Upgrading EVB1000 to latest software

Offset Compensation

Version 1.0

This document is subject to change without notice

DOCUMENT INFORMATION

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1 INTRODUCTION

This document is **only** intended for EVK1000 customers who want to upgrade the firmware on their EVK1000 boards to a version of software other than that shipped with the kit.

It describes the steps to achieve this upgrade.

Note 1: This procedure is only applicable to upgrades of the EVK1000 software. It is not necessary to carry out this procedure if the EVK1000 is used with the software that has been pre-loaded onto it.

Note 2: For a new product development, antenna delays should be calibrated appropriately (refer to application note APS012 "Production tests for DW1000-based products") and this procedure will not be necessary.

2   UPGRADE PROCEDURE

1. Program your pair of boards with the latest version firmware binary available on www.decawave.com. Refer to "DecaRanging ARM Source Code Guide" for a description of this procedure.

2. Compute the calibration offset as follows: -

    a. Set your boards to use one of the calibrated modes (3 or 5).
    b. Position the boards a distance of 8 m apart (precisely measured).
    c. Run the boards.
    d. Log at least 300 measured ranges at the anchor node. Refer to "DecaRanging ARM Source Code Guide" for a description of the debug info sent via the USB/virtual COM port.
    e. Compute the mean range for the 300 measured ranges.
    f. Compute the calibration offset using the following formula:

    calibration offset = actual distance (8 m) – average measured distance

3. Change ARM source code to add this calibration offset to the measured distance. In "ReportToF" function, modify the following computation:

    $$distance = tof * SPEED\_OF\_LIGHT$$

    to

    $$distance = (tof * SPEED\_OF\_LIGHT) + calibration\ offset$$

    Please note that "distance" is expressed in meters in this code.

4. Rebuild the source code.

5. Program the boards with your new binary.

3 REFERENCES

3.1 Listing

References are made to the following documents in the course of this document:

Table 1: Table of References

Ref	Author	Date	Version	Title
[1]	Decawave		Current	EVK1000 User Manual

4 DOCUMENT HISTORY

4.1 Revision History

Table 2: Document History

Revision	Date	Description	Revised By
1.0	22-Sep-2015	Initial release	CJ

5 MAJOR CHANGES

Revision 1.0

Page	Change Description
All	Initial Release

6   ABOUT DECAWAVE

Decawave is a pioneering fabless semiconductor company whose flagship product, the DW1000, is a complete, single chip CMOS Ultra-Wideband IC based on the IEEE 802.15.4-2011 UWB standard. This device is the first in a family of parts that will operate at data rates of 110 kbps, 850 kbps and 6.8 Mbps.

The resulting silicon has a wide range of standards-based applications for both Real Time Location Systems (RTLS) and Ultra Low Power Wireless Transceivers in areas as diverse as manufacturing, healthcare, lighting, security, transport, inventory & supply chain management.

Further Information

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