Functional Verification Test (FVT) forFRDM33771CSPEVB

FSW-47189 REV A



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| --- | --- | --- | --- | --- |
| Revision History | | | |  |
| Rev. | Date | Name | Description | Overall Test Time |
| A | 4/11/2020 | Zhan Huang | Initial | 3 minutes |
|  |  |  |  |  |

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INTRODUCTION

This document will describe the Functional Verification Test (FVT) procedure for the FRDM33771CSPEVB (700-47189).

Please, read this document from beginning to end before starting to perform the FVT procedure. Steps of the procedure will require the operator to pass or fail the test based on criteria outlined in this document.

Terminology used

Not all acronyms are listed.

CM - Contract Manufacturer

BU - NXP Business Unit

DC - Daughter Card

DC - Direct Current

TFA - Test Fixture Assignment

FVT - Functional Verification Test

FAT - Functional Acceptance Test same as FVT

FSW - Factory test Software

GUI - Graphical User Interface

CPU - Central Processing Unit

PC - Personal Computer

USB - Universal Serial Bus Port

RGB - Red Green Blue

RCA - Radio Corporation of America

MMC - Multi Media Card

DC - Direct Current

AC - Alternating Current

DHCP - Dynamic Host Configuration Protocol

SD - Secure Digital

DUT - Device Under Test

UUT - Unit Under Test

BDM - Background Debug Mode

JTAG - Joint Test Action Group

POR - Power on Reset

LVDS - Low Voltage Differential Signal

HDMI - High Definition Multimedia Interface

SSID - Service Set Identifier

LIN - Local Interconnect Network

CAN - Controlled Area Network

PCB - Printed Circuit Board

THEORY OF OPERATION

The FRDM33771CSPEVB is a board for evaluation of the Battery Management System based on the NXP MC33771C MCU.

Features to be tested/not tested

The features to be tested by FVT are listed below:

* Communication and startup status thru LED indicators
* Key point open/short and voltage

The features not to be tested by FVT are listed below:

* Vstack; Cell1 to 14 voltage acquisitions
* Chip temperature

Environmental Needs

Hardware

* (1) FRDM33771CSPEVB golden board 700-47189
* (n) FRDM33771CSPEVB production boards 700-47189
* (1) 24V DC power supply ………………………………………………………………………………………………………………………**Any**
* (1) 26 to 34 wires cable………………………………………………………………………………………..…………………………….. **600-77431**

Software

FRDM33771CSPEVB Test Package Installer FSW-47189

Adobe Reader TFA-00012

Host Computer

Host computer WIN-7 32-bit (XP OK) / 64bit.

* (1) available USB ports
* 2 GB RAM
* VGA monitor capable of 1024 x 768 pixels or better
* Hard disk, with at least 1 Gigabyte available for FVT software
* Desired but not mandatory an internet browser with internet connection

SOFTWARE INSTALLATION/CONFIGURATION

The installation software can be delivered in any media form currently available, example USB-Flash Drive, CD-ROM, DVD-ROM, via Agile thru an Ethernet connection, TFTP, etc.

Make sure to do the software configuration after installing the software.

Do not skip the installation order; also, do not change the default path of each installation.

