

**Intel® Embedded Media and Graphics
Driver (Intel® EMGD) v36.16.5 for
Windows Embedded Compact 7*
(WEC7*) and v36.18.5 for Windows
Embedded Compact 2013* (WEC2013*)
for Intel® Atom™ processor E3800
Product Family and Intel® Celeron
Processor N2807/N2930/J1900**

Release Notes

February 2017



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Copies of documents which have an order number and are referenced in this document may be obtained by calling 1-800-548-4725 or by visiting: <http://www.intel.com/design/literature.htm>

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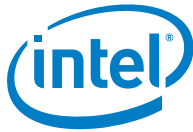


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Revision History

Date	Revision	Description
February 2017	010	Intel® Embedded Media Graphics Driver v36.16.5 for Windows Embedded Compact 7* and v 36.18.5 Windows Embedded Compact 2013* for Intel® Atom™ processor E3800 Product Family/ Intel® Celeron® Processor N2807/N2930/J1900
April 2016	009	Intel® Embedded Media Graphics Driver v36.16.4 for Windows Embedded Compact 7* and v 36.18.4 Windows Embedded Compact 2013* for Intel® Atom™ processor E3800 Product Family/ Intel® Celeron® Processor N2807/N2930/J1900 Hotfix
February 2016	008	Intel® Embedded Media Graphics Driver v36.16.4 for Windows Embedded Compact 7* and v 36.18.4 Windows Embedded Compact 2013* for Intel® Atom™ processor E3800 Product Family/ Intel® Celeron® Processor N2807/N2930/J1900
December 2015	007	Intel® Embedded Media Graphics Driver v36.16.3 for Windows Embedded Compact 7* and v 36.18.3 Windows Embedded Compact 2013* for Intel® Atom™ processor E3800 Product Family/ Intel® Celeron® Processor N2807/N2930/J1900 Hotfix 2
September 2015	006	Intel® Embedded Media Graphics Driver v36.16.3 for Windows Embedded Compact 7* and v 36.18.3 Windows Embedded Compact 2013* for Intel® Atom™ processor E3800 Product Family/ Intel® Celeron® Processor N2807/N2930/J1900 Hotfix
July 2015	005	Intel® Embedded Media Graphics Driver v36.16.3 for Windows Embedded Compact 7* and v 36.18.3 Windows Embedded Compact 2013* for Intel® Atom™ processor E3800 Product Family/ Intel® Celeron® Processor N2807/N2930/J1900
January 2015	004	Intel® Embedded Media Graphics Driver v36.16.2 for Windows Embedded Compact 7* and v 36.18.2 Windows Embedded Compact 2013* for Intel® Atom™ processor E3800 Product Family/ Intel® Celeron® Processor N2807/N2930/J1900
August 2014	003	Intel® Embedded Media Graphics Driver v36.16.1 for Windows Embedded Compact 7* for Intel® Atom™ processor E3800 Product Family/ Intel® Celeron® Processor N2807/N2930/J1900
June 2014	002	Intel® Embedded Media Graphics Driver v36.16.0 for Windows Embedded Compact 7* for Intel® Atom™ processor E3800 Product Family/ Intel® Celeron® Processor N2807/N2930/J1900
May 2014	001	Initial Release



1.0 Introduction

Intel® Embedded Media and Graphics Driver (EMGD) is designed specifically to support the unique graphics driver requirements of embedded applications for Intel® Embedded chipset-based platforms with integrated graphics capabilities.

This release contains components for:

- **INTEL_EMGD_BYT_WEC7_<REL>_36.16.5_xxxx.zip** (where <REL> is release type either ALPHA, BETA, PRODUCTION or MAINTANCE RELEASE, xxxx is the build number) for WEC7*.
- **INTEL_EMGD_BYT_WEC2013_<REL>_36.18.5_xxxx.zip** (where <REL> is release type either ALPHA, BETA, PRODUCTION or MAINTANCE RELEASE, xxxx is the build number) for WEC2013*.

1.1 Intended Audience

This document is intended for Intel® Internet of Things Group (IOTG) customers, especially Original Design Manufactures (ODMs)/Original Equipment Manufacturers (OEMs) and Independent Software Vendor (ISVs) using Intel® EMGD on Intel® Atom™ processor E3800 Product Family and Intel® Celeron® Processors N2807/N2930/N2930.

This is a production release. It is only available for Intel partners who have agreements in place to use Intel production products.

1.2 Customer Support

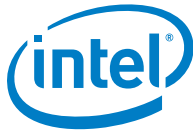
For technical support, including answers to questions not addressed in this document, visit the technical support forum, FAQs, and other support information at:

<http://www.intel.com/content/www/us/en/embedded/software/emgd/embeddedmedia-and-graphics-drivers-for-atom-overview.html>

The Intel® Embedded Design Center (EDC) is a public website; it contains Intel® EMGD production releases. Updates will be available for download from the Embedded Design Center once the product is in production.

To submit an issue, go to Intel® Premier Support:

<https://premiersupport.intel.com>



Note: Intel® Premier Support supports the Intel® EMGD Graphics Driver.

