

Realtek RTL8851BE/RTL8852BE-VT

WiFi Driver Release Notes

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1. Revision History

Revision	Date	Editor	Note
1.0.1	2022/12/23	Nate Tai	Update WiFi driver V6001.19.103.0
1.0.2	2023/2/17	Nate Tai	Update WiFi driver V6001.19.104.0
1.0.3	2023/3/10	Nate Tai	Update WiFi driver V6001.19.105.0
1.0.4	2023/4/7	Nate Tai	Update WiFi driver V6001.19.106.0
1.0.5	2023/4/28	Nate Tai	Update WiFi driver V6001.19.107.0
1.0.6	2023/6/12	Nate Tai	Update WiFi driver V6001.19.108.0
1.0.7	2023/7/7	Nate Tai	Update WiFi driver V6001.19.109.0
1.0.8	2023/7/31	Nate Tai	Update WiFi driver V6001.19.110.0
1.0.9	2023/9/1	Nate Tai	Update WiFi driver V6001.19.111.0
1.0.10	2023/9/25	Nate Tai	Update WiFi driver V6001.19.112.0
1.0.11	2023/11/3	Nate Tai	Update WiFi driver V6001.19.113.0
1.0.12	2023/11/17	Nate Tai	Update WiFi driver V6001.19.114.0
1.0.13	2023/12/15	Nate Tai	Update WiFi driver V6001.19.115.0
1.0.14	2024/1/16	Nate Tai	Update WiFi driver V6001.19.116.0
1.0.15	2024/2/2	Nate Tai	Update WiFi driver V6001.19.117.0
1.0.16	2024/3/25	Nate Tai	Update WiFi driver V6001.19.118.0
1.0.17	2024/5/10	Nate Tai	Update WiFi driver V6001.19.119.0
1.0.18	2024/6/21	Nate Tai	Update WiFi driver V6001.19.120.0
1.0.19	2024/7/19	Nate Tai	Update WiFi driver V6001.19.121.0
1.0.20	2024/8/16	Nate Tai	Update WiFi driver V6001.19.122.0
1.0.21	2024/9/13	Nate Tai	Update WiFi driver V6001.19.123.0
1.0.22	2024/10/11	Nate Tai	Update WiFi driver V6001.19.124.0
1.0.23	2024/11/8	Nate Tai	Update WiFi driver V6001.19.125.0
1.0.24	2024/12/6	Nate Tai	Update WiFi driver V6001.19.126.0
1.0.25	2025/1/3	Nate Tai	Update WiFi driver V6001.19.127.0
1.0.26	2025/2/14	Nate Tai	Update WiFi driver V6001.19.128.0
1.0.27	2025/3/11	Nate Tai	Update WiFi driver V6001.19.129.0
1.0.28	2025/4/11	Nate Tai	Update WiFi driver V6001.19.130.0
1.0.29	2025/5/19	Kuve Ma	Update WiFi driver V6001.19.131.0
1.0.30	2025/5/27	Kuve Ma	Update WiFi driver V6001.19.131.1

1.0.31	2025/7/16	Kuve Ma	Update WiFi driver V6001.19.132.0
1.0.32	2025/8/29	Kuve Ma	Update WiFi driver V6001.19.133.0
1.0.33	2025/10/16	Kuve Ma	Update WiFi driver V6001.19.134.0
1.0.33.1	2025/11/10	Justin Chen	Update WiFi driver V6001.19.134.1
1.0.34	2025/12/12	Kuve Ma	Update WiFi driver V6001.19.135.0
V6101.19.136.0	2026/02/02	Kuve Ma	Update WiFi driver V6101.19.136.0
V6101.19.137.0	2026/04/10	Kuve Ma	Update WiFi driver V6101.19.137.0
V6101.19.138.0	2026/06/05	Kuve Ma	Update WiFi driver V6101.19.138.0
V6101.19.138.1	2026/07/03	Kuve Ma	Update WiFi driver V6101.19.138.1