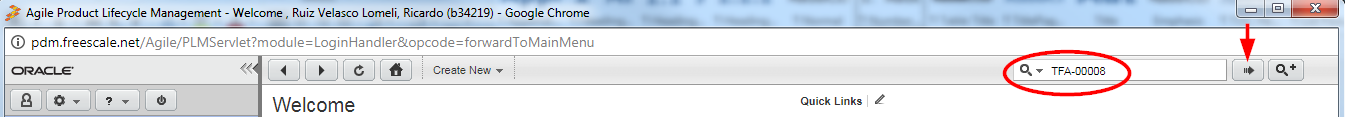
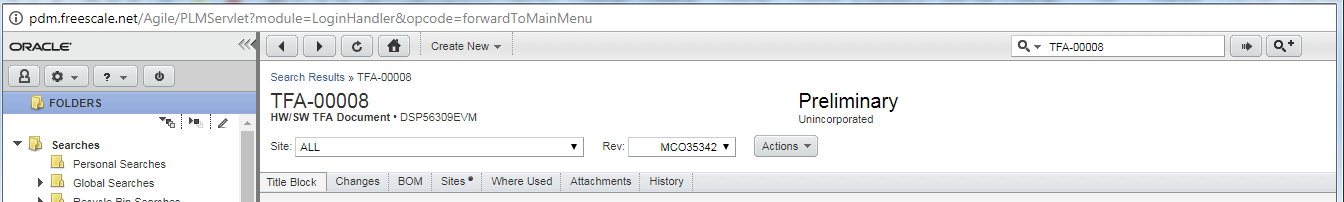
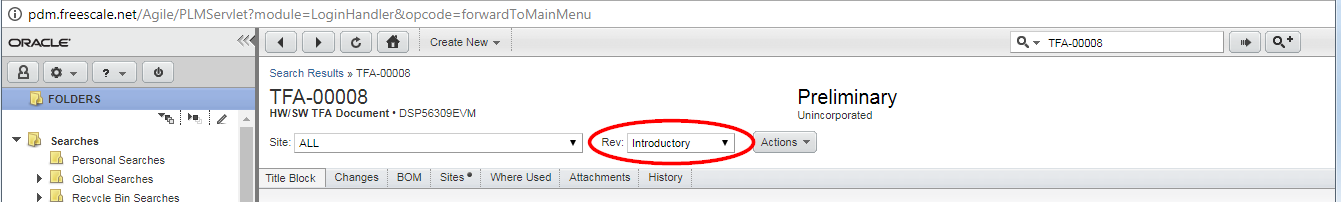
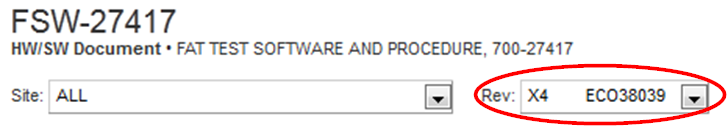
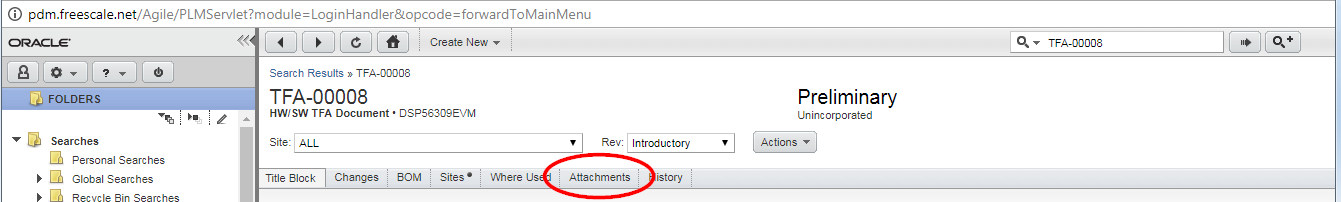
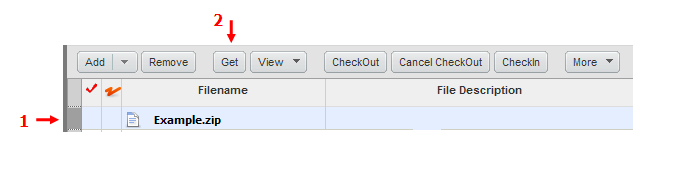
The Test PCs needs to have already installed WIN-7 32-bit/64bit. This document does not cover how to install WIN-7 32bit/64bit.

Please note that during installation default path is for 64-bit, example “C:\Program Files (x86)” on a 32-bit the path is just “C:\Program Files”.

Do the following to install the FVT software:

|  |  |
| --- | --- |
| # | Installation |
| 1 | Adobe Reader |
| 2 | FRDM33771CSPEVB Test Package Installer |
|  |  |
|  |  |

Some software packages must be downloaded from Agile repository. The process to access and download them will be described below.

1. Agile is the NXP Database for board assembly fabrication. If you do not know how to login to Agile contact your manager or NXP test engineer.
2. Example below uses “TFA-00008” but is valid for any Agile item with attachments.
3. Log into Agile and search for “TFA-00008” where “00008” is the Agile part number or 47189. The search box to enter text is the one with the magnifying glass and the button with the right pointed arrow is the execute the search  
   
4. Agile will display the item.  
   
5. Select the version using the drop-down box at “Rev”. When downloading attachments from “TFA” always go to “Rev: Introductory”. When downloading from “FSW- 47189” or any other use the revision mentioned on this test procedure.
6. “TFA-00008” example 
7. “FSW-27417” example  
   
8. Go to the “Attachments” tab.
9. Select the Row with desired file. Do a click over column [1]. Now Click on the “Get” [2] button.
10. Select “Save”. To download the file.
11. Done.

Acrobat Reader 9.0 Installation: TFA-00012

Acrobat Reader 9.0 or greater is needed to be installed on the test computer. If Acrobat Reader 9.0 or greater is already installed on the PC skip this section.

