Quartus II Software and Device Support Release Notes Version 15.0

2015.05.04

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This document provides late-breaking information about the Altera® Quartus® II software release version 15.0.

For information about operating system support, refer to the **readme.txt** file in your **altera/<*version number*>/quartus directory**.

New Features and Enhancements

The Quartus II software release version 15.0 includes the following new features and enhancements:

- Full support for the MAX® 10 10M02 device.
- Support for the Arria® 10 10AX115 and 10AX090 ES devices.
- Improved timing models for Arria 10 devices; you must recompile previous Arria 10 device designs and IP with the Quartus II software version 15.0.
- A redesigned Design Space Explorer (DSE) II GUI with improved graphical elements to indicate user flow and improved label names for ease of use.
- Improvements to the Quartus II Pin Planner; you can now highlight channels in the Pin Finder.

Memory Recommendations

A full installation of the Quartus II software requires up to 24 GB of available disk space.

Altera recommends that your system be configured to provide virtual memory equal to the recommended physical RAM that is required to process your design.

Note: Peak virtual memory may exceed these recommendations. These recommendations are based on the amount of physical memory required to achieve runtime within 10% of that achieved on hardware with an infinite amount of RAM.

Table 1: Memory Requirements for Processing Designs

These requirements are the same for both Windows and Linux installations.

Family	Device	Recommended Physical RAM
Arria II GX	EP2AGX45	1.5 GB
	EP2AGX65	2 GB
	EP2AGX95, EP2AGX125, EP2AGX190	4 GB
	EP2AGX260	6 GB

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Family	Device	Recommended Physical RAM
Arria II GZ	EP2AGZ225	4 GB
	EP2AGZ300	6 GB
	EP2AGZ350	8 GB
Arria V	5AGXA1	6 GB
	5AGTC3, 5AGXA3, 5AGXA5	8 GB
	5AGXA7, 5AGTC7	10 GB
	5AGXB1, 5AGXB3, 5AGTD3, 5ASTD3, 5ASXB3	12 GB
	5AGXB5, 5AGTD7, 5AGXB7, 5ASXB5, 5ASTD5	16 GB
Arria V GZ	5AGZE1	8 GB
	5AGZE3, 5AGZE5	12 GB
	5AGZE7	16 GB
Arria 10	10AS048, 10AX048	28 GB
	10AS057, 10AX057	30 GB
	10AS066, 10AX066	32 GB
	10AX090	44 GB
	10AT115, 10AX115	48 GB
	10AX016, 10AS016	18 GB
	10AX022, 10AS022	20 GB
	10AX027, 10AS027	22 GB
	10AX032, 10AS032	24 GB
Cyclone IV E	EP4CE6, EP4CE10, EP4CE15, EP4CE22, EP4CE30, EP4CE40	512 MB
	EP4CE55, EP4CE75	1 GB
	EP4CE115	1.5 GB
Cyclone IV GX	EP4CGX15, EP4CGX22, EP4CGX30	512 MB
	EP4CGX50, EP4CGX75	1.5 GB
	EP4CGX110, EP4CGX150	2 GB
Cyclone V	5CEA2, 5CGXC3, 5CEA4, 5CGXC4, 5CEA5, 5CGTD5, 5CGXC5, 5CSEA5, 5CSTD5, 5CSXC5, 5CSEA6, 5CSXC6, 5CEA7, 5CGTD7, 5CGXC7, 5CSEA2, 5CSEA4, 5CSXC2, 5CSXC4, 5CSTD6	6 GB
	5CEA9, 5CGTD9, 5CGXC9	8 GB
MAX II	All	512 MB

Family	Device	Recommended Physical RAM
MAX V	All	512 MB
MAX 10	10M02	512 MB
	10M04, 10M08	1 GB
	10M50	2 GB
	10M16	2 GB
	10M25	2 GB
	10M40	2 GB
Stratix IV	EP4SGX70	2 GB
	EP4SE230 EP4SGX110, EP4SGX230, EP4S40G2, EP4S100G2	4 GB
	EP4SGX290	6 GB
	EP4SE360 EP4SGX360, EP4S100G3, EP4S100G4	8 GB
	EP4SGX530, EP4SE530, EP4SE820, EP4S40G5, EP4S100G5	12 GB
Stratix V	5SGSD3	8 GB
	5SGXA3, 5SGSD4, 5SGXA4, 5SGTC5	12 GB
	5SGSD5, 5SGXA5, 5SGXB5, 5SGSD6, 5SGXB6	16 GB
	5SGTC7, 5SGXA7, 5SGSD8	20 GB
	5SGXA9, 5SEE9	24 GB
	5SEEB, 5SGXAB, 5SGXB9, 5SGXBB	28 GB

