

EVB-LAN9255 – EtherCAT SIP Counter FOE firmware Release Notes

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| Microchip Technology, Inc. | | | Microchip Technology, Incorporated  2355 W. Chandler Boulevard  Chandler, Arizona 85224  480/792-7416 |
| REV | DATE | ORIGINATOR | DESCRIPTION OF CHANGE |
| 1.0 | 9/29/2020 | Rathika K | Initial version |
| 1.01 | 12/01/2020 | Rathika K | Bug Fix Release for Compliance Failure |
| 1.02 | 12/11/2020 | Rathika K | OLED support |
| 1.03 | 1/07/2021 | Rathika K | Bug Fix Release |
| 1.04 | 1/27/2021 | Venkata Durga Prasad | UART Support |
| 1.05 | 2/18/2021 | Venkata Durga Prasad | Bug Fix release |
| 1.06 | 3/23/2021 | Venkata Durga Prasad | Bug Fix Release |
| 1.07 | 4/4/2021 | Rathika K | Reduced time delay taken to update alias register |

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# Introduction

|  |  |
| --- | --- |
| Component Type | Firmware Framework |
| **Target Silicon** | LAN9255 |
| **Where can an end user see the version number** |  |

This document contains the EVB- LAN9255 EtherCAT Device Controller SDK – SAME53 Counter FOE firmware samples based on EVB-LAN9255-SQI platform.

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# Terms and abbreviations

IDE - Integrated Development Environment

ESC - EtherCAT Slave Controller

EVB - Engineering Validation Board

SQI - Serial Quad I/O Interface

SSC - Slave Stack Code

ESF - EtherCAT Software Framework

# Prerequisites

The following development tools are required for using this sample for developing EtherCAT application:

* MPLAB IDE v5.35 or above

(Refer to MPLAB IDE download link: <http://www.microchip.com/pagehandler/en-us/family/mplabx/>)

* MPLAB XC32 Compiler v2.40 only

(Refer to MPLAB XC Compiler download link: <http://www.microchip.com/pagehandler/en-us/devtools/mplabxc/home.html>)

* EVB-LAN9255 Counter FOE firmware for SQI from Microchip.
* SSC v5.12 code from EtherCAT.org.

Note: *For using this slave stack code (SSC), you need to be a member of EtherCAT.org.*

* MPLAB IPE V5.35 or above

(Refer to MPLAB IPE download link: <http://microchip.wikidot.com/ipe:installation>)

* TwinCAT 3.11 or above.

(Refer to Beckhoff site to download TwinCAT <http://beckhoff.com> )

# References

* Jutland Switches and Industrial Controllers DOS - <http://mchpweb:4576/Fileattach/SpecIndex/DOS1700119/DOS-02606c.pdf>

# Release notes

## Version 1.0

|  |  |
| --- | --- |
| Release date | 4/4/2021 |
| **Release Type** | Feature |
| **Pre-requisites (if any)** | No |
| **Source code path** | https://bitbucket.microchip.com/scm/ung\_apps/lan9255\_firmware\_applications.git |
| **Source code label / branch & perforce change list number** | feature/eeprom\_emulation\_time\_delay\_reduction |
| **Software Requirements Specification (SRS) Path and Revision Number** | NA |
| **Software Design Document (SDD) Path and Revision Number** | NA |
| **Software Developer Test Plan (SDTP) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/TestPlan/LAN9255-SAME53-ETHERCAT-COUNTER-FOE\_Developer\_Test Report.xlsm |
| **Software Requirements Tracker (SRT) Path and Revision Number** | NA |

### Not implemented / Limited functionality requirements

None

### Bug Fixes

* UNG\_J2\_SIP-69 – FOE feature is not working.

### Features added

* UNG\_J2\_SIP-72 - Reduce time taken to update alias register in the EtherCAT firmware application.

