RN0065
Release Notes
CoreFIR v8.7

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1   Revision History

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

1.1   Revision 11.0

Updated the document for v8.7.

1.2   Revision 10.0

Support for RTG4 added

1.3   Revision 9.0

The following is a summary of the changes in this revision.

- Support for Linux OS added
- RTAX-D support moved to a separate IP

1.4   Revision 8.0

Support for IGLOO2 added

1.5   Revision 7.0

Support for SmartFusion2 added

1.6   Revision 6.0

Decimation filter option added

1.7   Revision 5.0

Folded single-rate and Polyphase Interpolation filter option added

1.8   Revision 4.0

Improved filter throughput. The release supports RTAX-DSP family only.

1.9   Revision 3.0

Fully enumerated MAC-based FIR filter implementation. The release supports RTAX-DSP family only.

1.10   Revision 2.0

Constant coefficient algorithm implemented

1.11   Revision 1.0

Initial release

Contents

Tables

2 CoreFIR v8.7

These release notes accompany the production release of CoreFIR v8.7. This document provides details about the features and enhancements, system requirements, supported families, implementations, and known issues and workarounds.

2.1 Key Features

CoreFIR supports the following filter types:

- Fully Enumerated
- Folded
- Polyphase Interpolator
- Polyphase Decimator

The key features for each type are listed in Table 1.

Table 1 • **Key Feature Support**

Feature	Fully Enumerated	Folded	Interpolator	Decimator
Number of filter coefficients	2 to 2N, where N is a number of physically available MACs	4 to 1,024	2 to 1,024	2 to 1,024
Input data bit width	2 – 18	2 – 18	2 – 18	2 – 18
Coefficient bit width	2 – 18	2 – 18	2 – 18	2 – 18
Signed and unsigned data coefficients	Yes	Yes	Yes	Yes
Full precision output	Yes	Yes	Yes	Yes
Coefficient symmetry optimization	Yes	No	No	No
Constant coefficients and constant coefficient sets	Yes	Yes	Yes	Yes
Run-time reloadable coefficients	Yes	Yes	Yes	Yes
RAM-based coefficient storage	No	Yes	Yes	Yes
RAM-based data storage	No	Yes	Yes	Yes

2.2 Supported Interfaces

No standard interface available.

2.3 Delivery Types

CoreFIR is licensed for Register Transfer Level (RTL). Complete HDL source code is provided for the core and testbenches.

2.4 Supported Families

- RTG4™
- SmartFusion®2
- IGLOO®2

2.5 Supported Tool Flows

- CoreFIR v8.7 requires Libero® System-on-Chip (SoC) software v11.4 or later
- Supports only Windows and Linux operating systems

2.6 Installation Instructions

The CoreFIR CPZ file must be installed into Libero software. This is done automatically through the Catalog update function in Libero, or the CPZ file can be manually added using the **Add Core** catalog feature. Once the CPZ file is installed in Libero, the core can be configured, generated, and instantiated within SmartDesign for inclusion in the Libero project. For more information, see the *Knowledge Based article*.

To know how to create SmartDesign project using the IP cores, refer to the *SmartDesign User guide*.

2.7 Documentation

This release contains a copy of the *CoreFIR Handbook*. The handbook, describes the core functionality and gives step-by-step instructions on how to simulate, synthesize, and place-and-route this core, and also implementation suggestions. Refer to the *Libero SoC Online Help* for instructions on obtaining IP documentation.

For updates and additional information, visit the Intellectual Property pages on the Microsemi SoC Products Group website: visit:

http://www.microsemi.com/products/fpga-soc/design-resources/ip-cores.

2.8 Supported Test Environments

The following test environments are supported:

- VHDL user testbench
- Verilog user testbench

2.9 Resolved Issues in the v8.7 Release

Table 3 shows SARs resolved in the v8.7 release of CoreFIR.

Table 2 •   **Resolved SARs in CoreFIR v8.7 Release**

SAR No.	Description
118463	RTG4 CoreFIR need update - Synplifypro errors out Assign a valid signal to this pin.
86400	RTL contains a bad signal name
68286	Data width is hardwired in component instantiation

2.10 Resolved Issues in the v8.6 Release

Table 3 shows SARs resolved in the v8.6 release of CoreFIR.

Table 3 •   **Resolved SARs in CoreFIR v8.6 Release**

SAR No.	Description
26897	Prevent using unsigned coefficients in anti-symmetric filter
43880	Fix "Invalid die configuration" issue for all valid die types
54996	Indicate a correct µRAM depth range on Handbook
55935	Eliminate core generation failures caused by incorrect device identification
57820	Eliminate simulation failure for 97-tap fully enumerated filter
58567	Improve compatibility for multiple core instances
61779	Eliminate potential metastability when using asynchronous reset

Table 3 • **Resolved SARs in CoreFIR v8.6 Release** *(continued)*

SAR No.	Description
62325	Add RTG4 support

2.11 Resolved Issues in the v8.5 Release

Linux OS support added.

2.12 Resolved Issues in the v8.4 Release

Table 4 shows SARs resolved in the v8.4 release of CoreFIR.

Table 4 • **Resolved SARs in CoreFIR v8.4 Release**

SAR No.	Description
48057	Support for IGLOO2 family

2.13 Resolved Issues in the v8.3 Release

Table 5 shows SARs resolved in the v8.3 release of CoreFIR.

Table 5 • **Resolved SARs in CoreFIR v8.3 Release**

SAR No.	Description
33218	Support for SmartFusion2 family
39038	Add support for interpolation filter signed data
39083	Fix user testbench to provide coverage for polyphase filter corner cases
40647	Eliminate unnecessary FIFO on polyphase designs
40679	Improve interpolation filter ease of use

2.14 Resolved Issues in the v7.0 Release

Table 6 • **Resolved SARs in CoreFIR v7.0 Release**

SAR No.	Description
30457	Decimation architecture is not supported in CoreFIR 6.0.
30300	Minimum Libero version should be 9.1, however, it is specified to be 8.6.
30458	TGI-interpolation filter should be seen as 'Multi-rate'.

2.15 Resolved Issues in the v6.0 Release

Table 7 • **Resolved SARs in CoreFIR v6.0 Release**

SAR No.	Description
28646	Implement semi-parallel (folding) filter type.
29750	CoreFIR v4.1 does not support up-sampling/interpolation architecture.

2.16 Resolved Issues in the v4.1 Release

Table 8 • **Resolved SARs in CoreFIR v4.1 Release**

SAR No.	Description
20214	Implement RTL licensing.
20420	Correct typos on the handbook.
26463	Eliminate extended datapath delays by inserting extra pipeline registers.
26466	Eliminate extended datapath delays by inserting extra pipeline registers.

2.17 Resolved Issues in the v4.0 Release

No issues resolved. This was the first release of the MAC-based FIR filter.

2.18 Resolved Issues in the v3.0 Release

No issues resolved. The Constant Coefficient architecture was added.

2.19 Discontinued Features and Devices

CoreFIR discontinued support for RTAX-D devices. The support for RTAX-D devices moved to a separate IP compatible with Libero IDE design software.

2.20 Known Limitations and Workarounds

No known issues have been found in the CoreFIR v8.7 release.