BSP for Microsoft Windows* Embedded Compact 7 and 2013 for Mobile Intel® 4th Generation Core™ Processors and Intel® 8 Series Chipsets

Release Notes

February 2015

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Contents

1.0 Introduction 6
- 1.1 Intended Audience 6
- 1.2 Customer Support 6
- 1.3 Acronyms and Terms 7

2.0 Release Content 8
- 2.1 The IO BSP Installer Package Contents 8
- 2.2 External Dependencies 8

3.0 What's New in This Release 9
- 3.1 New Features 9
- 3.2 Unsupported Features 9
- 3.3 Discontinued Features 9

4.0 Feature Limitations 10
- 4.1 GPIO Driver 10
- 4.2 HD Audio Driver 10
- 4.3 Operating System 10

5.0 Fixed Issues 11

6.0 Errata and Known Issues 14
- 6.1 Errata and Known Issues 14
- 6.2 Non-Intel Issues 15

7.0 Best Known Configuration 16
- 7.1 Hardware Configuration 16
- 7.2 Firmware Configuration 16
- 7.3 Driver/Operating System Configuration 16
- 7.4 Recommended BIOS Configuration 17
- 7.5 Tested Features 17

8.0 Hardware and Software Compatibility 20

Tables

Table 1. Acronyms and Terms 7
Table 2. Reference Documents 7
Table 3. Contents of Release Package 8
Table 4. Components of this release 8
Table 5. Fixed Issues 11
Table 6. Errata and Known Issues 14
Table 7. Hardware Configuration 16
Table 8. Firmware Configuration 16
Table 9. Driver/Operating System Configuration 16
Table 10. Best Known BIOS Configuration 17
Table 11. Tested Features 17

Revision History

Date	Revision	Description
February 2015	001	Initial Release. Corresponds to Gold software version.

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1.0 Introduction

This document provides system requirements, installation instructions, issues, limitations, and legal information for the release of this software. You may find other related documentation for this release as follows:

- *BSP for Windows* Embedded Compact 7 and WEC2013 for Intel® 4th Generation Core™ Processors and Intel® 8 Series Chipsets, User Guide* – refer to Table 2.
- *BSP for Microsoft Windows* Embedded Compact 7 and 2013 Gold Release for Mobile Intel® 4th Generation Core™ Processors and Intel® 8 Series Chipsets, Software Developer Guide* - refer to Table 2.

1.1 Intended Audience

These release notes are intended for ISVs, OEMs and ODMs

1.2 Customer Support

For technical support, including answers to questions not addressed in this product, visit the technical support forum, FAQs, and other support information at: http://www.intel.com/software/products/support/.

Please remember to register your product at https://registrationcenter.intel.com/ by providing your email address. Registration entitles you to free technical support, product updates and upgrades for the duration of the support term. It also helps Intel recognize you as a valued customer in the support forum.

Note: If your distributor provides technical support for this product, please contact them for support rather than Intel.

To submit an issue, please use Intel® Premier Support.

For more information on registering to Intel Premier Support, go to: http://software.intel.com/en-us/articles/performance-tools-for-software-developers-intel-premier-support

1.3 Acronyms and Terms

The following acronyms and terms are used in this document (arranged in alphabetic order):

Table 1. Acronyms and Terms

Term	Description
BSOD	Blue Screen of Death (Stop Error)
GPIO	General Purpose Input/Output
HS-UART	High Speed Universal Asynchronous Receiver/Transmitter
HSIC	High Speed Inter-Chip
I^2C	Inter-Integrated Circuit
ISP	Image Signal Processor for Camera
KSC	Keyboard and System Controller
SPI	Serial Peripheral Interface
SUT	System Under Test
WHCK	Microsoft Windows Hardware Certification Kit

Table 2. Reference Documents

Document	Document No./Location
BSP for Windows Embedded Compact 7 and WEC2013 for Intel® 4th Generation Core™ Processors and Intel® 8 Series Chipsets, User Guide*	332072
BSP for Microsoft Windows Embedded Compact 7 and 2013 Gold Release for Mobile Intel® 4th Generation Core™ Processors and Intel® 8 Series Chipsets, Software Developer Guide*	332077

2.0 Release Content

Table 3 lists the contents of this release Package.

