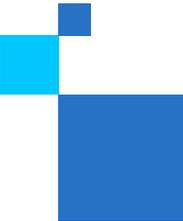**Release Notes**

Intel® PROSet/Wireless Bluetooth® Software V22.70.0.3 PV Release

Wireless Solution Group

WW 30

intel.

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Release Overview

- Intel is pleased to announce the 22.70.0.3 Production Version (PV) release of the Intel® PROSet/Wireless Bluetooth® Software.

  - This release introduces Windows 11 October 2021 Release (aka Cobalt) compliant drivers for all currently supported Intel Wireless HW, except:

    - 32-bit SdP/StP drivers : As already informed via a Technical Advisory , 32-bit binaries are no longer supported in Windows 11. 32-bit StP/SdP drivers remain included in the Generic Layout but are not Windows 11 compliant.

  - This version is a PV version to support KBL, GLK, CNL, CFL, WHL, AML, CML, ICL, LKF, TGL, RKL,JSL platforms.

  - This software package includes drivers for the following devices: TyP2, HrP2, CcP2, CcP2 UART, ThP2, JfP2, JfP1, SfP, WsP, SdP, StP.

  - This release contains certified drivers for RS5 (limited to TyP2/JfP/ThP2), Windows 10 and Windows 11. – see details in slide 5

General Information

Driver Version

TIC	PHBTW35843_22.70.0.3
File Name	PHBTW35843_22.70.0.3G.zip
22.70.0.3	TyP2/CcP2/HrP2/JfP1/JfP2/ThP2/CcP2 UART/WsP/SfP
20.100.10.3	64-bit StP/SdP
20.100.9.3	32-bit StP/SdP

Supported Operating Systems
(Please see slide 5 for OS Version support per HW)

Windows 10 October 2018 Update (RS5)

Windows 10 April 2019 Update (19H1)

Windows 10 November 2019 Update (19H2)

Windows 10 May 2020 Update (20H1)

Windows 10 October 2020 Update (20H2)

Windows 10 May 2021 Update (21H1)

Windows 11 October 2021 (Cobalt)

Tested Platforms

Tiger Lake(TGL)

Jasper Lake (JSL)

Rocket Lake (RKL)

Lakefield (LkF)

Kaby Lake (KbL) / Kaby Lake refresh (KbL-R)

Apollo Lake (ApL)

Sky Lake (SkL)

Broadwell (BDW)

Gemini Lake (GLK) / Gemini Lake Refresh (GLK-R)

Cannon Lake (CNL)

Coffee Lake (CFL)

Whiskey Lake (WHL)

Amber Lake (AML)

Ice Lake (ICL)

Comet Lake (CML)

Supported Hardware

Typhoon Peak 2 (TyP2)/AX210

Typhoon Peak 2 embedded (TyP2)/AX210-embedded

Harrison Peak2 (HrP2)/AX201

Cyclone Peak 2 (CcP2)/AX200

Cyclone Peak 2 UART (CcP2)/AX200

Thunder Peak2 (ThP2)/9260

Jefferson Peak2 (JfP2)/9560

Jefferson Peak1 (JfP1)/9461/9462

Windstorm Peak(WsP)/8265

Sandy Peak (SdP)/3168

Snowfield Peak (SfP) / 8260

Oak Peak (OkP)/18265

Douglas Peak (DgP)/18260 (WiGig)

Maple Peak (MpL)/17265 (WiGig)

Stone Peak 2 D0 (StP2)/7265/Stone Peak 1 (StP1)/3165

22.70.0.3 PV Release – Bluetooth POA Driver Matrix

- The starred version numbers indicate the SW has an updated version in this release (22.70.0.3) when compared with the previous PV Release, while the colors are used to group similar versions.

