

Release Information

Intel® PROSet /Wireless Bluetooth Technology 22.20 PV Software Release

WW50, 2020

Wireless Solution Group



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Release Overview

Intel is pleased to announce Wireless Bluetooth Technology 22.20 PV Software Release

The purpose of this release is to provide key fixes to the currently supported adapters as detailed below.

- USB drivers for AX210, AX201, AX200 and other currently supported adapters are PV versions to support – TGL, KBL, GLK, CNL, CFL, WHL, AML, ICL and CML platforms.
- UART drivers for AX200 UART SKU are PV versions for LKF platform.

For the complete list of drivers and platforms supported, please see [slide#4](#).

This release package (PHBTW20175_22.20.0.3.zip) has different drivers per POA – the driver versions in the [slide #5](#) matrix will appear in Device Manager.

The drivers included are certified for Windows 10 May 2020 Update (20H1) . The drivers have also been validated on Windows 10 October 2020 Update (20 H2), [however 20H1 certification persists in Windows 10 20H2](#).

Additionally, this release contains certified drivers for Windows 10 October 2018 Update (RS5) and Windows 10 May 2019 Update (19H1).

WHCP requirements of Windows 10 19H1 persists in Windows 10 19H2, hence *there are no separate certified drivers for Windows 10 19H2*.

General Information

Bluetooth Software Build, Supported Hardware and Tested Platforms

Bluetooth Software Build for Windows

TIC	PHBTW20175_22.20.0.3
FILE	PHBTW20175_22.20.0.3G.zip

Supported Hardware

Typhoon Peak2 (TyP2)/AX210 (On Tiger Lake Platform)
Cyclone Peak2 (CcP2)/AX200 (Including UART SKU)
Harrison Peak2(HrP2)/AX201
Thunder Peak2 (ThP2)/AC9260
Jefferson Peak2 (JfP2)/9560
Jefferson Peak1 (JfP1)/9461/9462
Windstorm Peak(WsP)/8265
Sandy Peak(SdP)/3168
Snowfield Peak(SfP) / 8260
Douglas Peak(DgP) / 18260 (WiGig)
Maple Peak (MP)/17265 (WiGig)
Stone Peak 2 D0 (StP2) / 7265
Stone Peak 1 (StP1) / 3165

Tested Platform

Tiger Lake
Sky Lake
Kaby Lake, Kaby Lake- R, Kaby Lake -Y R
CNL-U
Coffee Lake -S/H
Whiskey Lake
Amber Lake
Ice Lake
Comet Lake
Lakefield (AX200 UART SKU only)

POA Driver Matrix: Non-DCH and DCH

22.20.0.3
(PHBTW20175)

Win10

TyP2	22.20.0.3*
HrP2	22.20.0.3*
CcP2	22.20.0.3*
JfP	22.20.0.3*
ThP	22.20.0.3*
CcP2 UART SKU	22.20.0.3*
WsP	22.20.0.3*
SfP	22.20.0.3*
SdP	20.100.7.1
StP D0/D1	20.100.7.1

Colours, group the same driver version.

* indicates change in driver version, when compared to the last PV Version **22.10.0.2**

New Bluetooth Features in 22.20.0.3 PV

ID	Summary	Feature Benefits	Adapters
No new features in this version.			

Key Corrected Issues in 22.20.0.3 PV

ID	Applicable to		Issue Summary	DETECTED ON		Root Cause/Comments	Functional AREA
	USB	UART		NIC	OS		
BT-21261	✓	✓	Fatal Exception with event ID (IBTUSB-1819) and all connected device with DUT is not usable.	HrP2	Win 10 OS 20H1	Root Cause: Upon reception of a "Page scan Response" with errors (Header Error Check [HEC] error) the error handler did not close the RF prior to handling this error. This caused additional delay leading to a fatal exception being generated. Fix: RF is now closed prior handling the HEC error.	Protocol
BT-22349/ BT-20867/ BT-21153/ BT-22273/ BT-20858 [C]	✓	✓	Multiple Symptoms: • Yellow Bang (Error Code 10) • Watchdog Exception exceptions 01 01 00 07 01 03 • BT Error ID 17 shows in event log after MS/S4 stress test	CcP2/ JfP1 Quasar/ HrP2	Win 10 OS 20H1	Root Cause: Issue occurs when the Bluetooth attempts to read the CoEX related message mailbox, which is guarded by a Semaphore for multiple access. In case there is a failure to obtain the Semaphore, a delay function is used to retry later. Whenever Bluetooth is in Active Park mode - the delay function is providing an incorrect value (due to inherent register states) which causes to enter an infinite loop eventually triggering the watch dog exception. Fix: The delay function is replaced with a simpler implementation instead of relying on register states.	Connectivity/Co-Ex
BT-21063 [c]	NA	✓	System find 7E BSOD when MFG perform do Power On/Off (Shutdown/PowerOn) Test	CcP2 UART	Win 10 OS 20H1	Root Cause: On some systems with CcP2 UART a BSOD can occur during stress testing the D3-D0-D3 transition scenario back-to-back. This BSOD can occurs while transitioning to the D0 state with the Firmware becoming non-responsive and the driver incorrectly returns a SUCCESS status to the host stack. Thus, future transactions with the firmware result in a no response and consequently a BSOD. Fix: Currently, it is not understood why the Firmware is in a bad state, however the D0 entry function is now corrected to return an "UNSUCCESSFUL" status to the host stack and ensure that the host stack does not attempt further firmware transactions. Due to this correction a BSOD is no more expected in this scenario, however a yellow bang may occur for the same conditions.	State Transition