2. Driver Version information

Driver	Version	Support IC	WHQL Logo
rtwlane603.sys	V6001.19.138.1	RTL8851BE	Win11 25H2
rtwlane613.sys	V6101.19.138.1	RTL8852BE-VT	Win11 24H2 Win11 23H2

3. Driver Change List

3.1.Change List

Driver Version	Change List
V6101.19.138.1 V6001.19.138.1	<u>Feature:</u> Support 8852BE-VT RFE type 5/6 1216 module.
V6101.19.138.0 V6001.19.138.0	<u>Regulation:</u> - Update TAS algorithm for ISSED new certification. <u>Bug Fixed:</u> - Resolved critical process conflicts between Miracast MCC and roaming mechanisms. - Fixed a race condition between FW channel switching and driver flow, ensuring correct channel synchronization during RF operations. - Resolved a potential 0x7E BSOD caused by a race condition between the PLDR flow and the disconnect flow.
V6101.19.137.0 V6001.19.137.0	<u>Feature:</u> - An SBOM in SPDX format with a COSE signature is available starting with this release <u>Bug Fixed:</u> - Fixed intermittent Miracast projection performance degradation (screen corruption or lag) when connected to certain Wi-Fi display receivers acting as a P2P Sink (GO), such as Crestron AM-3200-WF. - Fixed a potential BSOD 0xE6 issue where APIs used in the suspend flow were blocked by the CONFIG_REMOTE_WAKEUP" compiled flag under the NIC FW. - Refine the PN replay check mechanism to avoid false packet drops during key transitions. - Fixed a potential BSOD 0x10D issue by validating memory before freeing failed allocations during S0i3 stress. - Fix permanent LPS disable issue when beacon loss triggers roaming indication. - Resolved I/O race condition between RF FW and HALRF causing abnormal behavior in Miracast MCC mode. - Resolved connection failures for Wi-Fi devices on 2.4GHz hotspot.
V6101.19.136.0 V6001.19.136.0	<u>Regulation:</u> - Update TX power limit for Canada 5 GHz new support channels CH120/124/128. <u>Feature:</u> - Add support for outputting PCIe debugging information into Wi-Fi packets (disabled by default; enabled only when needed for debugging).

	- Refine stable RSSI as trigger base. <u>Bug Fixed:</u> - Fixed an issue that caused wireless throughput drops due to incorrect packet handling. - Fixed roaming decision to consider the selected FT AP. - Mitigated throughput degradation during turn-table tests by avoiding unnecessary roaming triggered by RSSI variance. - Fixed WEP encryption buffer modification issue to resolve Windows Network Shared Folder compatibility.
V6101.19.135.0 V6001.19.135.0	<u>Regulation:</u> - Added support for Canada 5 GHz channels CH120/124/128. These channels are disabled by default and can be enabled by ODM via BIOS (refer to BIOS Guideline R17.7 Section 3.1.11). <u>Feature:</u> - Support enabling ISED new band by BIOS. - Enhanced robustness by integrating PCIe configuration validation and a MAC watchdog. <u>Bug Fixed:</u> - Resolved an issue that prevented Miracast device discovery. - Fixed a memory overrun issue (0x139 BSOD) caused by parsing unsupported information elements in 802.11ax beacons. - Fixed a GCMP-256 rekey failure caused by incomplete key deletion. - Fixed a 0x9F BSOD caused by pending TX resources during D3 power transitions. - Resolved connection instability by allowing SER IMR register updates during Low Power State (LPS).
V6101.19.134.1 V6001.19.134.1	<u>Bug Fixed:</u> Fixed an issue where the driver failed to parse the Multiple BSSID element in Beacon/Probe Response frames received from the AP, causing child BSSIDs to be missing and unsupported.
V6101.19.134.0 V6001.19.134.0	<u>Bug Fixed:</u> - Fixed a potential issue where the IC could malfunction after entering and then leaving power-saving mode. - Fix the 0xD1 BSOD issue to prevent a situation where the Tx remains continuously abnormal, leading to the exhaustion of Idle TCB and access to a null pointer. - Resolved the issue of intermittent wireless connection drops caused by a race condition between the AFE FIFO configuration by firmware IO and a clock glitch. - Fixed the 0x7E BSOD issue to avoid the situation where work items may still run after the device is closed and then access a null pointer. - Fixed the 0x7E BSOD issue to prevent accessing a null pointer when the MBSSID IE length is 0. - Fix the 0x9F BSOD issue to address the race condition between NetadapterCx and the driver, resulting in an unexpected Tx state. - Improve OTA (Over-the-Air) Maximum RX Throughput when connecting to 802.11be APs. (e.g., BE96U)
V6101.19.133.0 V6001.19.133.0	<u>Feature:</u> Enable seamless roaming between DFS channel.