For more information on registering with Intel® Premier Support, go to:

<http://software.intel.com/en-us/articles/performance-tools-for-softwaredevelopersintel-premier-support>

Note: If you have obtained this document from an Independent Software Vendor (ISV), contact them for technical support.

Table 1. Terminology

Term	Description
BIOS	Basic Input/ Output System
BMP	Binary Modification Program
BSP	Board Support Package
DDGPE*	Direct Draw Graphics Primitive Engine*
DDRAW*	Direct Draw*
DP	Display Port
EDC	Intel Embedded Design Center
EMGD	Embedded Media and Graphics Driver
eDP	Embedded Port Display
HDMI	High Definition Multimedia Interface
ISV	Independent Software Vendor
I/O	Input/output
IOTG	Internet of Things Group
MBI	Modular BIOS Interface
ODM	Original Design Manufacture
OEM	Original Equipment Manufacture
QFE	Quick Fix Engineering
SBIOS	System BIOS
SMP	Symmetric Multi-Processor
VBIOS	Video BIOS
VBT	Video BIOS Table
VGA	Video Graphics Array
WEC7*	Windows Embedded Compact 7*
WEC2013*	Windows Embedded Compact 2013*

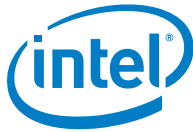


1.3 Reference Documents

For detailed installation and configuration instructions, refer to the User Guide, Doc #333781-007US, included in this Intel® EMGD release package. Full title and location information for the guide is provided in [Table 2](#).

Table 2. Reference Documents

Document	Document No./Location
<i>Intel® Embedded Media and Graphics Driver v36.16.5 for Windows Embedded Compact 7* and v36.18.5 for Windows Embedded Compact 2013* for Intel® Atom™ processor E3800 Product Family/Intel® Celeron® Processor N2807/N2930/J1900 Release User Guide.</i>	333781
<i>Intel® Embedded Media and Graphics Driver v36.16.5 for Windows Embedded Compact 7* and v36.18.5 for Windows Embedded Compact 2013* for Intel® Atom™ Processor E3800 Product Family/Intel® Celeron® Processor N2807/N2930/J1900 Hotfix Release – Specification Update – NDA</i>	548137
<i>Bay Trail-I Platform, Bayley Bay and Bakersport CRB Board - BIOS Image - Rev 93.41</i>	559868



2.0 *New in This Release*

2.1 **New Features**

This release is been validated based on the best known configuration for Microsoft* Windows Embedded Compact7* (WEC7*) and Microsoft* Windows Embedded Compact 2013* (WEC2013*).

2.2 **Existing Features from Past Releases**

This release contains the following features

1. Supports of following displays output:
 - Video Graphics Array (VGA) (2560 x 1600),
 - High Definition Multimedia Interface (HDMI) (1920 x 1200),
 - Display Port (DP) (2560 x 1600),
 - Embedded Port Display (eDP) (2560 x 1600)
 - 16 bpp display mode is supported for OpenGL-ES*
2. The driver has the capability to support following display configurations:
 - Single,
 - Extended,
 - Vertical extended
 - Clone.
3. The driver supports rendered scaling.
4. The driver has the capability to support Chrontel* CH7511a/CH7511B converters.
5. The driver supports multiple configurations using Video BIOS Table (VBT).
6. Hardware accelerated alpha blend and transparent blend is supported.
7. Supports hardware accelerated 2D Blits, DirectDraw* and Microsoft DirectDraw Graphics Primitive Engine* (DDGPE).
8. Supports simultaneous rotation, rendered scaling/stretch blit, horizontal flip, and alpha blend.
9. Supports OpenGL-ES 2.0*.
10. XAML (Silverlight*) running on both DirectDraw* and OpenGL-ES* 2.0 mode is supported.
11. Driver shall support Mpeg2, VC1 and H.264 hardware video decode.
12. Hardware decode on progressive and interlace is supported.
13. Supports single sprite per pipe to playback video.



14. Dual display video playback with sprite is supported in clone and vertical extended mode.
15. Driver shall support 3D and hardware video decode concurrency.
16. Driver shall support sprite color correction, FB blend and overlay.
17. Driver shall support eDP-LVDS Parade* converter card.
18. 3D and video concurrency support with condition of 512 MB aperture size set.

This feature is not supported under flipped or rotated mode. Refer to Specification Update, Doc #548137, for more setting detail.

19. OpenGL-ES* 2.0 performance tweaks for D0 silicon stepping.
20. VC1 hardware video decode support.
21. Supports VBT configuration using Binary Modification Program (BMP) tool with Windows* Embedded features.
22. Support for Microsoft* Windows Embedded Compact 7* (WEC7*) Official Release (August 2015 QFE Update (7.2.2859)).
23. Support for Microsoft* Windows Embedded Compact 2013* (WEC2013*) Official Release (August 2015 QFE Update (8.1.6223)).
24. 2D Support 16 bpp and Optimize performance

2.3 Changes to the Existing Features

There are no changes to the existing features.