Key Corrected Issues in 22.20.0.3 PV

ID	Applicable to		Issue Summary	DETECTED ON		Root Cause/Comments	Functional AREA
	USB	UART		NIC	OS		
BT-20419/ BT-22289 [C]	✓	✓	Bluetooth fails to function after resume from Idle (Modern Standby) due to connection timeout.	CcP2/ HrP2	Win 10 20 H1	Analysis: In corner cases upon resume from Idle states, it has been observed that missing or delayed interrupts create events in the RF activity scheduler which do not get processed (as the interrupts have missed). These events accumulate and cause anomaly in the scheduler behavior leading to connection time outs. Work around: The accumulated events are cleared in the missing Interrupt handler. This should resolve issues which cause connection timeouts occurring for the above-mentioned reasons. <i>The root cause will be addressed as part of BT-22169.</i>	HID
BT-20416/BT-20339[C]	✓	NA	BT results in BSOD 0x9F while system stress	HrP2	Win 10 OS 20H1	Root Cause: TILE registry was accessed incorrectly on non-TILE enabled platforms which resulted in longer D0 entry time. Fix: Incorrect TILE registry access is prevented.	TILE*

[C] indicates issues which have been reported by customers.

Known Issues & Limitations in 22.20.0.3 PV

ID	Applicable for		Summary	Is a 3rd Party Issue?	Impact on the user	NIC /OS Observed	Workaround Recovery procedure	Comments	Impacted Functional Area
	USB	UART							
BT-11873	✓	NA	In some scenarios, we can observe Audio Glitches in open environments with HFP.	No.	UX	HrP2 on Win 10 20H1	None	NA	HFP
BT-18675	✓	NA	Mouse Disconnections are observed followed by reconnections.	No.	UX	HrP2 on Win 10 20H1	NA	Issue found only on one OEM platform and with Logitech mouse only.	HID
BT-18680	✓	✓	HID lag is observed in the scenario with HFP Audio and HID mouse usage , whenever connection interval and eSCO intervals collide.	No.	UX	HrP2 on Win 10 20 H1	NA	Issue observed when both eSCO intervals and HID connection intervals are same.	HFP
BT-21386	✓‡	✓	System exception is observed with Event-ID(1820 & 1840) when connected with multiple devices including headset, BR/EDR mouse and LE apps on Mobile phones.	No.	NA (See comments)	CcP2/HrP2 on Win 10 20 H1	NA	This issue have been observed only when WRT logging is enabled. Hence we do not expect end user impact.	LE
BT-22169 [N]	✓	✓	BT mouse disconnected suddenly during using it.	No.	UX	HrP2 on Win 10 20 H1	Remote device needs to be power cycled.	Link is experiencing Connection timeout. This issue also follows up for the final fix of BT-20419 (listed as fixed with a work around in this release note)	HID

CONTINUED ...

‡ Issue was observed in USB hardware; however, issue could be also present in UART.

Known Issues & Limitations in 22.20.0.3 PV

ID	Applicable for		Summary	Is a 3rd Party Issue?	Impact on the user	NIC /OS Observed	Workaround Recovery procedure	Comments	Impacted Functional Area
	USB	UART							
BT-20105[N]	✓	✓	MOS(Mean Opinion Scores) with enabling HFP Audio offload is 6% lesser than when HFP Audio offload is disabled	No.	No audible impact is expected.	HrP2 on Win 10 20 H1			HFP
BT-20710 [N][C]	NA	✓	Observed BSOD 0x13a during Memory and Sound noise test.	Yes. Windows OS	UX	CcP2 UART on Win 10 20 H1	NA	This issue is confirmed to be an issue that needs to be fixed by Microsoft. Current communication from Microsoft indicates that this fix will be available in Windows 10 Build -21231. Please refer to Microsoft Bug ID: 29160513	Stress Testing

[C] indicates issues which have been reported by customers.

[N] indicates issues which have not been reported in earlier versions of the release notes.

Issues no longer observed/Closed for reasons other than being fixed/Non-Intel Issues – 22.20.0.3 PV

ID	Applicable for		Summary	NIC /OS Observed	Comments
	USB	UART			
BT-21039	✓	✓	During automation runs upon connection to a LE mouse, it has been observed that Bluetooth device can sometime enter an incorrect state and fails to perform Inquiry scan.	NA (See comments)	This issue is related WRT tool, rather than that of Bluetooth. The fix to this issue is available with the WRT release WRT2G_22.20.0.8 (Core 58) and later.