HW SKU	Supported operating Systems				Win 10 DCH/non-DCH
	RS5	Win 10 19 H1/H2	Win 10 20 H1/H2 and 21H1	Windows 11 (Cobalt)	Driver Version.
TyP2 AX210	✓	✓	✓	✓	22.70.0.3*
HrP2 AX201	✗	✓	✓	✓	
CcP2 AX200	✗	✓	✓	✓	
CCP2 AX200 UART	✗	✓	✓	✓	
Quasar+JfP1/9461/9462	✓	✓	✓	✓	
Quasar+ JfP2/9560	✓	✓	✓	✓	
Pulsar + JfP1/9461/9462	✓	✓	✓	✓	
Pulsar + JfP2/9560	✓	✓	✓	✓	
ThP2/9260	✓	✓	✓	✓	
WsP/8265	✗	✓	✓	✓	
SfP/8260	✗	✓	✓	✓	
64-bit StP1/3165 , StP2-D/7265 , SdP/3168	✗	✓	✓	✓	20.100.10.3*
32-bit StP1/3165 , StP2-D/7265 , SdP/3168	✗	✓	✓	✗	20.100.9.3*

Key Corrected Issues since 22.60 PV Driver

Key	Headline	Reported HW	Description	Issue type
BT-39554[C]	Code 10 STATUS_IO_TIMEOUT error reported by WU submissions targeting TyP2 1216 HW based devices	**TyP2 1216 HW ONLY**	**Root Cause: Issue is specific to only TyP2 1216.** FW fixes which are required to execute a successful driver upgrade on TyP2 were not being enabled on TyP2 1216 HW SKU **Fix:** FW is fixed to ensure that the driver upgrade flow works correctly for TyP2 1216 SKU.= as well. **Note:** • *This issue **does not impact** TyP2 2230 SKU.* • **Issue does not impact end user as** PLDR automatically recovers the device without any user inconvenience.	State Transition
BT-36602	53021(Fatal) & 52022(UsbXactError) occurred when HS, LE Mouse, LE KB connected & Scan window open overnight, Exception	Ccp2/HrP2/TyP2	**Root Cause:** Because of a Scheduler bug – when an inquiry is in progress and upon the reception of an Extended Inquiry response (EIR), the scheduler identifies the next job as a scan job which has already elapsed. This issue was happening as the scheduler was running partially. **Fix:** FW is fixed to ensure that the scheduler runs completely in these cases and identifies only a valid job.	LE
BT-41008	Disabling Triggering of LKDs	Agnostic	**Root Cause:** With the 22.50 PV release, Intel had introduced the triggering of LKDs upon a driver error, which could provide additional data especially during WU submission failures. However, with the *Cobalt eWDK the LKD APIs are no longer supported by Microsoft.* **Fix :** Currently the LKD triggering feature has been reverted starting 22.60.2.2 HF PV until Microsoft provides an alternative solution	NA

[c]indicate issues reported by *customers.*

DCRs and New Features – 22.70 PV

DCR #	Description	Improvements/Feature Benefits	Relevant HWs
	No New feature is part of this release.		

Known Issues and Limitations – 22.70 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-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-26880	✓	NA	[RKL][TyP][20H1][power] Observed High BT Idle power after performing RF Kill	NO	High Idle power if BT turned on after SW RFKill.	Only on RKL +Typ2 Win 10 20H1	NA		Idle Power
BT-34772/ BT-35336	✓	✓	Fatal exception(0x09 0x92) observed rarely during a HFP call	No.	UX	HrP2/Ty2 on Win 10 20H1/H2	None	NA	HFP

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

Known Issues and Limitations – 22.70 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-39182*	✓	✓	Some systems may show infrequent stability issues with HFP Audio Offload enabled Teams call	No.	UX	HrP2 on Win 10 20H2	NA	==Mitigation:== **Both issues (BT-39182,BT-39873) are going to be fixed via a Hotfix based on 22.70 PV** **Availability:** Current expectation is by End of WW 31' 21	HFP/Audio
BT-39873*† [c]	✓	✕	Bluetooth device is repeatedly disconnected and connected (refreshing) when connected to a LE mouse. ***This issue is specific to devices with Jefferson Peak with Quasar.***	No.	SUX	JfP/Quasar on Win 10	NA		LE
NA			==**Note:**== ***Enabling A2DP offload feature*** *will fail several related Cobalt HLK tests. To pass these tests following are required* 1. Microsoft has published a HLK Filter (No:84121) to ensure that A2DP offload test scenarios pass. Please consult the [HLK Website](#) to download the latest filters. 2. Updated SST drivers and also latest BIOS drivers, which will be published along with Tiger Lake Platform Cobalt BKC are required.			

