SPR5801S1 Firmware Release Notes

LG only

Version 0x10

Contents

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1. Overview

The GTI Lightspeeur® chip series consists of low-power and high-performance AI accelerator chips that leverage model compression and quantization techniques. SPR5801S1 chip series is equipped with native USB interface.

2. Release Notes for SPR5801S1 Firmware

SPR5801S1 firmware is released as part of SDK package under `GTISDK/Firmware` folder. The Firmware release includes I2C code download and USB connection and control transfer, EP in and EP out.

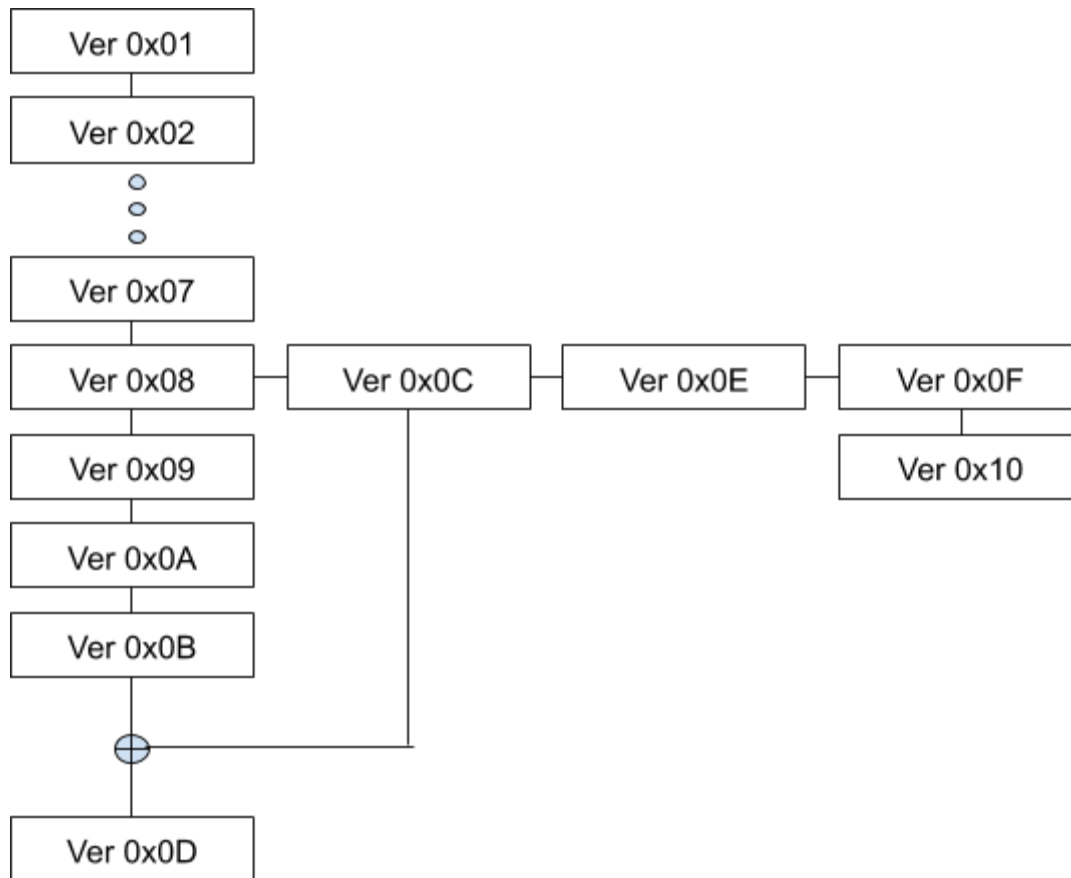| Version	Notes	Date
0x01	Initial release.	02/26/2019
0x02	Modified the data in and data out functions. ● Fixed the USB connection issue which was caused by improper flag of USB configuration. ● Fixed issue which does not respond data transfer CMD properly. ● Fixed the data in and out EP not starting issue. The EP could not start because it was not set correctly. ● Further simplified data transfer handler to reduce turnaround time. To finish the transfer preparation partially before receiving event, hence, save some time after receiving the event.	03/06/2019
0x03	Improved the data transfer performance. ● Increased the transfer data block size when guaranteeing stability. To prepare more space for the transfer to simplify the process. ● Assign higher priority for data transfer. The data transfer is processed as soon as possible.	04/03/2019
0x04	Optimized the power management functions. ● Implemented the power management commands. The API can use the command to enter low power mode. ● Fine tuned the timing for entrance and exit of low power states to guarantee system stability.	04/04/2019
0x05	Optimized firmware size to speed up the I2C loading. ● Reduced the code size for current FW implementation. Modify the code such that the bin file to be small.	04/06/2019

0x06	Fixed I2C 100kHz read firmware version issue. ● Previous release (rev 05) reduced code size and commented out the code to handle the STOP of the command 08 00 00 00. This fix just added the code back.	04/12/2019
0x07	Fixed the learning mode hang issue. ● To stop the DMA properly, the firmware added code to make the next memory invalid DMA descriptor. The DMA will stop when hitting the invalid descriptor.	04/16/2019
0x08	Fixed the issue that I2C stopped working after code download and demo execution. ● The code was modified such that the executing I2C related functions won't interfere with other functions.	04/21/2019
0x09	To improve the data transfer by increasing the data size.	04/29/2019
0x0A	To increase the DMA transfer block size	05/14/2019
0x0B	To clean up code.	06/12/2019
0x0C	● Added the CRC calculation function for the downloaded code. ● Added zero stuffing to have no impact in case code overwrite happen due to race condition in handling the STOP ISR. ● This version of Firmware was built based on revision 0x08.	06/14/2019
0x0D	● Added the CRC calculation function for the downloaded code (same change from 0x0C). ● Added zero stuffing to have no impact in case code overwrite happen due to race condition in handling the STOP ISR (same change from 0x0C). ● Re-use the ROM code to reduce the downloaded code size. The FW reset SPR5801S1 when it receives warm reset or USB2 connection request. ● This version of Firmware was built based on revision 0x0B.	06/26/2019

0x0E	● The FW reset SPR5801S1 when it receives warm reset or USB2 connection request. ● This version of Firmware was built based on revision 0x0C.	07/02/2019
0x0F	● Fixed USB enumeration issue by initializing the memory properly. ● This version of Firmware was built based on revision 0x0E.	07/15/2019
0x10	● Fixed DMA Bulk transfer issue ● This version of Firmware was built based on revision 0x0F.	07/17/2019

3. FW Branch History

4. Issues Fixed in Rev 0x10

Problem Description :
The DMA process of bulk transfer can be hung in case incorrect TRB is assigned.

Analysis :
Incorrect TRB can be assigned if the size of the requested data from host is too small for FW to have enough time for DMA event processing generated after DMA handling the data.

Fix :
FW ensures the TRB is assigned correctly in this case.

Side Effects:
No side effects are expected.