Changes in Device Support

Table 2: Device Support Not Fixed

Description	Workaround
EyeQ does not run without PRBS checker in Arria 10 designs The EyeQ **Start** button is grayed out when attempting to test a transceiver channel. This issue occurs when testing a transceiver channel without first associating either a hard or soft PRBS checker to that channel.	To run EyeQ in Arria 10 designs, select the **Enable prbs soft accumulators** option in the Native PHY IP core IP Parameter Editor.

Table 3: Device Support Fixed

Description	Workaround
Pin-Out File might contain incorrect voltages in Quartus II software release version 13.1 Arria 10 Edition The Pin-Out File (.pin) generated by the Quartus II software might contain incorrect voltages for some Arria 10 ES voltage rails. The voltage rails affected are: • VCC • VCCL • VCCERAM • VCCL_HPS • VCCIOREF_HPS • VCCPLL_HPS	This issue is corrected in Quartus II software release version 14.0 Arria 10 Edition.
Default VCCIO voltage for 10AX115 devices is incorrect in Quartus II software release version 13.1 Arria 10 Edition On the Voltage page of the Quartus II software, the default voltage listed for VCCIO (2.5 V) is incorrect.	This issue is corrected in Quartus II software release version 14.0 Arria 10 Edition.
Netlist viewer does not refresh when the design is recompiled The Netlist Viewer will not update after recompilation if the Netlist Viewer window is open when you modify and recompile the design by double-clicking on **Fitter** in the Task pane on the left side of the Quartus II software.	This issue is corrected in Quartus II software release version 14.1.

Table 4: Device Support Removed

These device families are no longer supported by the Quartus II software.

Device Family Removed	Support Removed in...	Last Supported in...
Cyclone III	14.0	13.1
Stratix III		
Arria GX	13.1	13.0
Cyclone, Cyclone II		
MAX 3000A, MAX 7000A, MAX 7000AE, MAX 7000B, MAX 7000S		
HardCopy II, HardCopy III, HardCopy IV		
Stratix, Stratix GX, Stratix II, Stratix II GX		

Related Information

Altera Knowledge Base

For more information about known device issues and workarounds.

Changes to Software Behavior

This section documents instances in which the behavior and default settings of the Quartus II software have been changed from earlier releases of the software, and known issues with the software.

Refer to the Quartus II Default Settings File (**.qdf**), ***<Quartus II installation directory>*/quartus/bin/assignment_defaults.qdf**, for a list of all the default assignment settings for the latest version of the Quartus II software.

The Pin Planner has been updated for the Quartus II software release version 15.0

- You can now highlight transceiver clock multiplier unit (CMU) capable channels in the Quartus II Pin Finder. When creating a query, select **Pin type** in the **Condition** column, and **CMU** in the **Value** column. The **CMU** value is only available if your target device has CMU channels.
- You can now highlight GT transceiver capable channels in the Quartus II Pin Finder. When creating a query, select **Pin type** in the **Condition** column, and **GT Capable** in the **Value** column. The **GT Capable** value is only available if your target device has GT channels.

Improvements to double-adjacent error location determination logic

Prior to this release, the Quartus II software only enabled double-adjacent error detection location determination when you included the cyclic redundancy check (CRC) atom in your design. If you included the CRC pin, without the CRC atom, the software disabled double-adjacent error detection location determination.

If you enable internal scrubbing, the software will now correct any bitstreams, including double-adjacent errors, created with the Quartus II software release version 15.0.

Corrects ECC pipeline settings for Stratix V and Arria 10 RAMs from the Quartus II software version 14.1

The Quartus II software release version 15.0 corrects an issue where error correction code (ECC) pipeline registers were incorrectly bypassed for Stratix® V and Arria 10 device RAMs. Prior to this fix, if your Quartus II software release version 14.1 design included two or more instances of M20K RAM WYSIWYG in ECC mode with **ECC pipeline stage enabled** set to **ON**, the software might reset **ECC pipeline stage enabled** to **OFF**.