	- Supports outputting Wi-Fi driver diagnostic events to the Microsoft User-Initiated Feedback (UIF) log <u>Bug Fixed:</u> - Address the issue of disconnections and ping test performance caused by high CPU load. - Restore CR with AON off for 8852BE-VT after leaving power saving mode. - Fix the 0x7E BSOD issue to avoid an error when touching a specific scan queue entry after clearing it. - Resolved an issue where intermittent connection drops occurred during YouTube playback with the RTL8852BE-VS Wi-Fi solution. - Fix inability to enter S0i3 sleep mode on non-wakeup platforms. - Fix the 0x10D BSOD issue to avoid accessing a null pointer in RxQueue. - Fix a potential 0x7E BSOD issue to Adapter Context to be cleaned up, leading to null pointer access
V6101.19.132.0 V6001.19.132.0	<u>Feature:</u> - Implemented PCIe DMA stall-detection logic and an automatic MIO failure-recovery mechanism. - Allow BIOS to enable the mechanism for the UK to follow CE transmit power limits. (refer to Realtek Regulatory Implementation Guideline-R17.5 sec. 3.1.11 for more details) <u>Bug Fixed:</u> - Resolved a potential connectivity issue that could occur when the 8851BE chipset entered power-saving mode. - Fixed firmware state-machine anomaly triggered by a TX-stuck condition. - Resolved a DMA access-violation that triggered a 0xE6 BSOD. - Resolved 0x7F BSOD to avoid accessing null station info. - Fix the noise issue in Bluetooth earphones caused by scanning interference. - Fixed a potential disconnection issue that could occur while roaming. - Fixed a 0x1F Blue Screen of Death (BSOD) that occurred when the adapter failed to allocate resources during initialization.
V6101.19.131.1 V6001.19.131.1	<u>Bug Fixed:</u> Resolved potential problem of FW abnormality when RTL8851BE entered LPS.
V6101.19.131.0 V6001.19.131.0	<u>Regulation:</u> - N/A <u>Feature:</u> - N/A <u>Customized:</u> - N/A <u>Bug Fixed:</u> - Resolved 0x133 BSOD occurred when too many p2p devices have been generated in the Wi-Fi environment. - Resolved potential issue with FW error causing AP list to disappear. - Resolved WPA connection issue.
V6101.19.130.0 V6001.19.130.0	<u>Regulation:</u> N/A

	<u>Feature:</u> • N/A <u>Customized:</u> • N/A <u>Bug Fixed:</u> • Resolved BT packets are periodically impacted by coexist mechanism. • Resolved DUT unable to connect with BT mouse. • Resolved 0x9F BSOD occurred when run reboot/modern standby/s4 stress test.
V6101.19.129.0 V6001.19.129.0	<u>Regulation:</u> • N/A <u>Feature:</u> • N/A <u>Customized:</u> • Add CMD for reset connected AP information. <u>Bug Fixed:</u> • Resolved incomplete handling during the recovery process. • Fix an issue where the BT PLDR function fails after resuming from MSD mode. (MSD: Disconnect from Wi-Fi AP and then enter Modern Standby). • Resolved updating the driver results in an empty scan list. • Resolved Wi-Fi/Bluetooth coexistence is causing degraded throughput and an initial 1-2 minute lag in A2DP audio streaming.
V6101.19.128.0 V6001.19.128.0	<u>Regulation:</u> • N/A <u>Feature:</u> • Cross AKM/Cipher roaming mechanism. <u>Customized:</u> • N/A <u>Bug Fixed:</u> • Resolved NLO for modern standby test. • Resolved severe video lag and disconnection occurring before ECSA after resuming from S4. • Resolved after setting up the mobile hotspot on DUT, both STA1 and STA2 can connect to the mobile hotspot and successfully ping external networks and DUT. However, SUT1 is unable to ping SUT2. • Resolved Yellow Bang issue occurred during MS aging test. • Resolved 0x7E BSOD after connecting/disconnecting wlan or connecting widi to play video.
V6101.19.127.0 V6001.19.127.0	<u>Regulation:</u> • N/A <u>Feature:</u> • TAS support.