## Version 0.92

|  |  |
| --- | --- |
| Release date | 3/23/2021 |
| **Release Type** | Bug Fix |
| **Pre-requisites (if any)** | No |
| **Source code path** | https://bitbucket.microchip.com/scm/ung\_apps/lan9255\_firmware\_applications.git |
| **Source code label / branch & perforce change list number** | feature/ethercat\_uart  Tag: COUNTER\_FOE\_UART\_V0.92 |
| **Software Requirements Specification (SRS) Path and Revision Number** | NA |
| **Software Design Document (SDD) Path and Revision Number** | NA |
| **Software Developer Test Plan (SDTP) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/TestPlan/LAN9255-SAME53-ETHERCAT-COUNTER-FOE\_Developer\_Test Report.xlsm |
| **Software Requirements Tracker (SRT) Path and Revision Number** | NA |

### Not implemented / Limited functionality requirements

None

### Bug Fixes

* J2-SIP-41 - Dynamic UART Transfer Bit Configuration was not Effective.
* J2-SIP-28 - EVB\_LAN9255\_Counter\_Direct\_Mode\_EEPROM\_Emulation Firmware did not drive the OLED Display in EVB
* J2-SIP-66 - FOE of Direct/Indirect bin file Fails when FOEed Direct Firmware Serves as a Base

### Features added

None

## Version 0.91

|  |  |
| --- | --- |
| Release date | 2/18/2021 |
| **Release Type** | Bug Fix |
| **Pre-requisites (if any)** | No |
| **Source code path** | https://bitbucket.microchip.com/scm/ung\_apps/lan9255\_firmware\_applications.git |
| **Source code label / branch & perforce change list number** | feature/ethercat\_uart  Tag: COUNTER\_FOE\_UART\_V0.91 |
| **Software Requirements Specification (SRS) Path and Revision Number** | NA |
| **Software Design Document (SDD) Path and Revision Number** | NA |
| **Software Developer Test Plan (SDTP) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/TestPlan/LAN9255-SAME53-ETHERCAT-COUNTER-FOE\_Developer\_Test Report.xlsm |
| **Software Requirements Tracker (SRT) Path and Revision Number** | NA |

### Not implemented / Limited functionality requirements

None

### Bug Fixes

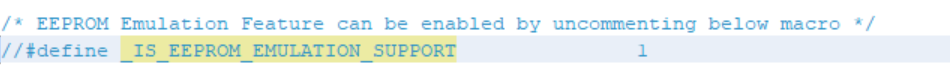
* J2-SIP-35 - EVB\_LAN9255\_Counter\_InDirect\_Mode\_EEPROM\_Emulation V0.90 Firmware was Unstable.
* J2-SIP-36 - Documentation on EtherCAT Counter Application (UART) V0.90
* J2-SIP-37 - UART Read Buffer Skips the First character and Displays the Second character
* J2-SIP-38 - EtherCAT Slave Device goes to Error State when UART Write is Performed
* J2-SIP-39 - Dynamic UART Baud Rate Configuration Failure in EVB\_LAN9255\_Counter\_EEPROM\_Emulation V0.90 Firmware
* J2-SIP-40 - Maximum Supported data Size in UART Data Transmission
* J2-SIP-41 - Dynamic UART Transfer Bit Configuration was not Effective.

