DW3 QM33 SDK 1.0.2 Release Notes

Versions

- UWB Stack Version: R12.7.0-288-gb8203d55886
- Driver version: 8.02.02
- GUI version: 2.1.1

Main Features

- **Targets supported:**
  - DWM3001CDK.
  - QM33120WDK1.
  - Murata Type2AB EVK.
- UWB chips supported: QM33120W, QM33110W, DW3120, DW3110, DW3220, DW3210.
- GUI to show FiRa ranging over UCI.
- UWB Qorvo Tools to show FiRa ranging over UCI.
- UWB Qorvo Tools to test RF performance over UCI and calibrate/configure the device.
- Commands for FiRa ranging, calibration/configuration and listener over Virtual COM Port.
- New calibration method: possibility to adjust using UCI or CLI.
- The OTP values are used by default.
- CMake/make build system is supported.

Known issues and limitations

1. FiRa - CLI: FoM (Figures of Merit) is not implemented.
2. FiRa - UCI: Sending UCI messages longer than 7 kB may lead to transport layer buffer overflows.
3. FiRa - UCI: Building firmware with USE_PCTT flag disabled or not defined is failing.
4. FiRa - Ranging with the slot duration equal to 1 ms is not possible.
5. FiRa - The script run_fira_twr does not allow to run provisioned STS for responder specific subsession key (SESSION_UPDATE_CONTROLLER_MULTICAST_LIST_CMD + multiple values of SUB_SESSION_ID and SUB_SESSION_KEY not handled).

6. FiRa - The multisession feature is currently in an experimental state and may require further adjustments for optimal functionality.
7. FiRa - AoA regression: On channel 9, the reported AoA values are correct for angles within the range of -55 to 60 degrees (instead of -60 to 60 degrees).
8. FiRa - For boards using a chip without OTP filled after production (e.g. DWM3000EVB), starting a ranging session will not work if the calibration/configuration is not firstly flashed (PLATFORM_ID and OTP_REV are mandatory; TxPower Levels, Xtal Trim and Antenna Delays are required to get correct performances).
9. FiRa - Loading calibration/configuration during a ranging session is not possible.
10. GUI - Editable names in the 'Node List', 'Calibration', 'Logging' etc. have different size on different platforms.
11. GUI - Grid label "Display size" in the "Real Time Location" page shows incorrect value when grid is 1000 cm and the screen is small.
12. GUI/UQT - Exporting the calibration/configuration file via GUI and loading it via UQT is not supported.
13. CLI - Arrows, delete, end and other input affecting keys have an impact on command recognition.
14. CLI - Occasionally, after the initial firmware flash or when commands are sent rapidly, the command may not be recognized and the device responds with an "unknown command" error.
15. CLI - The lowest value allowed for the "BLOCK" parameter in the INITF/RESPF commands is 100 ms.
16. CLI - When the INITF/RESPF application is started/executed with unsupported parameter values, the application exits with an error, but the thread is not automatically deleted, requiring manual deletion by running the "STOP" command.
17. RSSI is indicative only and may not be accurate. The end user must perform a thorough evaluation of RSSI performance before using it in a production application.
18. Memory: The content of OTP is only readable using the CLI command "GETOTP", it is not possible via the UCI.
19. Memory: For chips with empty OTP, it is possible to write to the OTP, but the tools for doing so are not provided. To write to the OTP, you will need to develop your own software based on the delivered drivers.
20. Memory: Flash and RAM usage figures are not provided in this release.
21. Memory: The required flash size for both CLI and UCI has increased due to the integration of the new version of the UWB stack.
22. The firmware libraries are built and tested only for Cortex M4.
23. macOS is partially supported (only GUI).
24. UCI - Sometimes, loading calibration/configuration may not work properly. In this case, it is recommended to power cycle the device and try again.

Change Log

Version 1.0.2

Drivers

Fixed

- Resolved an issue where some contents in the *Drivers/API/Build_Platforms/* subdirectories were missing from the package.

