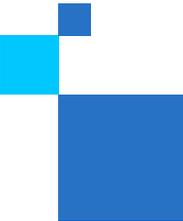**Release Notes**

Intel PROSet/Wireless Wi-Fi Software V22.190.0.4 PV Release

Wireless Solutions Group

WW49'22

intel.

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Release Overview

- Intel is announcing the 22.190.0.4 Production Version (PV) release of the Intel®
  PROSet/Wireless Wi-Fi Software.

  - This version is a PV version to support KBL, GLK, CNL, CFL, WHL, AML, CML, ICL, LKF, TGL, JSL, RKL, ADL, RPL
    platforms. This version is a maintenance release that addresses known issues reported in previous software versions.

  - This software package includes updates in the 22.190.0.4, 22.180.2.1, 21.80.25.1 drivers.

  - This release contains certified drivers for Windows 10/11 – see details on next slide.

  - This release introduces the addition of driver NetWtw12.sys, since Quasar-specific driver code has been branched out
    from the main Wi-Fi driver code. For more details, see *741522_Intel_Wireless_Quasar_Wi-Fi_Driver_Branch-
    out_ww36_22.pdf* for a detailed explanation.

General Information

Driver Version		OS
TIC	PHWFW07109_22.190.0.4	**Win10** RS5, 20H1/2, 21H1/2, 22H2 **Win11** October 2021, 22H2 Update (SV2)
22.190.0.4	HrP1/2, JnP2, TyP2, GfP2, GfP4(Win11)	
22.180.2.1	JfP1/2,CcP2, HrP1/2, JnP2	
21.80.25.1	JfP1,JfP2,ThP2	
20.70.32.1	WsP, SfP	**Win10** 20H1/2, 21H1/2 **Win11** October 2021, 22H2 Update (SV2)
19.51.42.2	StP, SdP	

Supported Operating Systems

Windows 10 October 2018 Update (RS5) NetWTw08/10 drivers only
Windows 10 May 2020 Update (20H1)
Windows 10 October 2020 Update (20H2)
Windows 10 May 2021 Update (21H1)
Windows 10 November 2021 Update (21H2)
Windows 10 Update (22H2)
Windows 11 October 2021 Update (aka Cobalt)
Windows 11 22H2 Update (aka Sun Valley 2)

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

Garfield Peak 4 (GfP4)/AX411
Garfield Peak 2 (GfP2)/AX211
Typhoon Peak 2 (TyP2)/AX210
Typhoon Peak 2 embedded (TyP2)/AX210-embedded
Typhoon Peak 2 industrial (TyP2)/AX210-industrial
Harrison Peak1 (HrP1)/AX101
Harrison Peak2 (HrP2)/AX201
Johnson Peak2 (JnP2)/AX203
Cyclone Peak 2 (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

1. GfP4 has limited functionality on win10 (No CDB).

22.190 Production Version Release – Wi-Fi Package Layout

- The Green areas indicate the new SW in this release (22.190.0.4).

CNVi	Module	Win10/11
Solar	GfP4 AX411	22.190.0.4[1] NETwaw12.sys(NetAdapter) (22.190.0.4)
Solar	GfP2 AX211	22.190.0.4[1] NETwtw12.sys (22.190.0.4)
Solar	HrP1 AX101; HrP2 AX201; JnP2 AX203	
N/A	TyP2 AX210	
N/A	CcP2 AX200	22.190.0.4[1] NETwtw10.sys (22.180.2.1)
Quasar	HrP1 AX101; HrP2 AX201; JnP2 AX203	
Solar / Quasar	JfP1 9461/9462; JfP2 9560;	
Pulsar	JfP1 9461/9462; JfP2 9560;	22.190.0.4[1] NETwtw08.sys (21.80.25.1)
N/A	ThP2 9260	
N/A	WsP 8265	20.70.32.1 NETwtw06.sys
N/A	SfP 8260	
N/A	SdP 3168	19.51.42.2 NETwtw04.sys
N/A	StP1 3165	
N/A	StP2-D 7265	

[1]. **Please note:** Since these drivers use the same INF, Device Manager will show the same driver version. The version in brackets shows the File version for that specific driver (.sys file) in the 'Driver File Details' tab.