Table 3. Contents of Release Package

Release Collaterals	Version	Release Date
Intel Processor WEC IO BSP.exe	v3.4.1.0.48	January 2015
HSW WEC IO Gold Internal Release Notes	1.0	January 2015
HSW WEC IO Gold Internal User Guide	1.0	January 2015
HSW WEC IO Gold Internal Developer Manual	1.0	January 2015

2.1 The IO BSP Installer Package Contents

Table 4 lists the drivers contained in the IO BSP Installer Package.

Table 4. Components of this release

No.	Software Driver Installed on target system	WEC*7	WEC*2013
1	GPIO	Yes	Yes
2	HD Audio	Yes	Yes
3	PCIe* KITL	Yes	Yes
4	SATA3 IDE	Yes	Yes
5	SMP (Multicore)	Yes	Yes
6	USB 3.0	Yes	Yes

2.2 External Dependencies

NOTES: None

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3.0 What's New in This Release

3.1 New Features

- GPIO Driver
  - Support GPIO pin configuration as input or output pin
  - Support Multiplexing for selected GPIO pin
  - Support GPIO pin level configuration to high or low (enable or disable)
  - Support query for GPIO pin setting.
- HD Audio Driver
  - Support High Definition Audio controller
  - Support ALC262 on Walnut Canyon platform
  - Support WEC software mixer
  - Support hardware mixer
  - Support master volume and mute control for audio output and audio input.
  - Support audio playback in stereo
  - Support 1 independent audio recording

3.2 Unsupported Features

- SATA – SATA AHCI mode is not supported.
- HD Audio – Mono recording is not supported

3.3 Discontinued Features

None

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4.0 Feature Limitations

4.1 GPIO Driver

None

4.2 HD Audio Driver

- HD Audio driver only support the base rates recording of 44.1 kHz and 48 kHz given by the HDA Controller.
- Recording mute is not supported.

Dependent on Realtek ALC262 HD Audio Codec:

- Only supports 44.1/48/96/192kHz sample rate.
- Only supports 16/20/24-bit PCM for stereo audio playback and multiply input streaming.

Dependent on Haswell Walnut Canyon platform:

- Only support three ports on panel, HeadPhone / Line / MIC.
- Only support stereo audio for each port. Don't support Mono Input/Output.

4.3 Operating System

WEC7*/WEC2013* OS limitation requires a system restart when a registry key is changed.

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5.0 Fixed Issues

Table 5. Fixed Issues

Issue #	Description of Issue	Implication (Impact)	Resolution
5221123 (IO)	Failed CETK Test on Measure Memory Performance for WEC 7* on HSW-Walnut Canyon Platform	Memory test in CETK will fail	Fixed in workaround on ioctl.cpp
5221141 (IO)	Failed CETK Test on Measure Memory Performance for WEC 2013* on HSW-Walnut Canyon Platform	Memory test in CETK will fail	Update Platform Builder IOCTL
5221142 (IO)	Failed CETK Test on Full-duplex Audio Playback Verification for WEC*2013 on HSW-Walnut Canyon Platform	Memory test This document provides system requirements, installation instructions, issues and limitations, and legal information for the release of this software: in CETK will fail	Update Platform Builder IOCTL
5221143 (IO)	Failed CETK Test on USB Host Driver Verification for WEC2013* on HSW-Walnut Canyon Platform	Memory test in CETK will fail	Update Platform Builder IOCTL
5221164 (BIOS)	Onboard graphics is not functioning with 135.01 Haswell BIOS	VGA will not have display	Change to BDW BIOS v80 onwards
5221166 (Platform)	PCIe* port J6C2 and J6C1 is not working. Graphics card and NIC are not detected when plugging in these two slots	Graphic card and NIC cannot be used on PCIe port J6C2 and J6C1	J6C2 Digital Display interface connector is not in IO Windows POR. Current Working PCIe* slot after rework: J5C1 - PEG , J6C1 - Slot 1 , J6D1 - Slot 2, J7C1 - Slot 3, J7D1 - Slot 4 , J8C1 - Slot 5
5221169 (IO)	[WEC7*] System hang after pressing Num lock or Caps lock with USB keyboard	Num lock or Caps lock cannot be press	Change to BDW BIOS v80
5221170 (Platform)	Walnut Canyon PCIe* Graphics Card and HDMI display breaks USB ports (BETA_2013_APR_18)	USB ports cannot be used together with PCIe Graphics Card and HDMI	Change to BDW BIOS v80
5221182 (IO)	HSW – WEC7* - USB 3.0 does not meet required data write speed	USB3.0 specification is not achieve	Not a Bug