	<u>Customized:</u> • N/A <u>Bug Fixed:</u> • Resolved 0x133/0x9f BSOD occurs after waking up from Modern Standby long idle for over 23 hours. • Resolved 0x9f BSOD when running reboot/S3/S4 stress test. • Resolved 0x133 BSOD occurred when system idle for about 10 minutes. • Resolved BT mouse lags intermittently when connected to 2.4G AP. • Resolved video and audio lag for 2.4G miracast SCC.
V6101.19.126.0 V6001.19.126.0	<u>Regulation:</u> • N/A <u>Feature:</u> • Mobility roam mechanism. • Optimize FW download for OS recovery time. <u>Customized:</u> • Improve 5G Tx throughput degradation when enable DMAR. <u>Bug Fixed:</u> • Resolved 0x10d BSOD occurred during stress test. • Resolved 0x7e BSOD when recording by snipping tool with connecting 8k TV. • Resolved 0xd1 BSOD occurred when resuming from S4. • Resolved 0xe6 BSOD occurred ping test.
V6101.19.125.0 V6001.19.125.0	<u>Regulation:</u> • [8852BE-VT]Regulatory country list domain code R50 + Channel plan R68. ■ Korea enable TAS. • [8851BE]Regulatory country list domain code R05 + Channel plan R68. ■ Default enable 2.4/5GHz band for uncertified countries. <u>Feature:</u> • N/A <u>Customized:</u> • N/A <u>Bug Fixed:</u> • Resolved the issue where the DUT connects to a WPA3-Enterprise encrypted AP, but the authentication was displayed as WPA2-Enterprise.
V6101.19.124.0 V6001.19.124.0	<u>Regulation:</u> • N/A <u>Feature:</u> • N/A <u>Customized:</u> • N/A

	<u>Bug Fixed:</u> • Improve the power consumption of WLAN device during web browsing. • Improve power saving behavior to pass E-Start Test@ErP Lot3 long idle LCM off power consumption spec. • Resolved weak Tx throughput for BT idle in AC mode. • Resolved 0xE6 BSOD caused by DMA violation. • Resolved 0xD1 BSOD when DUT resumes from S3. • Resolved the issue that cannot show correct wireless mode while switching AP mode to ax/ac/n.
V6101.19.123.0 V6001.19.123.0	<u>Regulation:</u> • [8851BE]Regulatory country list domain code R04 + Channel plan R68. ■ Add TAS field • [8852BE-VT]Regulatory country list domain code R48 + Channel plan R68. ■ Add TAS field ■ Add DAG field <u>Feature:</u> • N/A <u>Customized:</u> • Dynamic Antenna Gain. <u>Bug Fixed:</u> • Resolved 0xD1 BSOD related to P2P service discovery request construction. • Resolved 0x7E BSOD during unload driver process. • Resolved when the Bluetooth earphones are connected to the device, music playback stutters if the Wi-Fi is turned off.
V6101.19.122.0 V6001.19.122.0	<u>Regulation:</u> • N/A <u>Feature:</u> • N/A <u>Customized:</u> • N/A <u>Bug Fixed:</u> • [8852BE-VT] Resolved 0xC4 BSOD when doing the data test. • Resolved Wi-Fi disconnected after resuming from S4. • Resolved intermittent wireless disconnection.
V6101.19.121.0 V6001.19.121.0	<u>Regulation:</u> • N/A <u>Feature:</u> • N/A <u>Customized:</u> • Enable DMAr by default with Tx coalesce/LSO for specific customer.

