
CoreFIR v8.6 Release Notes

These release notes accompany the production release of CoreFIR v8.6. This document provides details about the features and enhancements, system requirements, supported families, implementations, and known issues and workarounds.

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 – 1,024 | 2 – 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 |

Supported Interfaces

No standard interface available.

Delivery Types

CoreFIR is licensed for register transfer level (RTL). Complete HDL source code is provided for the core and testbenches.

Supported Families

- RTG4™
- SmartFusion®2
- IGLOO®2

Supported Tool Flows

- CoreFIR v8.6 requires Libero® SoC software v11.4 or later
- Supports only Windows and Linux operating systems

Installation Instructions

The CoreFIR CPZ file must be installed into Libero software. This is done automatically through the Catalog update function in Libero SoC, or the CPZ file can be manually added using the Add Core catalog feature. Once installed in the Libero SoC Catalog, the core can be instantiated and configured.

Refer to the [Libero SoC Online Help](#) for further instructions on core installation, licensing, and general use.

Documentation

The 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, as well as implementation suggestions. For updates and additional information about the software, devices, and hardware, visit the Intellectual Property pages on the Microsemi SoC Products Group website at www.microsemi.com.

Supported Test Environments

The following test environments are supported:

- VHDL user testbench
- Verilog user testbench

Release History

Table 2 lists the release history for this core release version.

Table 2. Release History

| Version | Date | Changes |
|---------|---------------|-------------------------------------------------------------------------------------------------|
| 8.6 | March 2015 | Support for RTG4 added |
| 8.5 | January 2014 | Support for Linux OS added RTAX-D support moved to a separate IP |
| 8.4 | June 2013 | Support for IGLOO2 added |
| 8.3 | March 2013 | Support for SmartFusion2 added |
| 7.0 | March 2011 | Decimation filter option added |
| 6.0 | December 2010 | Folded single-rate and Polyphase Interpolation filter option added |
| 4.1 | July 2010 | Improved filter throughput. The release supports RTAX-DSP family only |
| 4.0 | August 2009 | Fully enumerated MAC-based FIR filter implementation. The release supports RTAX-DSP family only |
| 3.0 | May 2006 | Constant coefficient algorithm implemented |
| 2.0 | January 2005 | Initial release |

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

| 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 uRAM 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 |
| 62325 | Add RTG4 support |

Resolved Issues in the v8.5 Release

Linux OS support added.

Resolved Issues in the v8.4 Release

Table 3 shows SARs resolved in the v8.4 release of CoreFIR.

Table 4. Resolved SARs in CoreFIR v8.4

| SAR No. | Description |
|---------|---------------------------|
| 48057 | Support for IGLOO2 family |

Resolved Issues in the v8.3 Release

Table 4 shows SARs resolved in the v8.3 release of CoreFIR.

Table 5. Resolved SARs in CoreFIR v8.3

| 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 |

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'. |

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. |

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 | Double register high fanout signals to support synthesis replication feature. |

Resolved Issues in the v4.0 Release

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

Resolved Issues in the v3.0 Release

No issues resolved. The Constant Coefficient architecture was added.

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.

Known Limitations and Workarounds

No known issues have been found in the CoreFIR v8.6 release.



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