
| --- | --- |
| Status | Description |
|  | Passed |
|  | Passed with low priority bug |
|  | Failed with low priority bug |
|  | Failed with high priority bug |

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# Test Plan

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| --- | --- | --- | --- |
| Test Case | Description | Steps | Results |
| TC-001 | Factory Reset | * Power on IPK-1 * Press and hold the factory reset button for 10 seconds * Verify blinks red 4 times (2Hz) before rebooting * Verify IPK-1 is unassigned after it reboots * Verify the LED state for *Not Paired* in *Status LED Table*. | PASSED |
| TC-002 | Pairing  MBX-Series | * Go to Russound MBX-AMP device Setup web page * Select Start Keypad Pairing * Verify IPK-1 LED starts to blink green (2Hz) * Press F1 and F2 together for 2 seconds * Verify IPK-1 indicates *Pairing Accepted* by flashing the LED green twice. See *Status LED Table*.   **Requires MBX-Series 1.07.00 or higher:**   * Verify IPK-1 is listed on a MBX device web page as a paired device. It may take up to 1 minute for the keypad to appear in the list so you may need to refresh the page. | PASSED |
| TC-003 | Pairing  MCA-Series | • Go to Russound MCA-Series device Zone Settings web page  • Select Start Keypad Pairing  • Verify IPK-1 LED starts to blink green (2Hz)  • Press F1 and F2 together for 2 seconds  • Verify IPK-1 indicates *Pairing Accepted* by flashing the LED green twice. See *Status LED Table*.  **Requires MCA-Series 4.04.02 or higher:**  • Verify IPK-1 is listed on a MCA-Series web page as a paired device. It may take up to 1 minute for the keypad to appear in the list so you may need to refresh the page. | PASSED |
| TC-004 | Pairing  Timeout | * Go to Russound device web page and Start Keypad Pairing * Verify IPK-1 LED starts to blink green (2Hz) * Wait 60 seconds * Verify the IPK-1 goes back to the previous operational mode (paired or unpaired). | PASSED |
| TC-005 | Pairing  Canceled | * Go to Russound device web page and Start Keypad Pairing * Verify IPK-1 LED starts to blink green (2Hz) * Press any key on the keypad * Verify the keypress does not perform its intended function but instead cancels pairing. * Verify the IPK-1 goes back to operational mode if it had been previously paired | PASSED |
| TC-006 | Last Pairing Packet wins | * First Device or Zone: Go to the device Setup or Zone Settings web page and Select Start Keypad Pairing * Wait several seconds * Second Device or Zone: Go to the device Setup or Zone Settings web page and Select Start Keypad Pairing * Press F1 and F2 together for 2 seconds * Verify the IPK-1 is paired with the second device. | PASSED |
|  | | | |
| TC-100 | RUSSOUND PAIRING  Service Advertisement | * Launch WireShark and filter on the IPK-1 ip address and dns * Verify SRV, TXT and A records (*123456*: last 6 digits of MAC)   SRV record contains:   * Service: IPK1-*123456* RUSSOUND-PAIRING 0 * Protocol: \_russound-pairing * Name: \_tcp.local * Type: SRV * Cache flush: True * Port: 9629 * Target: IPK1-*123456*.local   TXT record contains:   * Name: IPK1-*123456* RUSSOUND-PAIRING 0.\_russound-pairing.\_tcp.local * Type: TXT * hostname=IPK1-*123456* * productId=92 * productType=3 * version=(version should be accurate) * pairedHost=*none* (paired device hostname when set) * pairedCid=*0* (paired device controller id when set [1-8]) * pairedZid=*0* (paired device zone id when set [1-8]) * pairedProtocol=*none* (rio.\_tcp.local when paired)   A record contains:   * IPK-1 IP address | PASSED |
| TC-101 | Russound Pairing Service | * telnet [IPK-1 IP] 9629 * Type the command EVENT reboot * Verify IPK-1 reboots | PASSED |
|  | | | |