Corrected Customer Issues since 22.180.0.4

22.190.0.4(NETwtw12.sys) driver only

Key	Headline (as reported)	Reported HW	Description	Issue type
WIFI-252454	[Win10 21H2] uCode error (EventID 5002) after roam.	HrP2 AX201	Firmware assert 0x1a28 indicates that the FW's PHY bandwidth is less than the TLC (transmit Layer Control) bandwidth. The bug occurs if AP reduce its bandwidth association capabilities below the bandwidth advertised on beacon. Fix: download the TLC configuration command before PHY command	Functionality
WIFI-256268	[ADL] [21H1[20%]softap created at 2.4G channel	HrP2 AX201	Wrong country code due to an aborted scan triggered an MCC update although it should not do it. Fix: avoid MCC update on aborted scan.	Regulatory
WIFI-255990	[ADL-M] [22H2]PC uses Miracast for screen projection, view shows garbage	HrP2 AX201	BA (Block ACK) entries filled with garbage values from previous frame. Fix: Firmware clear the rest of the BA entry to avoid this scenarios	Functionality
WIFI-220259	160mhz RU67s for CA ch50 and JP ch114 are not as expected	HrP2 AX201 GfP2 AX211	Canada and Japan power regulatory profiles adaptations for HrP2/ GfP2	Regulatory

Corrected Customer Issues since 22.180.0.4

22.180.2.1_(NETwtw10.sys) driver only

Key	Headline (as reported)	Reported HW	Description	Issue type
WIFI-252454	[Win10 21H2] uCode error (EventID 5002) after roam.	HrP2 AX201	Firmware assert 0x1a28 indicates that the FW's PHY bandwidth is less than the TLC (transmit Layer Control) bandwidth. The bug occurs if AP reduce its bandwidth association capabilities below the bandwidth advertised on beacon. Fix: download the TLC configuration command before PHY command	Functionality
WIFI-256268	[ADL] [21H1[20%]softap created at 2.4G channel	HrP2 AX201	Wrong country code due to an aborted scan triggered an MCC update although it should not do it. Fix: avoid MCC update on aborted scan.	Regulatory

Corrected Customer Issues since 21.80.24.2

21.80.25.1 (NETwtw08.sys) driver only

Key	Headline (as reported)	Reported HW	Description	Issue type
WIFI-214893	Low DL(download) throughput/performance due to invalid ADDBA response (Pulsar Family only. Fix for Quasar / Solar family done in previous versions)	TyP2 AX210	In case 802.11W connection on there is a race between getting ADDBA request and installing IGTK key. Fix: on association complete, we will update DP (data path) module with 11W association decision.	Performance