### Features added

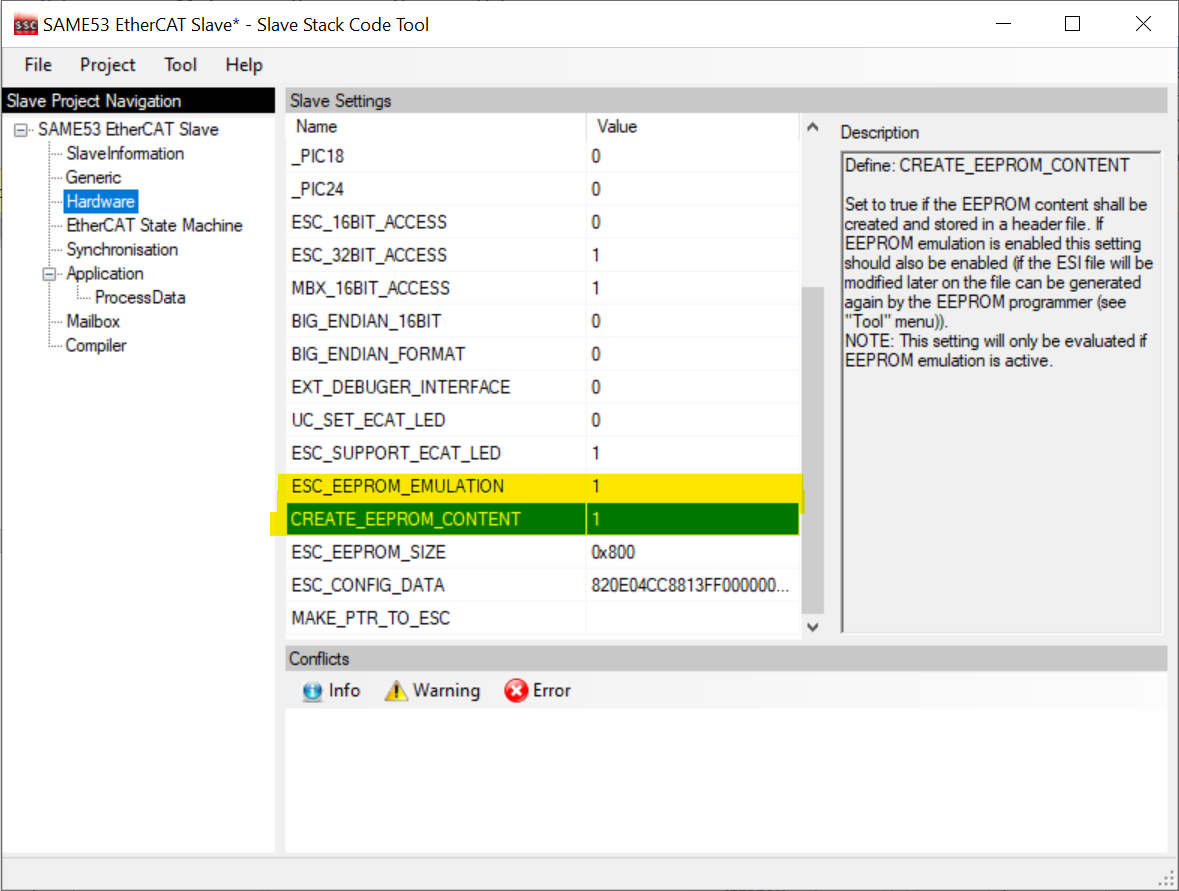
None

### Notes

* The PDI frequency can be selected through the ESF configuration file. The frequency can be given in Mhz to ESF\_PDI\_FREQUENCY.
* By default, the EEPROM emulation is enabled, can be disabled by commenting **\_IS\_EEPROM\_EMULATION\_SUPPORT** macro present in **ESF\_Config.h** file.
  + For reference



* **SSC code Generation for EEPROM Emulation mode** – There are two steps to be followed while generating the SSC code for EEPROM Emulation mode and are as follows.
  + The ESC\_EEPROM\_EMULATION must be 1 and ESC\_EEPROM\_CONTENT must be 1, while generating SSC code and copy the eeprom.h file and place it in SSC folder.



* + The ESC\_EEPROM\_EMULATION must be 1 and ESC\_EEPROM\_CONTENT must be 0, while generating SSC code and copy the SSC (Slave stack code) files and place it in SSC folder.