Issue #	Description of Issue	Implication (Impact)	Resolution
5221183 (IO)	Walnut Canyon – WEC7* - SUT hangs during CETK's Measure Memory Performance Test	Reboot is needed to start back SUT after hang	No longer can reproduce on latest BSP.
5221191 (Platform)	Walnut Canyon - SATA drives do not work when connected to eSATA port	SATA drives can only be used on SATA port and not eSATA	Platform rework needs to be done to enable eSATA.
5221195 (IO)	[WEC2013*] USB 3.0 Read Performance not up to expected standard	USB3.0 specification is not achieve	Test application issues are resolved.
5221189 (IO)	ICHHDA in Haswell Alpha BSP breaks EMGD functionality after performing integration	OS with EMGD unable to boot	Change to BDW BIOS v94.1
5221192 (IO)	[WEC7*/WEC2013*] WEC OS available system memory is too low (200~250MB)	Cannot open too many applications at same time	Fixed in IO Driver MR1 WW36.4 Release
5221199 (BIOS)	PS/2 fail functioning intermittently in BIOS stage	PS/2 cannot be used in BIOS	No longer can reproduce on latest BIOS BDW 94.1
5221204 (BIOS)	[BIOS] Onboard audio devices missing after updating BIOS to BDW_80_00	System will have no audio	Fixed in BIOS BDW 94.1
5221223 (IO)	Unable to mute and control microphone recording volume	Recording volume cannot be adjust and mute	Fixed in IO Driver Beta
5221239 (IO)	[WEC2013*][Walnut Canyon] USB ports are not working with IO Driver 09-22	Any USB device cannot be used on the system	Fixed in IO Driver Beta
5221240 (BIOS)	[Walnut Canyon][BIOS BDW_94] SUT shuts down after 30 mins regardless of activity	System cannot be up for more than 30 minutes	Fixed in BIOS BDW 94.1
5221248 (IO)	[WEC2013*]Adjusting audio slider also randomly adjusts Left-Right balance	Left-Right balance affected by volume adjust	Fixed in IO Driver Beta
5221249 (IO)	[WEC2013*][Walnut Canyon]Adjusting volume slider continuously kills audio functionality	Audio cannot be used and system restart needed	Fixed in IO Driver Beta
5221179 (IO)	WEC2013* - Intel BSP does not install to WinCE800 folder by default	Intel BSP files cannot be found in WinCE800 folder	Beta installer allows user to choose the destination folder.
5221247 (IO)	[WEC7*/2013] Audio recording recorded a lot of noise	Recording voice cannot be hear clearly	Fix in Beta BSP. No more noise when record audio
5221251 (IO)	[WEC7*/2013][Walnut Canyon] USB2.0 ports not functioning after unplug USB3.0 thumbdrive from	All USB2.0 port cannot be used.	Fix in Beta BSP. USB2.0 can work normally

Issue #	Description of Issue	Implication (Impact)	Resolution
	bottom USB3.0 port		
5221185 (IO)	WEC2013* - e1000 NIC - New drivers required	E1000 NIC cannot be used in WEC2013	Fixed
5221262 (Graphic)	OS intermittently blank screen on VGA when integrated with EMGD driver	OS have difficulty to display with VGA	Fixed in Gold
5221279 (Graphic)	[WEC7*]No display when WEC7 loaded with KITL in debug mode	OS will show blank screen in debug mode	Boot in release mode

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6.0 Errata and Known Issues

This section lists Errata and known and non-Intel issues.

