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## Self-test configuration for SPC584Cxx/SPC58ECx devices

### Introduction

This document is a guideline about how to configure the STCU run self-test in SPC584Cx/SPC58ECx devices in both offline and online mode. The self-test consists of logic and memory BISTs (L/MBIST). It is used to detect latent failures and is transparent for the application. The reader should have a clear understanding of the usage of self-test. See [Reference documents](#) for additional details.

## 1 Overview

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The SPC584Cx/SPC58ECx devices implement only the MBIST. It can detect latent faults in the volatile memory of the device. SPC584Cx/SPC58ECx include 57 memory cuts. The reader can see the complete list in the chapter 7 (Device configuration) of the reference manual.

## 2 Self-test configuration

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Self-test can run either in online or offline mode. To reach the best trade-off in terms of consumption and execution time, we recommend dividing the MBISTs in 12 splits. The MBISTs inside the same split run in parallel mode.

*Note:* with the exception of the split 11, where the partition runs in sequential mode. These 12 splits run in sequential mode.

The complete list of the MBISTs and its split are contained in the Microsoft Excel® workbook file attached to this document, see "SPC58ECx\_split.xlsx".

Locate the paperclip symbol on the left side of the PDF window, and click it. Double-click on the Excel® file to open it.

### 2.1 DFC list for offline configuration

MBISTs can run in offline mode up to 180 Mhz as max frequency. The list of the DCF has to be configured in order to start up the MBIST during the boot phase (offline mode), it is contained in the Microsoft Excel® workbook file attached to this document, see "SPC58ECx\_DCF\_rev2".

Locate the paperclip symbol on the left side of the PDF window, and click it. Double-click on the Excel® file to open it.

MBISTs run in full run mode in order to reach the maximum diagnostic coverage.

They take around 45 ms.

### 2.2 Online mode configuration

In online mode, the split list remains the same with some limitations due to life cycle. All MBIST can run in online mode only in ST production and Failure Analysis (FA). In the other life cycle, HSM MBIST and FLASH MBIST are not accessible. Also in this case the maximum frequency is 180 Mhz, provided by the sys\_clock. In that case STCU registers can be configured with the "register value" column of the DCF list file.

### 3 Summary

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In SPC584Cxx/SPC58ECx devices, user can only run MBIST, both in offline and online mode with the same setting:

- frequency setting
- MBIST Algo
- MBIST sequence (split list)

## Appendix A Other information

### A.1 Reference documents

**Table 1. Reference documents**

Doc name	ID	Title
RM0407	028117	SPC58 C Line- 32 bit Power Architecture automotive MCU Dual z4 cores 180 MHz, 4 MBytes Flash, HSM, ASIL-B Reference Manual
AN4551	026636	SPC574K72xx self-test procedures

### A.2 Acronyms

**Table 2. Acronyms**

Acronym	Name
MBIST	Memory built-in self-test
LBIST	Logic built-in self-test
STCU2	Self-test control unit
HSM	Hardware system module
LC	Life cycle
DCF	Device configuration format (DCF) records
Utest	User test Flash block
FA	Failure analysis

## Revision history

**Table 3. Document revision history**

Date	Version	Changes
23-Aug-2019	1	Initial release.
04-Nov-2021	2	Add the root part number SPC584Cxx. Add a new file SPC58ECx_DCF.

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