MMWAVE Studio Release Notes

1   Introduction

The mmWaveStudio GUI is designed to characterize and evaluate the TI Radar devices. The mmWave device is configured and controlled from the mmWaveStudio by sending commands to the device over SPI. ADC data is either captured using DCA1000 EVM or TSW1400 EVM board for single chip systems and TDA2XX EVM for Cascade systems. The data is processed in Matlab and the results are displayed in the GUI.

2   Release Overview

This is the 2.1.1.0 version of mmwavestudio

2.1   Platform and Device Support

The device and platforms supported with this release are

Supported Devices	Supported EVMs
xWR1243 ES3.0	AWR1243BOOST Cascade RF Board
xWR1443 ES3.0	AWR1443BOOST IWR1443BOOST
xWR1642 ES2.0	AWR1642BOOST IWR1642BOOST
IWR6843 ES2.0	IWR6843BOOST
xWR1843 ES1.0	AWR1843BOOST IWR1843BOOST

The solution to capture raw ADC data for single chip systems can be either TSW1400 EVM or DCA1000 EVM. If using TSW1400 EVM, then MMWAVE-DEVPACK with the booster pack needs

to be used, else one should use only DCA1000 EVM with the booster pack. In case of Cascade systems, the TDA2XX EVM needs to be used along with Cascade RF EVM Board.

2.2 Release contents and component versions

Component	Version/Details	Device	Type
RadarSS Firmware	DFP 1.2.5.1	xWR1642 ES2.0 xWR1243 ES3.0 xWR1443 ES3.0 xWR1843 ES1.0	Binary
	DFP 6.2.1.5	xWR6843 ES2.0	Binary
MSS Firmware	DFP 1.2.5.1	xWR1243 ES3.0 xWR1443 ES3.0 xWR1642 ES2.0 xWR1843 ES1.0	Binary
	DFP 6.2.1.5	xWR6843 ES2.0	Binary
FTDI Driver	2.12	NA	Binary
mmWaveStudio	2.1.1	NA	Executable
Documents	Release Notes	NA	PDF
	mmWaveStudio User's Guide		PDF
	mmWaveStudio Cascade User's Guide		PDF
	DCA1000 Quick start Guide		PDF
Reference Code	DCA1000 CLI source code and documentation	NA	Source code + Docs
	FTDI Library Source code and documentation		Source Code + Docs
	Ethernet Library source code and documentation		Source Code + Docs
Matlab Examples	MIMO Post Processing scripts	NA	Source Code
	TX-Beamforming Data Capture and Post-processing scripts		Source Code
	Matlab example for parsing ADC data using JSON based log file		Source Code
Platform Binaries	DCA1000 FPGA Image (2.8)	DCA1000 EVM	Binary
	TDA2 Firmware (3.7.1)	TD2XX EVM	Binary

2.3 Directory Structure

Directory Name	Content
docs	mmwave_studio_release_notes.pdf

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	mmwave_studio_user_guide.pdf
	mmwave_studio_cascade_user_guide.pdf
	DCA1000_Quick_Start_Guide.pdf
ftdi	FTDI Drivers
mmWaveStudio	mmWaveStudio GUI (*Runtime\mmWaveStudio.exe*)
	TSW1400 firmware files (*HSDCProFiles*)
	DCA1000 FPGA file (*PlatformBinaries\DCA1000FPGA*)
	TDA2XX Firmware file (*PlatformBinaries\TDA2Firmware*)
	Reference code for DCA1000 CLI (*ReferenceCode\DCA1000*)
	Reference code for FTDI Library (*ReferenceCode\FTDILib*)
	Reference code for Ethernet Library (*ReferenceCode\EthernetLib*)
	Matlab example for MIMO Post-Processing (*MatlabExamples*)
	Matlab example for Tx-Beamforming Post-Processing (*MatlabExamples*)
	Matlab example for single chip data parsing (*MatlabExamples*)
	Sample Lua scripts (Cascade + Single Chip) (*Scripts*)
	Sample JSON files (*JSONSampleFiles*)
rf_eval_firmware	RF evaluation firmware for supported Devices

2.4 Tools and dependencies

Below tools are required to run mmWaveStudio

Tools	Version	Download Link
HSDC Pro Software (if capture solution is TSW1400)	4.2 or later	download link
Matlab Runtime Engine	8.5.1 only	download link
FTDI Driver	2.12	Included in the package
Matlab (only for Matlab examples)	R2017a or later	License Required

2.5 Licensing

Please refer to the mmwave_studio_manifest.html, which outlines the licensing information for mmWave Studio package.

3 Release Contents

3.1 Features and enhancements

- Updated the FTDI drivers. Validity (signed) up till November 9th, 2021
- Update the RF Evaluation image for 6843 device. Image is corresponding to 6.2.1.5 DFP release

3.2 Changes in this release

Item type	Key	Issue Details/Description
FEATURE	MMWSTUDIO-465	Updated the RF Evaluation image for 6843 device
FEATURE	MMWSTUDIO-465	Updated the FTDI drivers

3.3 Limitations

- The matlab post-processing only works with the following value of CQ configuration
  - CQ0 – 132
  - CQ1 – 132
  - CQ2 – 72
- Only Interleaved mode is supported for xWR1243 device.
- Only Non-Interleaved mode is supported for xWR1443, xWR1642, xWR1843 and IWR6843 devices.
- Continuous Streaming with DCA1000 requires the user to manually stop the capture (after capturing the required number of sampels). Otherwise, DCA1000 will keep on capturing the data until it gets a Buffer full error.

3.3.1 Cascade Specific Limitations

- If the *"num_frames_to_capture"* parameter is 0, then the number of frames captured by the TDA2 is one less than the number of frames sent by the AWR devices when the AWR devices are configured to send out a finite number of frames. However if the *"num_frames_to_capture"* parameter is set to a non-zero value, then the TDA2 will correctly capture exactly the mentioned number of frames.
- The first frame may be corrupted in every capture. It is recommended to ignore the first frame for all captures.
- Post-processing for the data doesn't work for 12-bit data packing (16 bit data packed into 12 bit while saving the data)
- Support for the continuous streaming mode is currently limited. When this mode is enabled, only one frame of data is captured.
- The basic built-in post processing tool in mmWave Studio assumes that the configuration is the same for all devices. The angle estimation done by the tool only takes into account data from the 4 RXs of one device at a time.
- Logs from the TDA2 *"apps.out"* application are only generated when running the *"apps.out"* binary manually. The default behavior in which this application is started

automatically at boot-up does not generate the logs. These logs are required only for debug.
- The 12-bit and 14-bit ADC data format modes are not supported. Only 16-bit ADC data is supported and verified.
- The maximum number of samples per chirp is currently limited to 512 in complex 1x/2x modes, and 1024 in real mode.

3.4 Known issues

Key	Description
MMWSTUDIO-216	Font on Connect tab overlap on some Windows 7 PC