6.1 Errata and Known Issues

Table 6. Errata and Known Issues

Issue #	Description of Issue	Implication (Impact)	Resolution
5221222 (IO)	Unable to record waveform audio with certain formats. (Less than 16 bits, Lower than 44.1 kHz sampling rate and Less than two channels)	Certain audio recording format will have noise or cannot record	Will not fix
5221165 (IO)	Bluetooth icon in network connection won't disappear after plug unplugged more than two times	Bluetooth* transfer cannot be done	Don't plug and unplug device unnecessarily
5221181 (BIOS)	WEC7* - Poor performance with PCIe* GFX card	Os lagging if boot up with PCIe* GFX card	Use onboard graphics
5221184 (BIOS)	Walnut Canyon - USB Smart Auto mode does not switch to xHCI	When smart auto is used, USB will always work as EHCI (USB2.0)	Manually change in BIOS to **XHCI** (USB3.0) Enable
5221194 (IO)	Wireless driver not functioning in WEC*2013	Wireless USB cannot be used in WEC2013	Will not fix.
5221244 (BIOS)	[HSW][WEC7*/2013]Low system performance when integrate WEC*2013 with EMGD driver and using latest BIOS.	Os lagging if image integrated with EMGD	Manually change in BIOS to **XHCI** (USB3.0) Enable
5221254 (BIOS)	[HSW][WEC7*/2013]HD Audio failed to function when XHCI mode is set to 'Smart Auto' or 'Auto'	No audio in OS if BIOS XHCI mode is set to 'Smart Auto' or 'Auto'	Manually change in BIOS to **XHCI** (USB3.0) Enable
5221256 (IO)	[HSW][WEC7*/2013]Recorde d audio slow down when record with mono channel	Audio corrupted if record with mono channel	Will not fix. Hardware limitation.
5221263 (IO)	USB and Audio do not work when booting SUT with KITL in debug mode	In debug mode, USB and audio not working	Boot in release mode
5221264 (BIOS)	[HSW][WEC2013*]USB not functioning when **XHCI** mode in BIOS is set to 'Smart Auto' or 'Auto'.	USB not functioning in OS if BIOS XHCI mode is set to 'Smart Auto' or 'Auto'	Manually change in BIOS to **XHCI** (USB3.0) Enable

Issue #	Description of Issue	Implication (Impact)	Resolution
5221288 (IO)	[HSW][WEC2013*] Audio recording does not work when record audio using microphone	No audio can be heard from recorded file using microphone	Microphone's gain is very low, so the sound is very light. So we need to increase the gain of microphone to amplify the sound from Microphone. Increase the input gain of MIC to 0xFFFF

6.2 Non-Intel Issues

Issue #	Description of Issue	Implication (Impact)	Resolution
4635030 (Closed)	Unable to create partition on SD card and USB pendrive (WEC*7 Monthly Update March 2013)	User will not be able to create partition on SD card and USB pendrive from WEC*7 Storage Manager.	WEC*7 Monthly Update April 2014 onwards.
4994595 (Pending)	File system in Storage Manager did not reflect to actual file system type on the storage device. B3-I	The file format is always showing in exFat.	Device is still functional. User may check file system of storage device in another Windows* system i.e Win*7, Win*8.

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7.0 Best Known Configuration

This section provides a summary of the best known configuration.

7.1 Hardware Configuration

Table 7. Hardware Configuration

Category	Description	Rev / Type / Source
CRB	Walnut Canyon	FAB3 REV03
SoC	4th Generation Intel® Core™ i5-4400E CPU @2.70GH (Formerly Known as Haswell)	C0
PCH	Lynx Point*	C2 QM87
Display	VGA (WEC*7) HDMI (WEC*2013)	
Memory	4 GB DDR3	

7.2 Firmware Configuration

Table 8. Firmware Configuration

Category	Description	Rev / Type / Source
CRB BIOS	BDW-E1N1.86C.0094.R01.1410132152	Intel
KSC	V1.17	Intel