	<u>Bug Fixed:</u> • Fix 0x13A BSOD issue occurred when system resumed from WoWLAN. • Fix 0xD1/0x133 BSOD caused by accessing freed NB. • [8852BE-VT] Resolved DUT scan list empty when mobile hotspot resumed from S5. • Resolved wireless display automatically disconnect.
V6101.19.120.0 V6001.19.120.0	<u>Regulation:</u> • N/A <u>Feature:</u> • N/A <u>Customized:</u> • D3Cold support in AMD platform. <u>Bug Fixed:</u> • [8852BE-VT] Resolved “Allow the computer to turn off this device to save power” button in Power Management. • Improve the lag issue of Infra-casting application for Vivi. • Resolved incorrect display of mobile hotspot connection channel information.
V6101.19.119.0 V6001.19.119.0	<u>Regulation:</u> • N/A <u>Feature:</u> • The first version for RTL8851BE/RTL8852BE-VT to pass WHQL certification and submit Windows 11 24H2 logo <u>Customized:</u> • FCC 5.9G default enabled by driver with ASUS/DELL HWID. <u>Bug Fixed:</u> • Improve Wi-Fi performance when connect to specific Aruba 11AX AP. • [8852BE-VT] Resolved Samsung phone with Android 13 unable to sink with DUT. • [8852BE-VT] Resolved yellow card occurs when installing the driver. • [8852BE-VT] Resolved screen hangs when BT speaker is connected and DUT casting it over by Miracast in 2.4G. • Resolved incorrect display of mobile hotspot connection channel information. • Resolved DUT can't connect headset and BT mouse doesn't work smoothly in DC mode. • Resolved DUT hard to connect with AP with WPA3 H2E support. • [8852BE-VT] Resolve 0x133 BSOD when DUT executes hotspot function for long time. • Fix WLAN scan list empty after boot from UEFI HTTPS with DC mode.
V6101.19.118.0 V6001.19.118.0	<u>Regulation:</u> • Regulatory country list domain code R47 + Channel plan R66.
V6101.19.117.0 V6001.19.117.0	<u>Bug Fixed:</u> • Resolved 0x133 BSOD occurred during WeCom video meeting.

	- Resolved 0x124 BSOD for OS did not notify DUT to enter D3 or unload the driver and configured DUT in D3. - Resolved partial scan list after casting DMP. - Resolved card drop when DUT on airplane mode resumes from MS/S4/S5 and reboot OS. Regulation: - Regulatory country list domain code R45 + Channel plan R66.
V6101.19.116.100 V6001.19.116.100	Bug Fixed: - Resolved HW drip 0% when doing modern standby test with Wi-Fi radio off by GUI. - Resolved the client devices cannot surf the internet when the host shares a 5GHz band mobile hotspot via 2.4G Wi-Fi again after resuming from MS. - Resolved sink will disconnect when ECSA is triggered after waking from S4. - Resolved DMP profile auto remove by itself while trying to reconnect back with DMP. - Resolved 0xD1 BSOD for the same MAC address with port 0 and port 2. - Resolved card drop when DUT on airplane mode resumes from MS/S4/S5 and reboot OS.
V6101.19.115.0 V6001.19.115.0	Bug Fixed: - Reduce times of OS allocation shared memory. New Feature: - ACPI method to query ISED 5.9G support.
V6101.19.114.0 V6001.19.114.0	Bug Fixed: - Resolved 0xD1 BSOD when connect to BT headset and play the local audio. - Resolved Wi-Fi can still wake up after disabled wake on magic packet. - Resolved scan list empty after resuming from s4. - Resolved video unable to load smoothly by Miracast. Regulation: - Regulatory country list domain code R44 + Channel plan R65.
V6101.19.113.0 V6001.19.113.0	Bug Fixed: - Resolved 0xD1 BSOD when executing P2P port reset. - Support Directed PoFx. - Resolved BT devices cannot be automatically re-connected after waking up from S3 with Wi-Fi connected AP. Customized: - Add new ACPI method to disable BIOS SAR for specific country codes.
V6101.19.112.0 V6001.19.112.0	Regulation: - Regulatory country list domain code R43 + Channel plan R64. RF Parameter: - Radio A R32
V6101.19.111.0 V6001.19.111.0	Bug Fixed: Resolved DUT cannot reconnect to AP after resuming from S5.