2.4 Limitations

The following are the limitations in this release:

1. Rotation is not available for OpenGL-ES*.
2. The current command buffer algorithms will give priority to 3D.

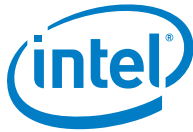
If there is high intensity 3D running with video, you will see smooth 3D running and lagging video. Set the Aperture size to 512 MB to avoid further lagging when the 3D is flooding the command buffer.

3. OpenGL-ES* 2.0 applications running on full screen mode will not work on any secondary display.
4. EMGD needs to work with environment variable **IMGRAM256=0**.
5. To launch the OpenGL-ES* 2.0 application, the stack size needs to be increased by adding the code listed below into the OpenGL-ES* 2.0 application source file.

LDEFSTACK=/STACK: 262144,4096

6. 3D and Video Concurrency Support with condition of 512 MB aperture size set.

This feature is not supported under flipped or rotated mode. Refer to Specification Update, CDI #548137, for more setting details.



2.5 Unsupported or Discontinued Features

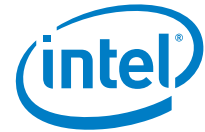
The following features are not supported or are discontinued in this release.

- Power Management
- Hardware Video Encode

2.6 Issues Resolved in this Release

Refer to Specification Update (CDI Doc # 548137) for more detailed information on Issues resolved in this release resolutions.

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3.0 ***Fixed Issues***

Refer to Specification Update (CDI Doc # 548137) for more detailed information on Bug fixes and possible resolutions.

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4.0 **Known Issues**

Refer to Specification Update (CDI Doc # 548137) for more detailed information on Known issues and possible workarounds.

4.1 **Non-Intel Issues**

There are no known non-Intel issues documented at this time.

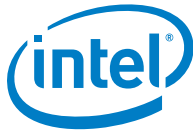
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5.0 *Where to find the Release*

Customers interested in obtaining the release packages are advised to contact their Intel representatives or Independent Software Vendors (ISV), Adeneo* or Bsquare*.

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6.0 Release Content

This release contains the following:

- Intel_BYT_WEC7_EMGD_Version_36_16_5__<REL>_<Build_date>_XXXX.zip
- Intel_BYT_WEC2013_EMGD_Version_36_18_5__<REL>_<Build_date>_XXXX.zip

Note: <REL> = Release type: ALPHA, BETA, Production or Maintenance Release
XXXX = Build number

[Table 3](#) contains the components within this release package.

Table 3. Production Candidate Release Components: Revision Numbers

Subproject (Component)	Location	Revision	Build Stamp
Driver Files	IEMGD_HEAD_WEC<VER>\Driver	–	<Build Date>
CEDriverInfo	IEMGD_HEAD_WEC<VER>\Utilities	–	–
User Guide	IEMGD_HEAD_WEC<VER>\Documents	007	December 2016
Release Notes	IEMGD_HEAD_WEC<VER>\Documents	010	December 2016
License	IEMGD_HEAD_WEC<VER>\License	–	–



7.0 Hardware and Software Compatibility

This section provides a complete summary of the hardware and software compatibility.

7.1 Supported Chipsets

Target system must contain one of the following Intel processor(s):

Intel® Atom™ processor E3800 Product Family and Intel® Celeron® Processor N2807/N2930/J1900

Check with your system provider to determine the Intel® Chipset used in your system.

7.2 Supported Operating Systems

This version of the driver supports the following OS or distributions:

- Intel® EMGD v36.16.5 WEC7*
- Intel® EMGD v 36.18.5 WEC2013*

The driver is validated using the Microsoft* provided versions listed below:

- WEC7* Official Release (August 2015 QFE Update (7.2.2859))
- WEC2013* (August 2015 QFE Update (8.1.6223))

Note: Customers are advised to update their systems to the versions listed above. Using this release on WEC* versions other than the two listed above may result in unknown behavior.

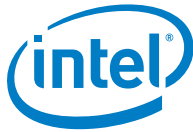
Note: WEC7* and WEC2013* binaries are not interchangeable. Run WEC7* driver binary only on a WEC7* OS. Run WEC2013* driver binary only on a WEC2013* OS.

7.3 Board support Package Version

This version of the driver supports the following Intel® Board Support Package (BSP):

BYT_WEC7_2013_<REL>_IO_v33_15_3125

Note: <REL> = Release type: ALPHA, BETA, Production or Maintenance Release



7.4 BIOS/Firmware Version

This version of the driver supports the following firmware version:

DOS/ VESA based OS (VBIOS: v36.2.9.3909)

For those customers using the Intel® Customer Reference Board (CRB), we recommend using the latest ISG SBIOS v93.44, available by downloading the *Bay Trail-I Platform, Bayley Bay and Bakersport CRB Board - BIOS Image - Rev 93.44*, CDI Doc # 570236.

Note: Intel® EMGD Driver does not support GMA VIBOS on the platforms stated.

Intel does not recommend using Intel® EMGD with GMA VBIOS.

7.5 Software Licenses

The Intel® EMGD is subject to the terms of the license agreement located in the license file in this distribution package. The users shall read, understand, and agree to the terms before using Intel® EMGD.

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