TILE* App Integration Info

Intel Wireless Bluetooth subsystem can support TILE¹ functionality on Tiger Lake platforms subject to *OEM integration of this feature*².

Intel –Tile SW BKC Information

The following table provides the BKC versions including the versions of the TILE App Intel has validated

Intel Bluetooth Driver Version	Version of the Tile Application		
	Windows App	Android Mobile App	iOS Mobile App
22.20.0.3	V3.0.2.0	2.75.0 (3285)	V2.72.0 (TestFlight)

Tile Related Known Issues

ID	Summary	Is 3 rd Party Issue?	NIC and OS Version	Comments
BT-21319	No Tile advertisements observed during BitLocker Screen	No	HrP2 on Win 10 20H1	NA
BT-11973	No Tile advertisements observed when DUT is shutdown with Fast Start up being disabled	Yes, Windows OS	CcP2 on Win 10 20H1	This is an issue in Windows OS, to be fixed via Microsoft Bug ID: 358675. Fix is expected in 21H2 OS release.

¹ TILE provides a solution for tracking devices - in this case the PC/laptop - using Bluetooth technology. Please refer to <https://www.thetileapp.com/>

² If you need more information on integrating TILE into upcoming designs, please contact your Intel Wireless representative.

Additional Notes

Updated Impacts for 22.20 PV Release

- Please note that starting from 21.120 PV release **Remote Wakeup Extension File is no more resold to customers**. Please refer to the TA titled: “REMOVAL OF Remote Wakeup Extension INF from Intel® Bluetooth® Software release” dated July 2020.
- The IBTSIVA is ON by default for all HW/SW combinations except for the DCH releases.
- Extension INF files are the method to enable services and install options in DCH releases.
- Bluetooth extension INF files have already been resold to customers that requested them. Please see your Intel Wireless account manager for further information on this topic.
- **Customers using UART Solution – as informed earlier starting from this PV release (22.20), please note the following changes:**
 - lbtserialbus.inf will be merged into lbtuart.inf, and hence there would be only one INF file from the 22.20 PV release onwards.
 - UART drivers will no longer be part of the non-UWD folders. Subsequently, UART drivers will only be delivered as part of UWD folders in Generic Layout Package.

BT Release History

This Release



Milestone Release Name	Release Week	BT TIC	BT KIT
21.110.0.3 PV	Ww28	PHBTW12144	136401
21.120.0.4 PV	Ww37	PHBTW15379	1000138
22.00.0.2 PV	Ww39	PHBTW16248	1000206
22.10.0.2 PV	Ww45	PHBTW18298	1000781
22.20.0.3 PV	Ww50	PHBTW20175	1001381

Intel Bluetooth SW Release VIP Kit Contents

File Name	Description
PHBTW20175_22.20.0.3G.zip	BT SW installation files for Generic Layout
Bluetooth_Debug_Tools.Zip	Contains the following: 1. lbt_tools.zip - IBT USB trace tool 2. ibtverify- tool for verification of BT Error recovery (Refer TA Document No: 616292) 3. Intel Bluetooth OEM Tools.msi - Required for DRTU installation, Please refer to DRTU User Guide for installation instructions of DRTU.
Others	1. Release note 2. Installation guide 3. License agreement

Glossary

COEX = Coexistence. This refers to when Bluetooth and Wifi are both operating simultaneously in the 2.4Ghz band. Collisions between the radios can occur and degrade performance.

PC = Production Candidate – Part of the initial software series on a new adapter (e.g. alpha, beta, PC, PV)

PV = Production Version – Software that is approved for shipping

SP = Service Pack – an intermediate release between major release. It usually only has defect corrections.

MR = Major Release – Includes new features and defect corrections.

WA = Workaround

RN = Release Note

HF = Hot Fix – a software release with minimal change. Created to resolve a urgent customer need.

YB – Yellow exclamation mark in device manager. Indicates that a driver is not functioning properly

Ibtsiva – Software service that runs after certain sleep cycles and restarts the BT device upon YB detection

POA – Platform, OS, Adapter e.g. (Kaby lake, RS1, WsP) – usually refers to OS/Adapter combo.

ATS – Adaptive Time Share

Adapter Numbers

Adapter Name	Number
Typhoon Peak2	AX210
Cyclone Peak 2	AX200
Harrison Peak 2 AX201	AX201
Thunder Peak 2/ 9260	AC9260
Thunder Peak 1/ 9162	AC9162
Jefferson Peak 2	AC9560
Jefferson Peak 1 Div 9462	AC9462
	AC8260
Snowfield Peak	
Sandy Peak	AC3168
Sandy Peak2	AC7265
Stone Peak	AC3168
Stone Peak 2	AC7265
Windstorm Peak	AC8265
Wilkins Peak2	AC7260
Wilkins Peak1	AC3160

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