

Functional Verification Test (FVT) for FRDM33771CSPEVB 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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1 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.

1.1 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

2 THEORY OF OPERATION

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

2.1 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

2.2 Environmental Needs

2.2.1 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**

2.2.2 Software

- **FRDM33771CSPEVB** Test Package Installer.....FSW-47189
- Adobe Reader TFA-00012

2.2.3 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

3 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.

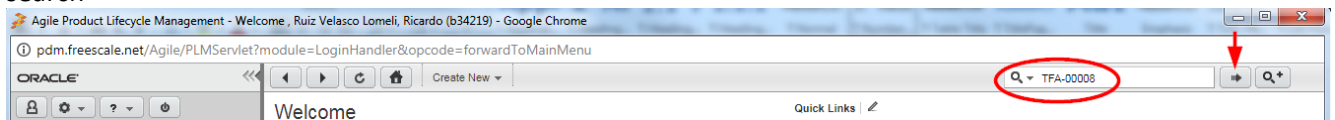
Please note that during installation default path is for 64-bit, example “C:\Program Files (x86)” on a 32-bit the path is just “C:\Program Files”.

Do the following to install the FVT software:

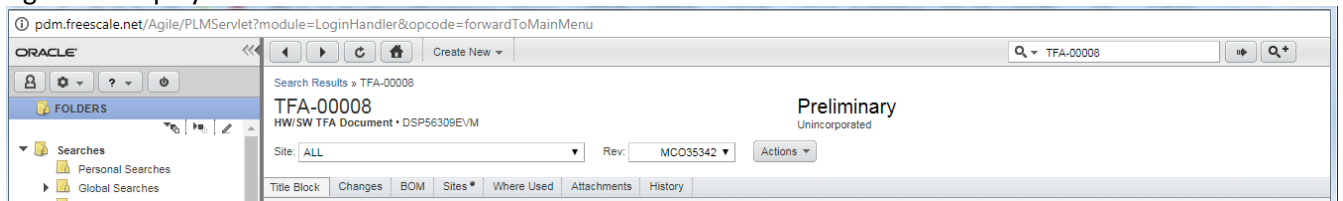
#	Installation
1	Adobe Reader
2	FRDM33771CSPEVB Test Package Installer

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

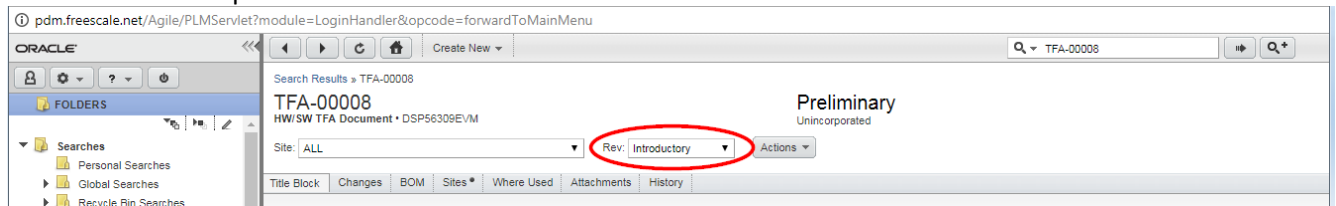


4. Agile will display the item.



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



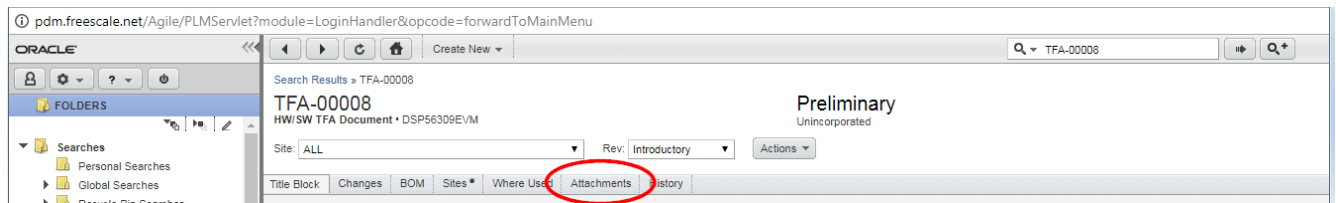
7. “FSW-27417” example

FSW-27417

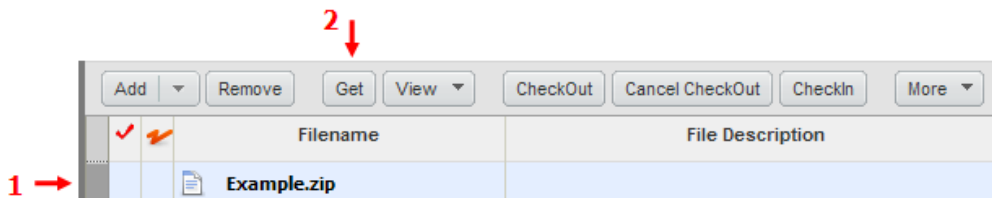
HW/SW Document • FAT TEST SOFTWARE AND PROCEDURE, 700-27417



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.

3.1 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.

3.2 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.

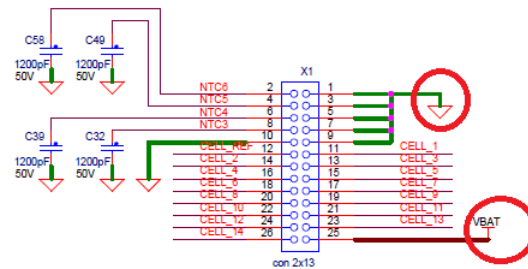
1. Agile is the NXP Database. If you do not know how to login to Agile contact your manager or NXP test engineer.
2. Go to Agile “**FSW-47189 Rev A**”, inside the “**Attachments**” tab get the files “**FRDM33771CSPEVB Test Package Installer.zip**”.
3. Copy the file to a media ex: USB flash Drive and 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.

4 HARDWARE SETUP/INSTALLATION

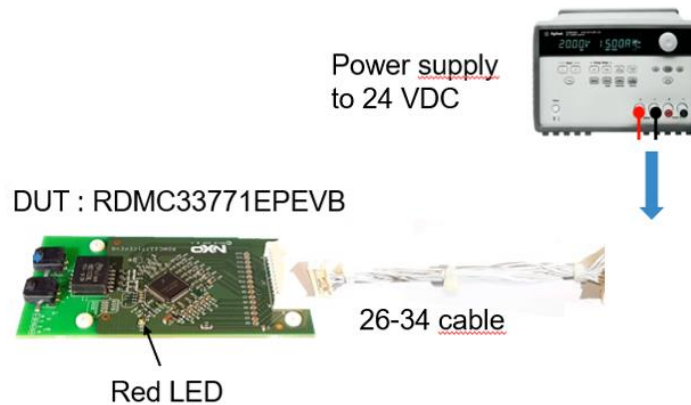
Follow steps below to setup your required hardware

4.1 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.



Cell Terminal connector



5 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.

a. Static impedance test

Before power up DUT, verify the static impedance 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.

b. 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	

c. Power LEDs indicator check

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

Appendix A. Resistor bridge card