| TC-200 | LED Test  MBX-Series | telnet MBX-IP 9620  W 7.0.2.0.48 {"color":"green","blinkRate":1,"flashCount":0}  W 7.0.2.0.48 {"color":"red","blinkRate":1,"flashCount":0}  W 7.0.2.0.48 {"color":"yellow", "blinkRate":1,"flashCount":0}  W 7.0.2.0.48 {"color":"blue","blinkRate":1,"flashCount":0}  W 7.0.2.0.48 {"color":"violet","blinkRate":1,"flashCount":0}  W 7.0.2.0.48 {"color":"cyan","blinkRate":1,"flashCount":0}  W 7.0.2.0.48 {"color":"white","blinkRate":1,"flashCount":0}  W 7.0.2.0.48 {"color":"none","blinkRate":0,"flashCount":0}  W 7.0.2.0.48 {"color":"green","blinkRate":0,"flashCount":0}  W 7.0.2.0.48 {"color":"green","blinkRate":2,"flashCount":0}  W 7.0.2.0.48 {"color":"green","blinkRate":3,"flashCount":0}  W 7.0.2.0.48 {"color":"green","blinkRate":4,"flashCount":0}  W 7.0.2.0.48 {"color":"green","blinkRate":2,"flashCount":1}  W 7.0.2.0.48 {"color":"green","blinkRate":2,"flashCount":2}  W 7.0.2.0.48 {"color":"green","blinkRate":2,"flashCount":3}  W 7.0.2.0.48 {"color":"green","blinkRate":2,"flashCount":4} | ALL PASSED except VIOLET  Need to review the following before mass production:   * LED brightness * LED color VIOLET |
| TC-201 | MBX-Series  Functional  LED Test | * Verify the LED is on when audio is “playing” * Verify the LED blinks when audio is “paused” * Verify the LED is off when audio is “stopped” * Verify the LED is blue when Bluetooth is selected * Verify the LED is cyan when the Digital Input is selected * Verify the LED is violet when the device is Grouped * Otherwise the LED color should be green | ALL PASSED except GROUPING (VIOLET) |
| TC-202 | MCA-Series  Functional  LED Test | * Verify the LED is off when the the zone is OFF * Verify the LED is green when the zone is ON | PASSED |
|  | | | |
| TC-300 | Zone  Favorites | * Use Russound app to connect to MBX or MCA device * Browse any service and make a selection (UPnP, TuneIn) * Once audio is playing press and hold F1 for 1.5 seconds * Verified the LED indicates *Favorite Saved* after the 1.5 second hold time. * Repeat for F2, F3 and F4 using different station or playlist * Select F1-F4 to restore saved favorite * Verify stations or playlists are restored | MBX - PASSED |
| TC-301 | MCA - PASSED |
| TC-302 | Play/Pause Toggle | * Make sure MBX device is playing audio from a playlist (UPnP) * Press the button to Pause the track * Press the button again to Play the track * Change audio to a station or channel (TuneIn, Airable Radio) * Press the button to Stop the audio (LED should turn off) * Press the button again to Play audio | MBX - PASSED |
| TC-303 | MCA - PASSED |
| TC-304 | Volume Up and Down | * Make sure MBX device is playing audio and volume is 0 * Press the volume up button once a second * Verify volume steps in *Volume LED Indicator* * Press the volume down button once a second * Verify volume steps in *Volume LED Indicator* | MBX - PASSED |
| TC-305 | MCA - PASSED |
| TC-306 | Volume Up and Down Hold | * Press and hold volume up * Volume should gradually increase approx. 7 units/second * Press and hold volume down * Volume should gradually decrease approx. 7 units/second | MBX - PASSED |
| TC-307 | MCA - PASSED |
| TC-308 | Volume LEDs | * Verify volume LEDs illuminate when volume is changed on the IPK-1 or remotely * Verify volume LEDs illuminate when any button is pressed on the IPK-1 * Verify volume LEDs illuminate when Status LED transitions from off to on * Verify volume LEDs turn off after 20 seconds or when the Status LED transitions from on to off | PASSED |
| TC-309 | Next Button | * Make sure MBX device is playing audio from a playlist (UPnP) * Press the Next button * Verify the next track plays | MBX- PASSED |
| TC-310 | MCA - PASSED |
| TC-311 | Previous Button | * Make sure MBX device is playing audio from a playlist (UPnP) * Press the Previous button * If track has played more than 2 seconds then the track should return to the start * If track has played less than 2 seconds then the previous track should play. | MBX - PASSED |
| TC-312 | MCA - PASSED |
| TC-313 | Power Button | * Make sure MBX device is playing audio * Press the Power button * Verify audio stops and LED on IPK-1 turns off | MBX – PASSED with intermittent crash  BUG: IPK-1 often crashes when Power button is pressed |
| TC-314 | MCA – PASSED with intermittent crash  BUG: IPK-1 often crashes when Power button is pressed |