7.3 Driver/Operating System Configuration

Table 9. Driver/Operating System Configuration

Category	Description	Rev / Type / Source
Operating System	WEC7* Official Release, Update August 2014 (7.1.2843) WEC2013* Official Release, Update August 2014 (8.0.6211)	MSDN*

Category	Description	Rev / Type / Source
I/O Driver	Intel Processor WEC*7 I/O BSP.msi	Intel
EMGD Driver	Intel_HSW_WEC7_EMGD_V37.16.0_RC_2015-01-07_2002 Intel_HSW_WEC13_EMGD_V37.16.0_RC_2015-01-07_2002	Intel

7.4 Recommended BIOS Configuration

Table 10 contains the recommended BIOS Configuration.

Table 10. Best Known BIOS Configuration

BIOS Selection	Configuration
XHCI Mode	Intel Advanced Menu --> PCH-IO Configuration --> USB Configuration --> XHCI Mode --> **Enabled**

7.5 Tested Features

Features tested with Intel WEC*7 IO BSP and Windows* Catalog are listed in Table 11.

These features may have limitations and known issues. See Section 6.0 Errata and Known Issues for more details.

Table 11. Tested Features

Area	Feature	Source	WEC*7 Pass	WEC*2013Pass
CEPC Boot Loaders	WCELDR	WEC7* Inbox feature	Pass	Pass
	LoadCEPC	WEC7* Inbox feature	Pass	Pass
	Eboot	Intel BSP	Pass	Pass
	UEFI Loader	Intel BSP		
SIO	Legacy Serial COM port	Intel BSP	Pass	Pass
	PS/2 Mouse and Keyboard	WEC7* Inbox driver	Pass	Pass

Area	Feature	Source	WEC*7 Pass	WEC*2013Pass
USB	General USB 2.0 feature Note: USB WIFI tested with: SparkLAN-Ralink RT2870 USB WIFI dongle with EHCI mode	WEC*7 Inbox driver	Pass	Pass
	General USB 3.0 feature Note: USB WIFI* tested with: VNT6656 USB WIFI dongle with EHCI and XHCI mode.	Intel BSP	Pass	Pass
	USB2.0 Boot	WEC7 Inbox driver	Pass	Pass
SATA	General SATA IDE feature Support on ATAPI driver for 2x SATA port	Intel BSP	Pass	Pass
SMP	Symmetric Multi-Processing	Intel BSP	Pass	Pass
PCIe	General PCIe* feature	WEC7* Inbox driver	Pass	Pass
	KITL	Intel BSP	Pass	Pass
	Ethernet Tested with KITL Ethernet Debug Driver for PCIe* Intel/Pro 1000 PT Server Ethernet Adapter and polling mode KITL is supported.	Integrated Intel Driver	Pass	Pass
NOTES: Tested USB WIFI* for WEC*2013 as device driver not available at the time of testing				
High Definition Audio	HD Audio Controller Support	Intel BSP	Pass	Pass
	ALC262 Support			
	WEC7* Software Mixer			
	Master Volume/Mute control			

Area	Feature	Source	WEC*7 Pass	WEC*2013Pass
High Definition Audio	Audio stereo playback	Intel BSP	Pass	Pass
	Audio recording			
	2 Independent Audio Playback 2x audio playback outputs at Port-C and Port-D and 1x audio recording input at Port F on Bayley Bay Platform.			
GPIO	Direction Setting	Intel BSP	Pass	Pass
	Level Value Setting			
	Pin Setting Query			
	Multiplexing Setting			

NOTES:

1. SATA Support on ATAPI driver for 2x SATA port. SATA AHCI mode is not supported.
2. USB Support WIFI* via SparkLAN-Ralink RT2870 USB WIFI* dongle with EHCI mode and VNT6656 USB WIFI* dongle with EHCI and XHCI mode.
3. High Definition Audio Support 2x audio playback outputs at Port-C and Port-D and 1x audio recording input at Port F.

8.0 Hardware and Software Compatibility

This section lists the Intel hardware and software that this release is compatible with:

Mobile Intel® 4th Generation Core™ Processors and Intel® 8 Series Chipsets

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