

Release Notes

Intel® PROSet/Wireless Bluetooth® Software Version 22.210 PV Release

Wireless Solutions Group
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Release Overview

- Intel is pleased to announce the 22.210 Production Version (PV) release of the Intel® PROSet/Wireless Bluetooth® Software.
 - This version supports RPL, ADL, KBL, GLK, CNL, CFL, WHL, AML, CML, ICL, LKF, TGL, RKL, JSL platforms.
 - This software package includes drivers for the following devices: HrP1, JnP2, GfP4, GfP2, TyP2, HrP2, CcP2, CcP2 UART, ThP2, JfP2, JfP1, HrP1, SdP & StP.
 - This release contains certified drivers for RS5 (limited to TyP2/JfP/ThP2), Windows 10 and Windows 11 – see details on [slide 5](#).
 - Starting with this release, following drivers are no longer included:
 - 32-bit Drivers for StP1 (3165) , StP2-D (7265) and SdP (3168)
 - Drivers for WsP (8265) and SfP (8260). For more info, see doc# 761732

General Information

Driver Version	
TIC	PHBTW75040_22.210.0.3
File Name	PHBTW75040_22.210.0.3G.zip
22.210.0.3	GfP4/GfP2/HrP2/HrP1/TyP2/CcP2/CcP2 UART/JfP1/JfP2/JnP2/ThP2
20.100.10.10	64-bit StP/SdP

Supported Operating Systems
(Please see slide 5 for OS Version support per HW)
Windows 10 October 2018 Update (RS5)
Windows 10 May 2020 Update (20H1)
Windows 10 October 2020 Update (20H2)
Windows 10 May 2021 Update (21H1)
Windows 11 October 2021 (SV1)
Windows 11 22H2 Update (SV2)

Tested Platforms
Raptor Lake (RPL)
Alder Lake (ADL)
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
Harrison Peak1 (HrP1)/AX101
Johnson Peak2 (JnP2)/AX203
Garfield Peak4 (GfP4)/AX411
Garfield Peak2 (GfP2)/AX211
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
Sandy Peak (SdP)/3168
Maple Peak (MpL)/17265 (WiGig)
Stone Peak 2 D0 (StP2)/7265/Stone Peak 1 (StP1)/3165

22.210 PV Release – Bluetooth® POA Driver Matrix

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

HW SKU	Windows 10/11 UWD Version	Supported Operating Systems			
		Windows 10 (RS5)	Windows 10 20H1/H2 and 21H1/H2	Windows 11 (SV1)	Windows 11 (SV2)
GfP4 AX411	22.210.0.3*	×	✓	✓	✓
GfP2 AX211	22.210.0.3*	×	✓	✓	✓
TyP2 AX210	22.210.0.3*	✓	✓	✓	✓
HrP2 AX201	22.210.0.3*	×	✓	✓	✓
HrP1 AX101	22.210.0.3*	×	✓	✓	✓
JnP2 AX203	22.210.0.3*	×	✓	✓	✓
CcP2 AX200	22.210.0.3*	×	✓	✓	✓
CCP2 AX200 UART	22.210.0.3*	×	✓	✓	✓
Quasar + JfP1/9461/9462	22.210.0.3*	✓	✓	✓	✓
Quasar + JfP2/9560	22.210.0.3*	✓	✓	✓	✓
Pulsar + JfP1/9461/9462	22.210.0.3*	✓	✓	✓	✓
Pulsar + JfP2/9560	22.210.0.3*	✓	✓	✓	✓
ThP2/9260	22.210.0.3*	✓	✓	✓	✓
64-bit StP1/3165 , StP2-D/7265 , SdP/3168	20.100.10.10*	×	✓	✓	✓