Device Support and Pin-Out Status

Table 5: Full Device Support

Full compilation, simulation, timing analysis, and programming support is now available for the new devices listed in this table.

Device Family	Devices
MAX 10	10M02, 10M04, 10M08, 10M40, 10M50
Arria 10	10AS066ES, 10AX066ES, 10AX115ES, 10AX115E2, 10AT115E2

Table 6: Advance Device Support

Compilation, simulation, and timing analysis support is provided for these devices. The Compiler generates pinout information for these devices in this release, but does not generate programming files.

Device Family	Devices
Arria 10	10AX048, 10AS048, 10AX057, 10AS057, 10AX066, 10AS066, 10AX090, 10AX115, 10AT115
MAX 10	10M16, 10M25

Table 7: Initial Information Device Support

Compilation, simulation, and timing analysis support is provided for these devices. Programming files and pinout information are not generated for these devices in this release.

Device Family	Devices
Arria 10	10AX016, 10AS016, 10AX022, 10AS022, 10AX027, 10AS027, 10AX032, 10AS032

Timing and Power Models

Table 8: Timing and Power Model Status

Device Family	Device	Timing Model Status	Power Model Status
Arria 10	10AX016, 10AS016, 10AX022, 10AS022, 10AX027, 10AS027, 10AX032, 10AS032,10AX048, 10AS048	Advance [(1)]	Preliminary
	10AX057, 10AS057, 10AX066, 10AS066, 10AX090, 10AX115, 10AT115	Preliminary	Preliminary

(1) This release contains advance timing models for some Arria 10 devices. These models will change and should not be relied on for production timing. For more information about working with advance timing models, review the *System Design with Advance FPGA Timing Models* white paper, or contact Altera.

Device Family	Device	Timing Model Status	Power Model Status
Arria V	5AGXB5, 5AGXB7	Final – 12.1 SP1 (2)	Final – 13.1
	5AGTD7		Final – 14.0
	5AGXA1, 5AGXA3, 5AGTC3	Final – 13.0 SP1 (2)	Final – 14.0
	5AGXA5, 5AGXA7	Final – 13.1 (2)	Final – 14.0
	5AGXB1, 5AGXB3, 5AGTD3	Final – 13.0 (2)	Final – 13.1
	5AGTC7	Final – 13.1 (2)	Final – 13.1
Arria V GZ	All	Final – 12.1 SP1 (2)	Final – 13.0
Arria V SoC	5ASXB3, 5ASXB5, 5ASTD3, 5ASTD5	Final – 14.0	Final – 14.0
Cyclone V	5CEA2, 5CEA4, 5CEA7, 5CEA9, 5CGXC7, 5CGXC9, 5CGTD7, 5CGTD9	Final – 13.0 SP1	Final – 13.1
	5CEA5, 5CGXC4, 5CGXC5	Final – 13.1	Final – 13.1
	5CGXC3		Final – 14.0
Cyclone V SoC	5CSEA2, 5CSEA4, 5CSXC2, 5CSXC4	Final – 14.0	Final – 14.1
	5CSEA5, 5CSEA6, 5CSXC5, 5CSXC6, 5CSTD5, 5CSTD6		Final – 14.0
Stratix V	5SGXA7, 5SGXA5, 5SGTC5, 5SGTC7	Final – 12.1 (2)	Final – 13.0
	5SGSD3, 5SGSD4, 5SGSD5, 5SGXA3, 5SGXA4, 5SGXB5, 5SGXB6, 5SGXAB, 5SGXA9, 5SEE9, 5SEEB, 5SGXB9, 5SGXBB	Final – 12.1 SP1 (2)	Final – 13.0
	5SGSD6, 5SGSD8	Final – 13.0 SP1 (2)	Final – 13.0
MAX 10	10M02, 10M04, 10M08, 10M50, 10M16, 10M25, 10M40	Preliminary	Preliminary

The current version of the Quartus II software also includes final timing and power models for the Arria II GX, Arria II GZ, Cyclone IV E, Cyclone IV GX, MAX II, MAX II Z, MAX V, and Stratix IV device

(2) The timing model was updated in Quartus II software version 13.1.

families. Timing models for these device families became final in the Quartus II software versions 11.1 or earlier.