DCRs and New Features – 22.190 PV

DCR #	Description	Improvements	Relevant HWs
DCR-1893	Enable 6E in Australia/Fiji/Kenya/NZL/Israel/Saudi-Arabia/UAE/Mauritius	Enable 6E band in Australia/Fiji/Kenya/NZL/Israel/Saudi-Arabia/UAE/Mauritius	GfP2/4, TyP2
DCR-1951	Enabling 6E band for Japan (added GfP4)	Following Japan's approval for 6E, added support GfP4. **Please note:** OEM is responsible to ship platforms with only after Japan 6E approval for these HWs. The latest status should be verified with regulatory team.	GfP4
DCR-1874	Customer specific		
DCR-1798	Add PPAG on ADL+AX201+China	Enable PPAG in China on ADL with HrP1/2 devices	HrP1/2
DCR-1803	PIE API to detect the 6E readiness of Intel Wi-Fi Module on customer platform in run-time	Adding a PIE API to show if 6E is enabled on the platform	GfP2/4, TyP2
DCR-1762	Peer preferred channel in GON flow	Giving priority to the operating channel from peer connection in GON flow in case the device is the GO, peer sends the operating channel in GON response and device is not connected to BSS or any higher priority	GfP2/4
DCR-1588	Keep scan on same chain/antenna if part of same scan-cycle	Driver sends to the Firmware indication if the scan operation is the same scan cycle is previous scan and by that allowing the scan to continue and run on the same chain/antenna	HrP1/2, CcP2, GfP2/4, TyP2
DCR-1509	Customer specific		
DCR-1451	Avoid Missed beacon by increasing sensitivity calibration THs	Firmware increases the sensitivity threshold just before beacon's arrival to reduce the probability for missing beacons in a crowdy environment	HrP1/2, CcP2, GfP2/4, TyP2

Extension INF/ Component INF

INF	Version	Summary	HW
PieComponent.inf	22.1190.0.4	Date and time change	GfP2/4,TyP2,HrP1/2,JnP2,CcP2,JfP1/2,ThP2, SfP,WsP,SdP,StP
PieExtension.inf	22.1160.0.2	No update	GfP2/4,TyP2,HrP1/2,JnP2,CcP2,JfP1/2,ThP2, SfP,WsP,SdP,StP

Software Known Issues and Limitations – 22.190

Key related	Description	OS	Notes
N/A	N/A		

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Product Health

Domain	22.190.0.4	Details
Connectivity		
Platform		
Data Path \ TpT		
Miracast		
SoftAP		
BT-Coex		
Wi-Fi Device Power		
Cert (WHQL)		

Legend:

🟥	Broken, Not usable
🟧	Usable, major issues exist
🟩	Usable

<Color Guidelines>
Critical bug(s) or critical usability issues
minimum 1 High P1. if >=5 High P1 – mandatory. Also If > 20 High - mandatory

Notes on the DDD Debug Layout Usage

▪ Included with the user distributed layouts is also a DDD debug layout. This layout incorporates debug capabilities to be used by OEM validation teams to provide logs and information about an issue to Intel engineering.

▪ <u>This layout is not to be included on production systems or to be shared with end-user customers.</u>

▪ To use the DDD layout, follow the instructions below:

   1) Clean the Windows event log by the following commands with administrator prompt.

      wevtutilcl system

      wevtutilcl application

      wevtutilcl Microsoft-Windows-WLAN-AutoConfig/Operational

   2) Install DDD release.

   3) Perform test until issue reproduction.

   4) Note down the exact time when issue reproduced.

   5) Disable WiFidevice in the device manager.

   6) Copy all files below to share with Intel:

      I.   *"System.evtx" under C:\Windows\System32\winevt\Logs*

      II.   *"Application.evtx" under C:\Windows\System32\winevt\Logs*

      III.   *"Microsoft-Windows-WLAN-AutoConfig%4Operational.evtx" under C:\Windows\System32\winevt\Logs*

      IV.   *"dddLog_XXX.bin" for ThP/JfP/CcP/HrP is* under **C:\Windows\Temp\DDDLogs\ (for RS3/RS4)** *and* **under** C:\Windows\System32\Drivers\DriverData\Intel\Wlan\Out\DDD (for RS5 or later). For legacy devices *"dddLog_XXX.bin" is under* **C:\Windows\Temp\DDDLogs\ (for RS5 or later)**

      V.   *"MurocLog.log" under C:\Program Files\Intel\WiFi\UnifiedLogging*

      VI.   *"MEMORY.DMP" under C:\Windows\System32*

Abbreviations

Acronym	Codename	Intel product name
JnP2	Johnson Peak 2	Intel® Wi-Fi 6 AX203
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
HrP1	Harrison Peak 1	Intel® Wi-Fi 6 AX101
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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