DCRs and New Features – 22.210 PV

DCR #	Description	Improvements/Feature Benefits	Relevant HWs
DCR-1789	Bluetooth PPAG Support for China Region	Extends the PPAG feature (so far available only for ETSI region) also to China Regulatory region for OEM/ODMs who would like to utilize this feature for their designs in the China Region.	GfP2,GfP4, TyP2
DCR-1796	BT Multi Profile Scheduling co-existence and priority enhancements	Improves HID and A2DP performance by optimal scheduling in co-existence scenarios.	GfP2,GfP4, TyP2
DCR-1809	Set Max/default LL length to 2120us from the current 17040us	Some of the peer devices used to reset the default length to 2120us during connection establishment. 2120us is the optimal time for Bluetooth 1M PHY. Additionally, should improve timing maintenance in case of Multi-profile scenarios.	GfP2,GfP4, TyP2
NA	LE Audio is supported with this release. See slide 11 and slide 12 for important details.	Bluetooth® LE Audio is the next generation Bluetooth Audio providing support for the low latency <i>LC3 audio codec</i> and expanding the use cases of Bluetooth Audio	GfP2,GfP4

Key Corrected Issues in 22.210 PV Release

Key	Headline	Reported HW	Description	Domain of the Issue
BT-107255	Intel Wireless controller fails to respond to Vendor specific HCI command, preventing broadcasts being sent (Issue specific to some customers)	HrP2/Solar	<i>Root Cause:</i> When the application sends Vendor Specific Commands to disable LE Advertisement when the connection is being established, a race condition prevents the response to the Vendor Specific Command <i>Fix:</i> The race condition has been fixed.	LE Advertisements
BT-99082	No sound is observed during video streaming, after user drags the progress bar	GfP2	<i>Root Cause:</i> When A2DP was suspended in a co-existence scenario, scheduling of ACL was missed. <i>Fix:</i> This issue has been fixed by correcting the ACL scheduling.	Co-Existence

[c] indicate issues reported by *customers*.

Known Issues and Limitations – 22.210 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-63176	✓	NO	Sometimes a BTOE LE device may suddenly disconnect.	NO	UX	CcP2/HrP2/Win 10	Device recovers automatically	No visible user impact.	HID

[c] Issues reported by customers [N] Issues reported for the first time in this release note

Issues Closed For Reasons Other Than Being Fixed

ID	Applicable for		Summary	Is a 3rd Party Issue?	Details	Impacted Functional Area
	USB	UART				
NA			NA			

[c] Issues reported by customers [N] Issues reported for the first time in this release note

TILE* App Integration Info

Intel Wireless Bluetooth® subsystem can support TILE¹ functionality on Tiger Lake and Alder Lake platforms (GfP2, GfP4, TyP2, HrP2, HrP1 , JnP2& Ccp2) subject to *OEM integration of this feature*².

Intel Bluetooth® Driver Version	Version of the Tile Application ³		
	Windows App	Android Mobile App	iOS Mobile App
22.210.0.3 PV	3.3.27.0	2.108.0 (4426)	2.107.0 (7602)

TILE* Related Fixes/Changes

ID	Summary	NIC and OS Version observed	Comments
	No Tile related changes.		

TILE* Related Known Issues

ID	Summary	Is a 3 rd Party Issue?	NIC and OS Version observed	Comments
NA				

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.

[c] Issues reported by customers

LE Audio Integration Info

- LE Audio feature is supported with this release (for GfP2/GfP4) and made available to OEMs for *early validation activities*.¹

Intel Bluetooth SW	Wi-Fi SW	ISST Driver Version required	Windows EEAP Build	Platform ²
22.210.0.3 PV	22.210 PV2 ³	v8467 or later	Windows 11 SV2 EEAP build - 25295 or later	ADL, RPL

LE Audio - Key Known Issues with Bluetooth Driver			
ID	Summary	NIC and OS Version observed	Comments
BT-117425	Audio degradation observed in LE Audio Multi-profile use case with active Keyboard and mouse	GfP2/Win 11	
BT-112975	LE Audio Microphone does not work when recording sounds with a recording application	GfP2/Win 11	
BT-120581	A FW exception with the signature M&R 0x5 0x2 - SC_EXC_CLIB_MEMCPY_DEST_PTR_NULL (Check to mention)	GfP2/Win 11	
BT-125134	Only one ear bud is connecting after performing connect/disconnect cycle from the GUI	GfP2/Win 11	
BT-115322/BT-111975	HID performance requires improvement in multi-profile use cases with LE Audio	GfP2/Win 11	

¹ **Feature is not considered PV** until validated against Microsoft Windows RTM version supporting LE Audio.