## Version 0.9

|  |  |
| --- | --- |
| Release date | 1/27/2021 |
| **Release Type** | Beta |
| **Pre-requisites (if any)** | No |
| **Source code path** | https://bitbucket.microchip.com/scm/ung\_apps/lan9255\_firmware\_applications.git |
| **Source code label / branch & perforce change list number** | feature/ethercat\_uart  Tag: COUNTER\_FOE\_UART\_V0.9 |
| **Software Requirements Specification (SRS) Path and Revision Number** | NA |
| **Software Design Document (SDD) Path and Revision Number** | NA |
| **Software Developer Test Plan (SDTP) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/TestPlan/LAN9255-SAME53-ETHERCAT-COUNTER-FOE\_Developer\_Test Report.xlsm |
| **Software Requirements Tracker (SRT) Path and Revision Number** | NA |

### Not implemented / Limited functionality requirements

None

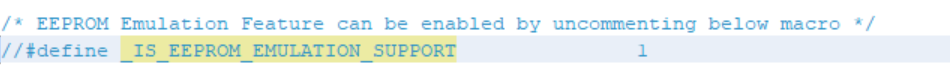
### Bug Fixes

### Features added

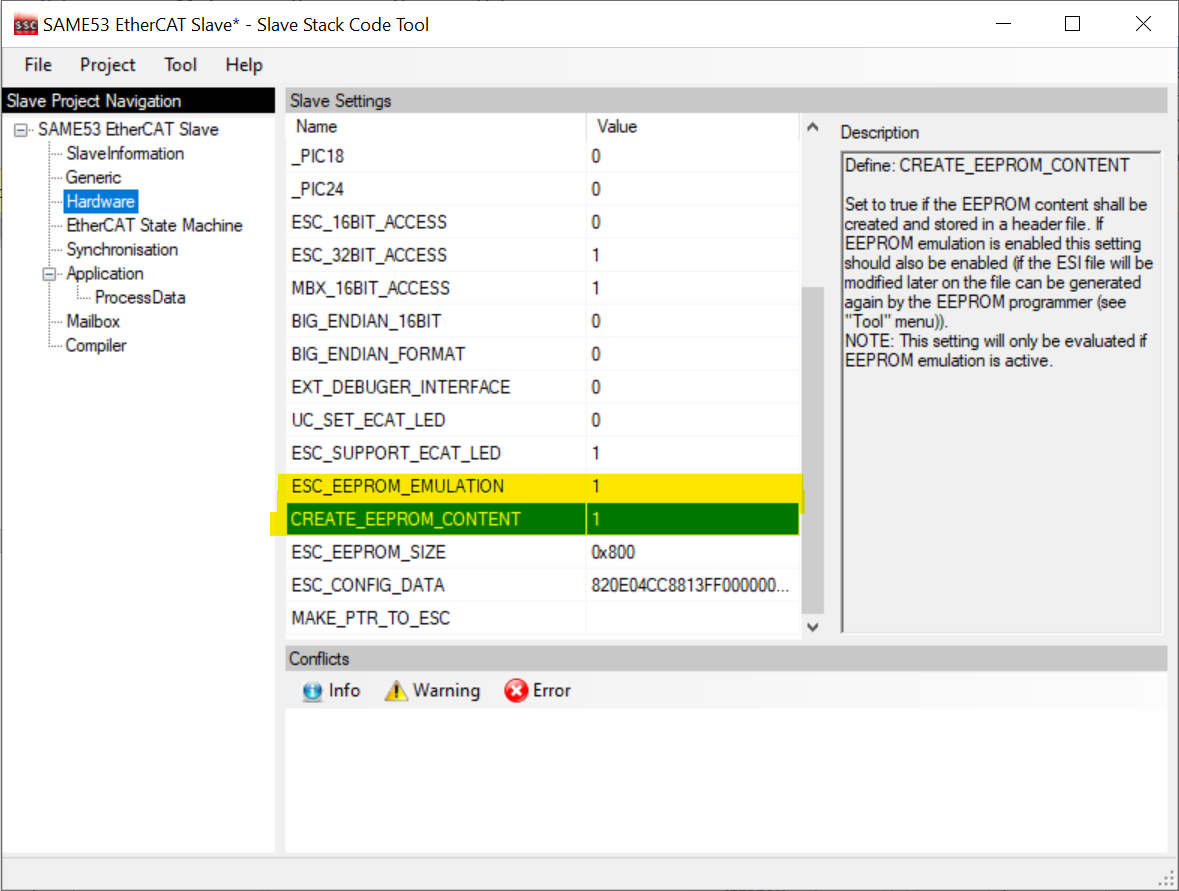
* J2-SIP-20 – UART application support

### Notes

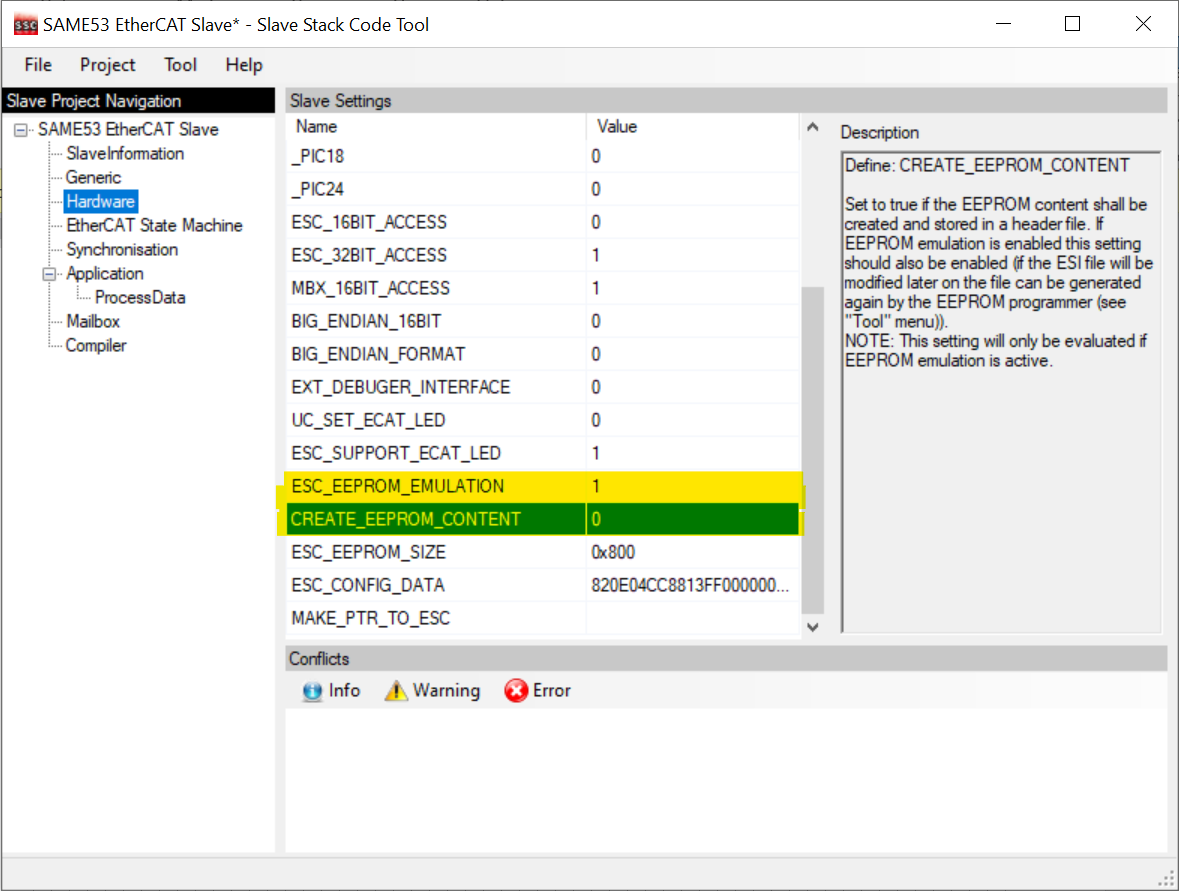
* The PDI frequency can be selected through the ESF configuration file. The frequency can be given in Mhz to ESF\_PDI\_FREQUENCY.
* By default, the EEPROM emulation is enabled, can be disabled by commenting **\_IS\_EEPROM\_EMULATION\_SUPPORT** macro present in **ESF\_Config.h** file.
  + For reference