Version 1.0.1

GUI

Fixed

- Devices renaming, manual addressing, automatic addressing, angle inversion and custom antenna are supported when using the boards or products with the same UWB Part ID.

Version 1.0.0

GENERIC

Changed

- The whole package structure is changed.
- A common package is released for all targets with specific documentation (Developer Manual, Quickstart Guide) for each target.
- PDoA mode is now selected automatically.

Removed

- NLOS.

UCI

Added

- PCT UCI messages for RF testing.
- UCI messages for setting device configuration and calibration.
- The support of RSSI (see point 12 in the Known issues and limitations section).

Changed

- UCI messages version to FiRa 2.0.
- GET_DEVICE_INFO UCI response to include vendor information.
- GET_CAP UCI response.

CLI

Added

- LCFG command to configure the listener.
- CALKEY and LISTCAL commands to display and modify calibration/configuration keys.
- SETAPP command to define default application to be started after a power cycle.
- GETOTP command to read content of OTP memory.
- LISTENER command to report any received packets.
- Qorvo SoC ID field to the output of the DECAID command.

Changed

- Improved INITF and RESPF commands by adding configuration parameters to cover the use of the removed UWBCFG command.
- Improved INITF and RESPF commands to align FiRa parameters with the latest version of the stack.
- Output of FiRa notifications for INITF and RESPF commands.
- Output of Diagnostic notifications when DIAG is enabled.

- Output of HELP command.
- Behavior of SAVE and RESTORE commands.
- Behavior of UART command.

Removed

- The PDoA averaging.
- **Following CLI commands:**
  - TCFM,
  - TCWM,
  - PAVRG,
  - ANTTXA,
  - ANTRXA,
  - XTALTRIM,
  - PDOAOFF,
  - TXPOWER,
  - ANTENNA,
  - VERSION,
  - STSKEYIV,
  - LISTENER2,
  - DECA$.

Note: The features of ANTTXA, ANTRXA, XTALTRIM, PDOAOFF, TXPOWER, and ANTENNA are now covered by calibration/configuration keys.

UWB Qorvo Tools

Added

- **Scripts for device management:**
  - *get_cal*
  - *get_cap*
  - *get_config*
  - *get_device_info*
  - *load_cal*
  - *reset_calibration*
  - *reset_device*
  - *set_cal*
  - *set_config*
- **Scripts for FiRa standard ranging capabilities:**
  - *run_fira_twr*
  - *run_fira_test_per_rx*
  - *run_fira_test_periodic_tx*

  - *run_fira_test_rx*
  - *run_fira_test_ss_twr*
- **Scripts to test Qorvo UWB chip functionalities:**
  - *run_qorvo_test_pll_lock*
  - *run_qorvo_test_tx_cw*
- **General utility scripts, usable as standalone tools or supporting scripts:**
  - *decode_uci*
  - *fp*
  - *uqt_info*
  - *uqt_ls*

GUI

Added

- The possibility to reset all calibration/configuration parameters to default values, not just the parameters exposed to the UI.
- The possibility to switch between the Jolie (default) and Custom antenna after Custom LUT is imported.
- The possibility to configure PDoA offset in device configuration.
- The support of new device info encoding (52 bytes of vendor specific part).
- The support of device with no AoA by Calibration procedure.
- The support of the One-To-Many ranging.
- The support of QM33 calibration/configuration.

Changed

- Improved logging messages.
- Improved logging of setting/getting calibration/configuration parameters.
- Use session handle for session control commands.
- Some buttons can be activated by Enter key.

IDE

Added

- **Following tasks in VS Code:**
  - Build clean firmware
  - Build & Flash target.
  - Choose configuration.
  - Build firmware.
  - Check configuration.
  - Flash target.

Changed

- Switch supported development environment from Segger Embedded Studio to VSCode.

Version 0.1.1

Initial Release