² **Feature is disabled by default** on ADL, RPL. On RPL, feature can be enabled for the above-mentioned SW configuration via the BIOS. Enablement mechanism for ADL is **under review**.

³ **Wi-Fi SW 22.210 or later** is required for Co-Ex features to work appropriately with Bluetooth® LE Audio

Manual HLK Errata Submission Is Required For WHQL Testing With This Release

Important

- LE Audio is enabled in the driver for GfP2/GfP4/TyP2¹ with this release, and due to *missing implementation of related HLK test cases by Microsoft* in Windows 10, Windows 11 SV1, SV2 - the following tests will be listed during System HLK testing but fail. Some test cases require a [manual errata](#) submission with Microsoft. Please see below:

HLK Test	Resolution on Failure	Affected OS
Bluetooth - HciExtensionsV2 (Development and Integration)	Submit Manual Errata with Microsoft (MSFT PUID:701348)	22H1, 22H2
Bluetooth - CIS Establishment Test	Submit Manual Errata with Microsoft (MSFT PUID:701345)	22H1, 22H2
Bluetooth - LE Connected Isochronous Streams support	Submit Manual Errata with Microsoft (MSFT PUID:741263)	22H1, 22H2
Bluetooth - HciExtension1 (Bring Up)	Download the latest HLK filters . Filter#33734 resolves this issue	RS5, 20H1, 21H2

- Please note that irrespective of LE Audio feature being enabled² or not - *above listed tests will fail.***

¹LE Audio framework is enabled for TyP2, however since TyP2 does not support Offload Audio – requires host LC3 codec support for LE Audio enablement, which is not available yet in the Windows OS.

²LE Audio requires enablement via BIOS or Extension INF

Additional Notes

Note: JnP2, HrP1 drivers

JnP2 and HrP1 use the same drivers as that of HrP2. For Bluetooth, all three devices use the same device ID.

Changes applicable from 22.90 PV and later

- Layout Changes:
- Non-UWD drivers are removed.
- iBTSIVA is no longer included.
- 32-bit StP/SdP UWD drivers are introduced in lieu of 32-bit non-UWD drivers.

Changes applicable from 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.

Impact on OEMs:

- No impact. The Layouts will include a dedicated folder containing all Non-Intel licenses

Layout update reason

- This change was done based on Intel legal requirement

Additional Notes (Cont.)

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

- 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.

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
PHBTW75040_22.210.0.3G.zip	BT SW installation files for Generic Layout
	<i>Utilities/Ibterverify (Version 1.3.0)</i> Tool for verification of BT Error recovery (Refer TA Document No: 616292).
	<i>Intel Bluetooth OEM Tools.msi</i> Bluetooth® Test mode driver Installer for DRTU Installation. Please refer latest version of DRTU Install manual.
Others	<div><div>1. Release note</div><div>2. Installation guide</div><div>3. License agreements</div></div>

Ibterverify version compatibility: Bluetooth® 22.210.0.3 requires ibterverify **Version 1.3.0** to evaluate PLDR support/implementation included in this package.

Abbreviations

Acronym	Codename	Intel product name
GfP4	Garfield Peak 4	Intel® Wi-Fi 6E AX411
GfP2	Garfield Peak 2	Intel® Wi-Fi 6E AX211
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
JnP2	Johnson Peak 2	Intel® Wi-Fi 6 AX203
HrP1	Harrison Peak 1	Intel® Wi-Fi 6 AX101
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

Appendix: How to Submit Manual Errata for HLK

For a manual errata, the following steps need to be taken to include it in the submission package:

1. Download the “Windows Hardware Dashboard Submission Readme Form” from <http://aka.ms/submissionreadme>
2. “Section 1: Testing Exceptions” in submission readme:
 1. Specify manual errata# and the failing HLK item name.
3. “Section 2: Additional Information” in submission readme:
 1. Specify the CSS ID# and CSS support engineer name (if known) so that WHQL can contact CSS support engineer directly if they have any questions about this errata.
 2. If this is a contingency case, then please also specify contingency number and test failure details.
4. In HLK Studio, click “Package” tab.
5. Click “Add Supplemental Folder” and browse to the folder that contains the submission readme form then select it.

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