Related Information

System Design with Advance FPGA Timing Models

IBIS Models

Table 9: IBIS Model Status for the Quartus II Software Release Version 15.0

Device Family	IBIS Model Status
Arria II GX	Correlated with PHY device operation – 11.1
Arria II GZ	Correlated with PHY device operation – 11.1
Arria V	Correlated with PHY device operation – 14.0
Arria 10	Preliminary - 15.0
Cyclone® IV E	Correlated with PHY device operation – 11.1
Cyclone IV GX	Correlated with PHY device operation – 11.1
Cyclone V	Correlated with PHY device operation – 14.0
MAX V	Correlated with PHY device operation – 11.1
MAX 10	Preliminary - 15.0
Stratix IV	Correlated with PHY device operation – 11.1
Stratix V	Correlated with PHY device operation – 13.0 SP1

EDA Interface Information

Table 10: Synthesis Tools Supporting the Quartus II Software Release Version 15.0

Synthesis Tools(3)	Version	NativeLink Support
Mentor Graphics® Precision	2014b	Yes
Synopsys® Synplify, Synplify Pro, and Synplify Premier	2015.03	Yes

Table 11: Simulation Tools Supporting the Quartus II Software Release Version 15.0

Simulation Tools	Version	NativeLink Support
Aldec Active-HDL	10.1 (Windows only)	Yes

(3) EDA Synthesis tools that support the Quartus II software version 15.0 will be released by vendors shortly after the release of the Quartus II software. Contact your vendor account manager for details.

Simulation Tools	Version	NativeLink Support
Aldec Riviera-PRO	2014.10	Yes
Cadence Incisive Enterprise Simulator (IES)	14.10.013 (Linux only)	Yes
Mentor Graphics ModelSim® PE	10.3d	Yes
Mentor Graphics ModelSim SE	10.3d	Yes
Mentor Graphics ModelSim-Altera	10.3d	Yes
Mentor Graphics Questa®	10.3d	Yes
Synopsys VCS and VCS MX	2014.03-SP1 (Linux only)	Yes

Table 12: Formal Verification (Equivalence Checking) Tools Supporting the Quartus II Software Release Version 15.0

Formal Verification Tools	Version	NativeLink Support
Cadence Encounter Conformal	8.1	—

Antivirus Verification

The Quartus II software release version 15.0 has been verified virus free using the following software:

McAfee VirusScan Enterprise + AntiSpyware Enterprise Version: 8.8.0 (8.8.0.1247)
Scan Engine Version (32 bit): 5700.7163
Scan Engine Version (64 bit): 5700.7163
DAT Version: 7750.0000

Software Issues Resolved

Table 13: Issues Resolved in the Quartus II Software Release Version 15.0

Customer Service Request Numbers							
10836139	11026312	11079724	11093767	11102395	11109337	11115840	11122158
10850195	11027763	11079844	11093809	11102515	11109408	11115894	11122181
10851530	11028231	11080213	11093960	11102793	11109510	11115936	11122572
10863386	11028375	11080284	11094128	11103019	11109594	11115965	11123080
10864476	11029143	11080684	11094173	11103063	11109689	11116008	11123131
10867563	11031283	11081089	11094592	11103081	11109779	11116217	11123191
10871326	11031760	11081840	11094627	11103419	11110076	11116336	11123273

Customer Service Request Numbers							
10876802	11032595	11082271	11095023	11103663	11110200	11116449	11123513
10879692	11035398	11083373	11095114	11103843	11110304	11116529	11123819
10884338	11035660	11084090	11095565	11104078	11110763	11116614	11124052
10884523	11036560	11084158	11095982	11104106	11110824	11116664	11124134
10896505	11037740	11084165	11096264	11104236	11110947	11116692	11124445
10897081	11038002	11084357	11096354	11104342	11111293	11117022	11124718
10897583	11038334	11084859	11096635	11104454	11111332	11117152	11125032
10924541	11038350	11085169	11096724	11104502	11111439	11117252	11125345
10924582	11038514	11085737	11096849	11104971	11111466	11117275	11125421
10929671	11039225	11085948	11096930	11105008	11111518	11117285	11125464
10958169	11042419	11085957	11097646	11105123	11111528	11117360	11125761
10962283	11042861	11086098	11097976	11105528	11111789	11117686	11125871
10964310	11043668	11086244	11098188	11105609	11111909	11117742	11125937
10964966	11044092	11086602	11098380	11105626	11112143	11117826	11125977
10965913	11044899	11086661	11098442	11105630	11112178	11117871	11126213
10965983	11046164	11086707	11098977	11105665	11112268	11118080	11126248
10969783	11046379	11087248	11099100	11105702	11112278	11118316	11126341
10970455	11046722	11087391	11099217	11106055	11112575	11118429	11128105
10972120	11047421	11087474	11099492	11106122	11112951	11118434	11128596
10980037	11047736	11088337	11099641	11106264	11112996	11118535	11128741
10980085	11049692	11088487	11099814	11106269	11113210	11118588	11128815
10980579	11050108	11088881	11099886	11106357	11113329	11118862	11129350
10990645	11057839	11089007	11099894	11106474	11113751	11118960	11129419
10991390	11057939	11089356	11099904	11106586	11113752	11119046	11129681
10991708	11059203	11089696	11100295	11106989	11113868	11119273	11129830
10993425	11060121	11089958	11100392	11107218	11113954	11119456	11130081
10993826	11062791	11090158	11100705	11107412	11114042	11119600	11130592
10996044	11063462	11090461	11100796	11107658	11114129	11119713	11130720
10996276	11068346	11090607	11100923	11107721	11114197	11119947	11130783
10997700	11068820	11091187	11100980	11107774	11114215	11120094	11130943
10998009	11069149	11091264	11101011	11108036	11114251	11120349	11130948