| TC-315 | Power Button Hold | * Press and hold the Power button for 1.5 seconds * Verify all MCA zones turn off * Verify all MBX devices stop playing * Verify the LED on IPK-1 turns off | MBX - PASSED |
| TC-316 | MCA - PASSED |
| TC-317 | Hold and Release | * Launch WireShark and filter on IPK-1 IP address * Press and hold the Pause button * Verify the KeyHold event is send while the button is held * Verify the KeyRelease event is sent when the key is release * Repeat using *Previous* and *Next* buttons | MBX - PASSED |
| TC-318 | MCA - PASSED |
| TC-319 | Other Key Combinations | • Verify the following key combinations generate RIO KeyHold events: F1+F3, F1+F4, F2+F3, F2+F4 and F3+F4 | PASSED |
|  | | | |
| TC-400 | Recover from device reboot | * Pair IPK-1 and MBX-AMP * Reboot MBX-AMP * Verify RIO connection established when MBX-AMP is online * Repeat with MCA-Series zone | MBX - PASSED |
| TC-401 | MCA - PASSED |
| TC-402 | Network Error – No DHCP | * Remove the uplink to the router on PoE switch * Power on IPK-1 * Verify LED blinks yellow (1Hz) * Connect PoE switch to router * Verify IPK-1 establishes connection to paired device (MBX) | PASSED |
| TC-403 | Soft Reboot | * Press and hold *Volume(-)* and *Power* together for 5 seconds * Verify IPK-1 reboots and LED turns yellow | PASSED |
| TC-404 | Firmware Update – Manual OTA | * Make sure new firmware is available on the OTA server * Press and hold *Previous* and *Next* keys for 5 seconds * Verify OTA update starts and completes successfully * Verify LED blinks green (4Hz) during update * Repeat with another device but use the Russound Pairing Service (port 9629) command *EVENT firmwareUpdate* * Verify IPK-1 still pairs with device after update | PASSED |
| TC-405 | Firmware Update  - USB | * Copy firmware image file to a USB stick (IPK-1\_XX.bin) * Plugin the USB stick into the IPK-1 (use USB adaptor cable if needed) * Power on the IPK-1 * System should start the upgrade automatically * Verify LED blinks green (4Hz) * After the upgrade is complete, the LED should blink red. * Unplug the USB and verify the IPK-1 boots into the new version | Requires updated bootloader |
| TC-406 | Firmware Update – Automatic OTA | * Make sure new firmware is available on the OTA server * Power on IPK-1 running previous release and wait 24 hours * Verify OTA update starts and completes successfully * Verify LED blinks green (4Hz) during update * Verify IPK-1 still pairs with device after update | Test when 1.00.08 is available |
| TC-407 | DHCP Renewal | * Use Wireshark to verify that the IPK-1 maintains the DHCP lease. IPK-1 should send a DHCP REQUEST when the lease is half expired. | PASSED - DHCP REQUEST sent exactly at half lease time |
| TC-408 | DHCP Discover | * Use Wireshark to verify that the IPK-1 broadcasts a DHCP DISCOVER when the DHCP REQUEST fails. * Test 1: Remove the LAN connection to the POE injector for the entire lease time. On reconnection verify DHCP DISCOVER is sent and connection to paired device is maintained. * Test 2: Reboot the router prior to the DHCP REQUEST. Verify DHCP REQUESET fails and DHCP DISCOVER is sent and connection to paired device is maintained. | TEST 1 – PASSED  TEST 2 – NOT TESTED |
|  | | | |
| TC-500 | Power Loss during Firmware Update | * Make sure new firmware is available on the OTA server * Hold Previous and Next for 5 seconds * Verify OTA update starts then remove power during the download * Verify IPK-1 boots normally into the previous loaded version | PASSED |
| TC-501 | Network Loss during Firmware Update | * Make sure new firmware is available on the OTA server * Hold Previous and Next for 5 seconds * Verify OTA update starts then interrupt the download by removing the internet connection. Do not power down the IPK-1 * Reconnect internet and verify that either:   + The download continues and the update succeeds, or   + The download was cancelled and the IPK-1 boots normally into the previous loaded version | PASSED |
| TC-502 | Device Fault | * TODO – Hansong to identify any device faults defined | NOT DEFINED |