1. Agile is the NXP Database. If you do not know how to login to Agile contact your manager or NXP test engineer.
2. Go to Agile “TFA-00012” Revision “Introductory”, inside the “Attachments” tab get the file “AdbeRdr90\_en\_US.exe”.
3. Double click the file “AdbeRdr90\_en\_US.exe” to start acrobat reader installation.
4. Follow the instructions.
5. Done.

Test Package FSW-47189 REV A Agile Location and Installation

The test package is in Agile in “FSW-47189 Rev A”. The instruction below shows how to get the exe package file from a PC with Agile access.

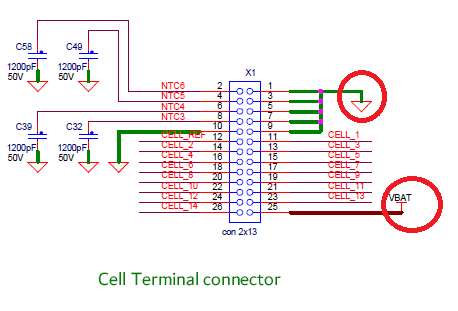
1. Agile is the NXP Database. If you do not know how to login to Agile contact your manager or NXP test engineer.
2. Go to Agile “FSW-47189 Rev A”, inside the “Attachments” tab get the files “FRDM33771CSPEVB Test Package Installer.zip”.
3. Copy the file to a media ex: USB flash Drive and take it to the test computer.
4. Insert the media to test computer with “FRDM33771CSPEVB Test Package Installer.zip” file to start the installation.
5. Double click over the “FRDM33771CSPEVB Test Package Installer.zip” file to begin installation.
6. Click on the Next button and follow instructions.
7. Do not change the destination path. It should be “C:\NXPTEST\47189\_FRDM33771CSPEVB\”.
8. Done.

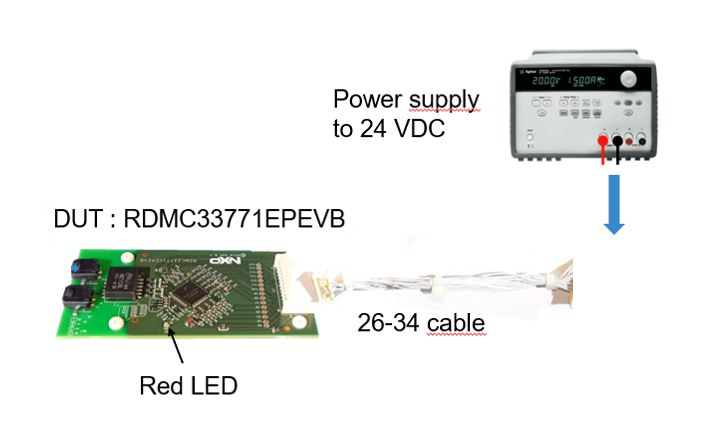
HARDWARE SETUP/INSTALLATION

Follow steps below to setup your required hardware

Setup fixture

1. Connect the FRDM33771CSPEVB **J1** connector to the resistor bridge using the **26-34 cable**.
2. Connect the 24V DC power supply positive to 26-34 cable PIN 25. Negative to Pin 1.
3. See below for HW setup.







FUNCTIONAL VERIFICATION TEST

Follow the instructions below to perform the test. If any of the test steps failed then set aside the board for debugging. Make sure to use a toe tag label to write the failure and attach it to the board.

To abbreviate from now and on FRDM33771CSPEVB will be replaced with DUT (Device Under Test)

If help is required, then contact the NXP test engineer.

* 1. **Static impedance test**

Before power up DUT, verify the static impendence between GND and main power inputs. GND is at TP4.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Expected Value (ohm)** | **Test Point** | **Actual Value (ohm)** | **Result** |
| VPWR | ≠0 | TP1 Vs GND |  |  |
| VCOM | ≠0 | TP3 Vs GND |  |  |
|  |  |  |  |  |

Note: If trouble in finding the location of test point, download DNP-47189.pdf, that is located in Agile at **“DNP-47189”** attachments, make sure download the correct version, if any conflicts on it, please contact NXP TE for help.

* 1. **Voltage Test**

Reference to chapter 4.1, measure key point voltage in below table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Net Name** | **Test Point** | **Voltage Range (V)** | **Test Result(V)** |
| VPWR | TP1 Vs GND | 4.75~5.25 21~27 |  |
|  |  |  |  |
|  |  |  |  |

* 1. **Power LEDs indicator check**

|  |  |  |  |
| --- | --- | --- | --- |
| **Signal Name** | **Expected Result** | **Visual Check Point** | **Actual Value** |
| VCOM | LIGHT ON Red | LED1 |  |
|  |  |  |  |

1. Resistor bridge card