† Other reported issues with similar symptoms: BT-40097, BT-40099, BT-40647
*Issues not reported in previous release notes and included for the first time.
[c] Issues reported by customers

Issues that are no longer observed/Closed for reasons other than being fixed/Non-Intel Issues – 22.70 PV

ID	Applicable for		Summary	NIC /OS Observed	Comments
	USB	UART			
Not Applicable					

TILE* App Integration Info

Intel Wireless Bluetooth subsystem can support TILE[1] functionality on Tiger Lake platforms (TyP2, HrP2 & Ccp2) subject to *OEM integration of this feature[2]*.

Intel Bluetooth Driver Version	Version of the Tile Application		
	Windows App	Android Mobile App	iOS Mobile App
22.70 PV	3.1.7.0[3]	2.84.1 (3575)[3]	2.84.0[3]

TILE* Related Fixes

ID	Summary	NIC and OS Version	Comments
This release does not have any new fixes related to TILE*			

TILE* Related Known Issues

ID	Summary	Is 3rd Party Issue?	NIC and OS Version	Comments
BT-21319	No Tile advertisements observed during BitLocker Screen	No	HrP2 on Win 10 20H1	NA
BT-34255	Tile counter management continuity is lost when system resumes to S0 from S4/S5	YES	HrP2 on Win 10 20H1	Issue Identified in BIOS.

[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.
[3]   The Tile applications can be downloaded from the Application Market store of the *Windows, iOS and Android* platforms.

Additional Notes

Following Layout change is applicable for 22.50 PV and later

- Intel Wireless (Wi-Fi and Bluetooth*) Connectivity layout will include all third-party licensing information, which may include wireless software components, from one or more third parties, including third party copyright information addressing any specific terms to be transferred to Intel partners.

<u>Impact on OEMs:</u>
- No impact. The Layouts will include a dedicated folder containing all Non-Intel licenses

<u>Layout update reason</u>
- This change was done based on Intel legal requirement

For Customers using UART Solution, Following is applicable from 22.20 PV and later

- Ibtserialbus.inf will be merged into Ibtuart.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.

Older Notes

- 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.

Intel Bluetooth SW Release Kit Contents

File Name	Description
PHBTW35843_22.70.0.3G.zip	BT SW installation files for Generic Layout
Bluetooth_Debug_Tools.Zip	Contains the following: 1. ibterverify– tool for verification of BT Error recovery (Refer TA Document No: 616292) 2. Intel Bluetooth OEM Tools.msi - Required for DRTU installation, Please refer to DRTU User Guide for installation instructions of DRTU. *Note: lbt_tools.zip will no longer be part of the package.*
Others	1. Release note 2. Installation guide 3. License agreement

Ibterverify version compatibility: Bluetooth 22.70.0.3 requires ibterverify version 1.0 to evaluate PLDR support/implementation.

Bluetooth Release History

Milestone Release Name	Release Week	BT TIC	BT KIT
22.50.0.4 PV	WW 17	PHBTW29311	638515
22.70 PV	WW 25	PHBTW33435	640646
22.70.0.3 PV	WW30	PHBTW35843	644789

This Release ➡

Abbreviations

Acronym	Codename	Intel product name
TyP2	Typhoon Peak 2	Intel® Wi-Fi 6E AX210
CcP2	Cyclone Peak 2	Intel® Wi-Fi 6 AX200
HrP2	Harrison Peak 2	Intel® Wi-Fi 6 AX201
JfP1- DA	Jefferson Peak 1 Diversity antenna	Intel® Wireless-AC 9462
JfP1- SA	Jefferson Peak 1 Single antenna	Intel® Wireless-AC 9461
JfP2	Jefferson Peak 2	Intel® Wireless-AC 9560
ThP2	Thunder Peak 2	Intel® Wireless-AC 9260
WsP	Windstorm peak	Intel(R) Dual Band Wireless-AC 8265
SdP	Sandy Peak	Intel(R) Dual Band Wireless-AC 3168
StP2	Stone Peak 2	Intel(R) Dual Band Wireless-AC 7265
StP1	Stone Peak 1	Intel(R) Dual Band Wireless-AC 3165
SfP	Snowfield Peak	Intel(R) Dual Band Wireless-AC 8260
WkP2	Wilkins Peak 2	Intel(R) Dual Band Wireless-AC 7260
WkP1	Wilkins Peak 1	Intel(R) Dual Band Wireless-AC 3160

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

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

- ATS – ACL Time Share

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