

FRWY-LS1046A NON-SECURE, NON-EDGESCALE EXPERIENCE Release Notes

Version	2.0.0
Date	10 th June 2019

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1. Introduction

This document provides various details related to the release of the FRWY-LS1046A. The demo focuses on device functionalities with different features which includes CPU Performance benchmarks, Data Analytics (Gen 1 refrigeration demo), Machine learning/video analytics using AI/ML and video vault.

2. Release History

Release Version	Date	Description
1.0.0	08th April 2019	Initial release for video recording
1.0.1	12th April 2019	Phase 1 release
1.0.2	17th April 2019	Phase 1 including Gen 2, Data Analytic
1.0.3	26th April 2019	Phase 1 with updated real and simulated sensors demo integration
1.0.4	17th May 2019	Added updated Videos in Video Vault and bug fixes.
2.0.0	10 th June 2019	Fix the CPU utilization bug on Cold Storage Page and Removed Face Recognition and fix bug on goggle and helmet detection.

3. Release Artifacts

File Name	md5sum
bootpartition_LS_arm64_lts_4.14_201905080935.tgz	73caf2197667879b80a025035b972a8f
firmware_ls1046afrawy_uboot_qspiboot.img	88587a3a568fc97b8472898cf9f2c602
firmware_ls1046afrawy_uboot_sdboot.img	ca2799b1ac0fff44db348499fa22fe17
flex-installer	24b98e01f1c0ba13a17dd0bcc39ab656
README.txt	70e239d76136f7925e8b34500ab2e908
rootfs_lsdk1906_legal_3.tgz	5e4f3cf3343b76c299a234175f87196c

4. SharePoint link to download the images

https://nxp1.sharepoint.com/sites/dngsst/NSSG/SSL/Shared%20Documents/Forms/AllItems.aspx?cid=b5b4ce22-0ee7-4b36-93cd-d79c5cb73f92&RootFolder=%2Fsites%2Fdngsst%2FNSSG%2FSSL%2FShared%20Documents%2FProjects%2FLS1046A_FRWY%2FLegal%20Clearance%20Release%20V2&FolderCTID=0x012000350600AF4836194EB7D99E9EA9D55DBD

Note: - Use Google Chrome browser for UI.

5. Prerequisites

Requirement (Hardware)	Count
FRWY-LS1046A kit (including power adapter)	1
Ethernet	1
USB Camera	1
M.2 Wi-Fi dual band Qualcomm card	1
Wi-Fi Patch antenna	1
Accelerometer (ADXL345) module	1
SD card (16 GB or more)	1
X86-Machine (Linux- Ubuntu 18.04 LTS)	1

6. Setup diagram

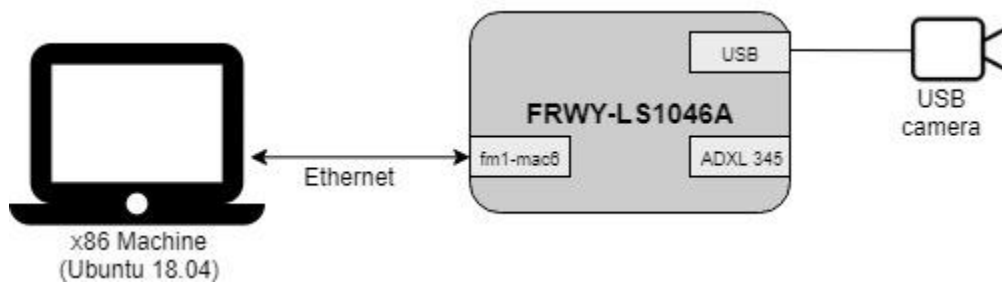


Table 1 Setup Diagram

7. Demo Explanation

The demo focuses on FRWY-LS1046A functionalities with different features which includes CPU Performance, Data Analytics, Machine learning video analytics and video vault.

7.1 CPU Performance

Demo provides the CPU performance, when a core or cores are utilized to 100%, using the benchmarking tools like: Coremark and Dhrystone.

7.1.1 Coremark

CoreMark is a synthetic benchmarking tool that measures the performance of central processing units (CPU) used in embedded systems.

7.1.2 Dhrystone

Dhrystone is synthetic CPU benchmarking tool, meaning that it is simple programs that are carefully designed to statistically mimic the processor usage of some common set of programs.

7.2 Data Analytic

7.2.1 Cold Storage Data Analytic

- Demo shows the compute power of FRWY-LS1046A. User can choose from among 400 simulated refrigerators to check internal temperature, external temperature, deviation from set-point.
- The Gateway will flag any refrigerator that is not performing within a specified range of temperature. Local database is used to check past performance up to 24hrs.
- 24000 data-points processed and pushed to the local database per minute.

7.2.2 Sensor Data Analytic

- Data Analytic demo shows the compute power of FRWY-LS1046A using the live and simulated sensors on board.
- The Gateway will flag the sensor that is not performing within specified range.
- Local database is used to check past the performance of sensors on board.

7.3 Machine Learning Video Analytics

- Video analytics showcase the FRWY-LS1046A board's capability in field of Artificial Intelligence and Machine learning.
- Machine Learning and Artificial Intelligence capabilities packed in docker containers for easy deployment.

- Using a different framework and Convolutional neural network like live people counting, YOLO framework and Object detection, TensorFlow, we can demonstrate the boards performance in terms of machine learning.

7.3.1 People Counting Demo

- The demo is designed to perform the Live People Counting and show the count on Web UI.
- Object detection using TensorFlow shows Machine learning and AI capabilities of FRWY-LS1046A.
- Trained model for almost any object can be added using this method.
- ML/AI capabilities powered by TensorFlow and OpenCV which provide ease of use and smooth deployment and development options to users.

7.3.2 Industrial Safety and Security Demo

This demo showcases the capabilities of Layer Scape family LS1046A-FRWY for the Industrial IOT solution. We have demonstrated the ability of the LS1046A-FRWY to run the tensor flow with OpenCV and do the Goggles and Helmets detection for safety applications. The demo is designed to perform the Goggles and Helmets detection and show the count on Web UI.

7.4 Video Vault

The demo plays the multiple videos present on board that will guild the user about the board's performance, its features and capabilities.

8. Limitations

There are certain limitations and known issues with this specific release

- Camera to detect the object, must be at proper angle and have the sufficient lightning condition.

Note: This is for Industrial Safety and Security Demo.

9. Open Issues

- Rendering of pages, will be different on a different resolution screen.