* **SSC code Generation for EEPROM Emulation mode** – There are two steps to be followed while generating the SSC code for EEPROM Emulation mode and are as follows.
  + The ESC\_EEPROM\_EMULATION must be 1 and ESC\_EEPROM\_CONTENT must be 1, while generating SSC code and copy the eeprom.h file and place it in SSC folder.



* + The ESC\_EEPROM\_EMULATION must be 1 and ESC\_EEPROM\_CONTENT must be 0, while generating SSC code and copy the SSC (Slave stack code) files and place it in SSC folder.



* The UART application is not having any conditional macro. This code can be disabled by using the old Sample\_app.xls file while generating SSC code.

## Version 0.8

|  |  |
| --- | --- |
| Release date | 1/7/2020 |
| **Release Type** | Beta |
| **Pre-requisites (if any)** | No |
| **Source code path** | https://bitbucket.microchip.com/scm/ung\_apps/lan9255\_firmware\_applications.git |
| **Source code label / branch & perforce change list number** | bugfix/UNG\_J2\_SIP-28  Tag: COUNTER\_FOE\_V0.8 |
| **Software Requirements Specification (SRS) Path and Revision Number** | NA |
| **Software Design Document (SDD) Path and Revision Number** | NA |
| **Software Developer Test Plan (SDTP) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/TestPlan/LAN9255-SAME53-ETHERCAT-COUNTER-FOE\_Developer\_Test Report.xlsm |
| **Software Requirements Tracker (SRT) Path and Revision Number** | NA |

### Not implemented / Limited functionality requirements

None

### Bug Fixes

* [UNG\_J2\_SIP-18](https://jira.microchip.com/browse/UNG_J2_SIP-18) - File Over EtherCAT was successful When an Invalid Firmware Bin File is Given as Input File
* [UNG\_J2\_SIP-28](https://jira.microchip.com/browse/UNG_J2_SIP-28) - EVB\_LAN9255\_Counter\_Direct\_Mode\_EEPROM\_Emulation Firmware did not drive the OLED Display in EVB
* [UNG\_J2\_SIP-29](https://jira.microchip.com/browse/UNG_J2_SIP-29) - File Over EtherCAT Feature Fails in EVB\_LAN9255\_Counter\_InDirect\_Mode\_EEPROM\_Emulation V0.70 Application

### Features added

* None

### Notes

* The PDI frequency can be selected through the ESF configuration file. The frequency can be given in Mhz to ESF\_PDI\_FREQUENCY.

## Version 0.7

|  |  |
| --- | --- |
| Release date | 12/11/2020 |
| **Release Type** | Beta |
| **Pre-requisites (if any)** | No |
| **Source code path** | https://bitbucket.microchip.com/scm/ung\_apps/lan9255\_firmware\_applications.git |
| **Source code label / branch & perforce change list number** | feature/ethercat\_FOE\_counter  Tag: COUNTER\_FOE\_V0.7 |
| **Software Requirements Specification (SRS) Path and Revision Number** | NA |
| **Software Design Document (SDD) Path and Revision Number** | NA |
| **Software Developer Test Plan (SDTP) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/TestPlan/LAN9255-SAME53-ETHERCAT-COUNTER-FOE\_Developer\_Test Report.xlsm |
| **Software Requirements Tracker (SRT) Path and Revision Number** | NA |

### Not implemented / Limited functionality requirements

None

### Bug Fixes

* None

### Features added

* Provided OLED support along with counter trigger application. - OLED display will be updated based on counter value as per the update from the master. (TwinCAT).

### Notes

* The PDI frequency can be selected through the ESF configuration file. The frequency can be given in Mhz to ESF\_PDI\_FREQUENCY.

