

SimpleLink™ MSP432E4 Upper Level Memory Protection Issue



TI-PSIRT-2022-050133

CVEID: Not Applicable

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Summary

A function for setting flash read, write, and execution-only protections in the driver library for MSP432EXX devices silently ignores requests to protect flash memory beyond the first 256 kiB. This potentially leaves the upper memory space, beyond 256 kiB, unprotected regardless of input to said function. The security impact to the application depends on the details of what an application stores in the flash memory.

CVSS base score: 4.4

CVSS vector: [AV:L/AC:L/PR:L/UI:N/S:U/C:L/I:L/A:N](#)

Affected products and versions

- MSP432E4XX SDK version 4.20.00.12 and earlier

Potentially impacted features

Flash memory protection above the lower 256 kiB of memory address space. An application is impacted if it calls `FlashProtectSet()` with a value of 0x40000 or greater as the `ui32Address` argument.

Suggested mitigations

In `simplelink_msp432e4_sdk_4_20_00_12\source\ti\devices\msp432e4\driverlib\Flash.c`, change line 379 from:

```
ui32Bank = ((ui32Address / 32) % 4);
```

to:

```
ui32Bank = ((ui32Address / 32) % 16);
```

This allows memory up to 1024 to be protected by one of the 16 flash protection registers. 1024 kiB (1 MiB) is the largest flash size available in the MSP432E4XX series.

The SimpleLink MSP432E4 SDK does not have a planned SDK update to address the vulnerability discussed above due to the legacy nature of its software. It is recommended that customers patch the mentioned function within the DriverLib library of the SimpleLink MSP432E4 SDK. Customers should verify that the changes made are compiled and linked into their application. Customers may also confirm proper operation by checking that the expected values are written to the FMPPEn and FMPREn registers, see the [MPS432E4 SimpleLink™ microcontrollers technical reference manual](#).

Acknowledgment, External references

We would like to thank Hareesh Khattri from INTEL Corporation for reporting this potential vulnerability to the TI Product Security Incident Response Team (PSIRT).

Revision history

- Version 1.0 Initial publication

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