	- Resolved DUT can find current hidden SSID on AP list. - Resolved DUT connects to AP of channel 177 and cannot ping AP. - Resolved DUT will disconnect from Miracast upon connecting to AP. Customized: - Resolved conductive throughput issue in G mode. Regulation: - Regulatory country list domain code R42 + Channel plan R64.
V6101.19.110.0 V6001.19.110.0	Bug Fixed: - Resolved WLAN connection failed after doing restart test. - Resolved WLAN connection fail when SUT resumes from S4.

3.2.Fixed Issue List

RTK ID (Risk)	Issue	Test Scenario	Root Cause	Solution
N/A	N/A	N/A	N/A	N/A

4. Test Result

Category	Scenario	Test Result (PASS/FAIL)
Installation	Driver Install / Uninstall	PASS
Device HLK	Windows HLK Test for logo certification	PASS
Throughput	Pass criteria: 8851BE 2.4G HE 40M, CH1 => TX: 207Mbps RX: 215Mbps 5G HE 80M, CH36 => TX: 501Mbps, RX: 505Mbps Pass criteria: 8852BE-VT 2.4G HE 40M, CH1 => TX: 405Mbps RX: 415Mbps 5G HE 80M, CH36 => TX: 939Mbps, RX: 935Mbps	PASS
Connectivity	On-line Video Long-Run more than 12hrs	PASS
	Connect to AP then idle more than 12hrs	PASS
	DUT pings to website (ex: www.google.com) for 5 minutes and check the ping status	PASS
Security	DUT can connects to AP with WPA-PSK/WPA2-PSK /WPA3-SAE/ 802.1x TTLS Test	PASS
Airplane mode	Airplane mode on/off test	PASS
Disable/Enable Long-Run	Disable/Enable Long-Run more than 1000 times	PASS
Power Stress Test	S0i3/S3/S4/S5/Restart endurance test	PASS
Roaming	Basic Roaming - Close/Open lid	PASS
	Basic Roaming from AP1 to AP2	
Mobile Hotspot	DUT connected to AP then turns on the Mobile Hotspot SUTs are associated with DUT and then ping Internet	PASS
Miracast	Miracast projection test with wireless display adapter (Both SCC and MCC)	PASS
	Miracast Sink function Test (Both SCC and MCC)	PASS
Modern Standby	Select "Sleep" to let DUT enter MSC (S0i3) for 12 mins. Check the SleepStudy report that there exist SW/HW Drips after wake from sleep.	PASS
WOWLAN	Wake up DUT from S3/S4 via Magic Packet	PASS
COEX	Wi-Fi (On-line Video) + HID (BT mouse) + A2DP (BT headset)	PASS
BIOS SAR Power	1T1R for 8851BE: Port 1 actual tx power are within ± 1.5 dB of target value 2T2R for RTL8852BE-VT:	PASS

	Port 1 and Port 2 actual tx power are within $\pm 1.5\text{dB}$ of target value	
AP IOT	Throughput at different AP	PASS
RSSI	Antenna testing with RSSI tool, AntennaPackage_5.0.11.	PASS

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5. Regulatory Compliance Annex

5.1. 5.9G Support Country List

ISO 3166-2	Country	Driver Version starts supporting	Remark
US	United States of America	v6001.19.112.0	
CA	Canada	V6001.19.117.0	