## Version 0.51

|  |  |
| --- | --- |
| Release date | 12/1/2020 |
| **Release Type** | Beta |
| **Pre-requisites (if any)** | No |
| **Source code path** | https://bitbucket.microchip.com/scm/ung\_apps/lan9255\_firmware\_applications.git |
| **Source code label / branch & perforce change list number** | feature/ethercat\_FOE\_counter  Tag: COUNTER\_FOE\_V0.51 |
| **Software Requirements Specification (SRS) Path and Revision Number** | NA |
| **Software Design Document (SDD) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/EVB\_LAN9255\_Counter\_FoE Design.docx |
| **Software Developer Test Plan (SDTP) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/TestPlan/LAN9255-SAME53-ETHERCAT-COUNTER-FOE\_Developer\_Test Report.xlsm |
| **Software Requirements Tracker (SRT) Path and Revision Number** | NA |

### Not implemented / Limited functionality requirements

None

### Bug Fixes

* [UNG\_J2\_SIP-14](https://jira.microchip.com/browse/UNG_J2_SIP-14) - [ETG Compliance Failure]: Failed in PDI Error Counter test

### Features added

* None

### Notes

* The PDI frequency can be selected through the ESF configuration file. The frequency can be given in Mhz to ESF\_PDI\_FREQUENCY.

## Version 0.5

|  |  |
| --- | --- |
| Release date | 9/29/2020 |
| **Release Type** | Beta |
| **Pre-requisites (if any)** | No |
| **Source code path** | https://bitbucket.microchip.com/scm/ung\_apps/lan9255\_firmware\_applications.git |
| **Source code label / branch & perforce change list number** | feature/ethercat\_FOE\_counter  Tag: COUNTER\_FOE\_V0.5 |
| **Software Requirements Specification (SRS) Path and Revision Number** | NA |
| **Software Design Document (SDD) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/EVB\_LAN9255\_Counter\_FoE Design.docx |
| **Software Developer Test Plan (SDTP) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/TestPlan/LAN9255-SAME53-ETHERCAT-COUNTER-FOE\_Developer\_Test Report.xlsm |
| **Software Requirements Tracker (SRT) Path and Revision Number** | //depot\_hw\_jutland2\_MCM/doc/sw/LAN9255\_CrossFunctional\_ProjectPlan.mpp |

### Not implemented / Limited functionality requirements

None

### Bug Fixes

* [UNG\_JUTLAND2-278](https://jira.microchip.com/browse/UNG_JUTLAND2-278) - Odd address read with any length is failing in ESF - SQI mode
* [UNG\_JUTLAND2-279](https://jira.microchip.com/browse/UNG_JUTLAND2-279) - PDRAM write is failing in Indirect mode - ESF SQI Interface

### Features added

* [UNG\_J2\_SIP-5](https://jira.microchip.com/browse/UNG_J2_SIP-5) - FOE support in EVB LAN9255 - Jutland II SIP firmware

Provide support to firmware upgrade through FOE via master.

* [UNG\_J2\_SIP-3](https://jira.microchip.com/browse/UNG_J2_SIP-3) - Integrate ESF SAME53 code into EtherCAT Counter FOE firmware. EtherCAT Counter FOE firmware is targeted for LAN9255 Jutland II SIP. Integrate/Port already available SAME53 SQI code into EtherCAT Counter FOE firmware application.
* [UNG\_J2\_SIP-4](https://jira.microchip.com/browse/UNG_J2_SIP-4) - LAN9255 Counter FOE firmware - PCLint setup with MISRA 2012 standard.
* [UNG\_J2\_SIP-2](https://jira.microchip.com/browse/UNG_J2_SIP-2) - Boot loader support for FOE Jutland II SIP firmware.

### Notes

* The PDI frequency can be selected through the ESF configuration file. The frequency can be given in Mhz to ESF\_PDI\_FREQUENCY.