Customer Service Request Numbers							
11009570	11072056	11091617	11101290	11108152	11114276	11120388	11131004
11014770	11072207	11091825	11101306	11108385	11114511	11120802	11131245
11014939	11073021	11091828	11101611	11108408	11114547	11121054	11131520
11015505	11073240	11092453	11101670	11108528	11114648	11121272	11132544
11017179	11076833	11093028	11101817	11108604	11114784	11121301	11132752
11020144	11077096	11093052	11101848	11108825	11115032	11121387	11132830
11021480	11077898	11093096	11102090	11108981	11115091	11121430	11135214
11022798	11078188	11093263	11102195	11109123	11115165	11121685	11135646
11023348	11078300	11093419	11102196	11109247	11115353	11121703	11136861
11024840	11078964	11093736	11102265	11109331	11115549	11122132	11137443

Software Patches Included in this Release

Table 14: Software Patches included in the Quartus II Software Release Version 15.0

Software Version	Patch	Customer Service Request Number
Quartus II software version 14.1a10s	0.07sa	11125464
Quartus II software version 14.1a10s	0.06sa	—
Nios® II software version 14.1.1	1.08	—
Quartus II software version 14.1.1	1.06	—
Quartus II software version 14.1.1	1.03	11120388
Quartus II software version 14.1.1	1.02	11120094
Quartus II software version 14.1.1	1.01	11114251
Quartus II software version 14.1	0.28	11106474
Quartus II software version 14.1	0.25	11121054
Quartus II software version 14.1	0.20	11089007
Quartus II software version 14.1	0.13	11114810
Quartus II software version 14.1	0.12	11114251
Quartus II software version 14.1	0.11	11014770
Quartus II software version 14.1	0.06	11068346
Quartus II software version 14.1	0.02b	—
Quartus II software version 14.0.2	2.14	—
Quartus II software version 14.0.2	2.09	11068346
Quartus II software version 14.0.2	2.05	11095114

Software Version	Patch	Customer Service Request Number
Quartus II software version 14.0.1	1.04	—
Quartus II software version 14.0	0.36	11106474
Quartus II software version 13.1.4	4.56	11101011
Quartus II software version 13.1.4	4.55	—
Quartus II software version 13.1.4	4.53	—
Quartus II software version 13.1.3	3.18	11097976
Quartus II software version 13.1.3	3.14	11068346
Quartus II software version 13.1.1	1.15	11107833
Quartus II software version 13.1.1	1.14	—
Quartus II software version 13.1	0.113	11087474
Quartus II software version 13.1	0.107	11097557
Quartus II software version 11.1sp2	2.59	11084357

Latest Known Quartus II Software Issues

Information about known software issues is available on the Quartus II Software Support webpage.

You can find known issue information for previous versions of the Quartus II software on the Altera Knowledge Database webpage.

Information about issues affecting the Altera IP Library is available in the *Altera IP Release Notes*.

Related Information

- **Quartus II Software Support**
- **Altera Knowledge Database**
- **Altera IP Release Notes**

Document Revision History

Table 15: Quartus II Software Release Version 15.0 Document Revision History

Date	Version	Changes
May 2015	15.0.0	Initial release.