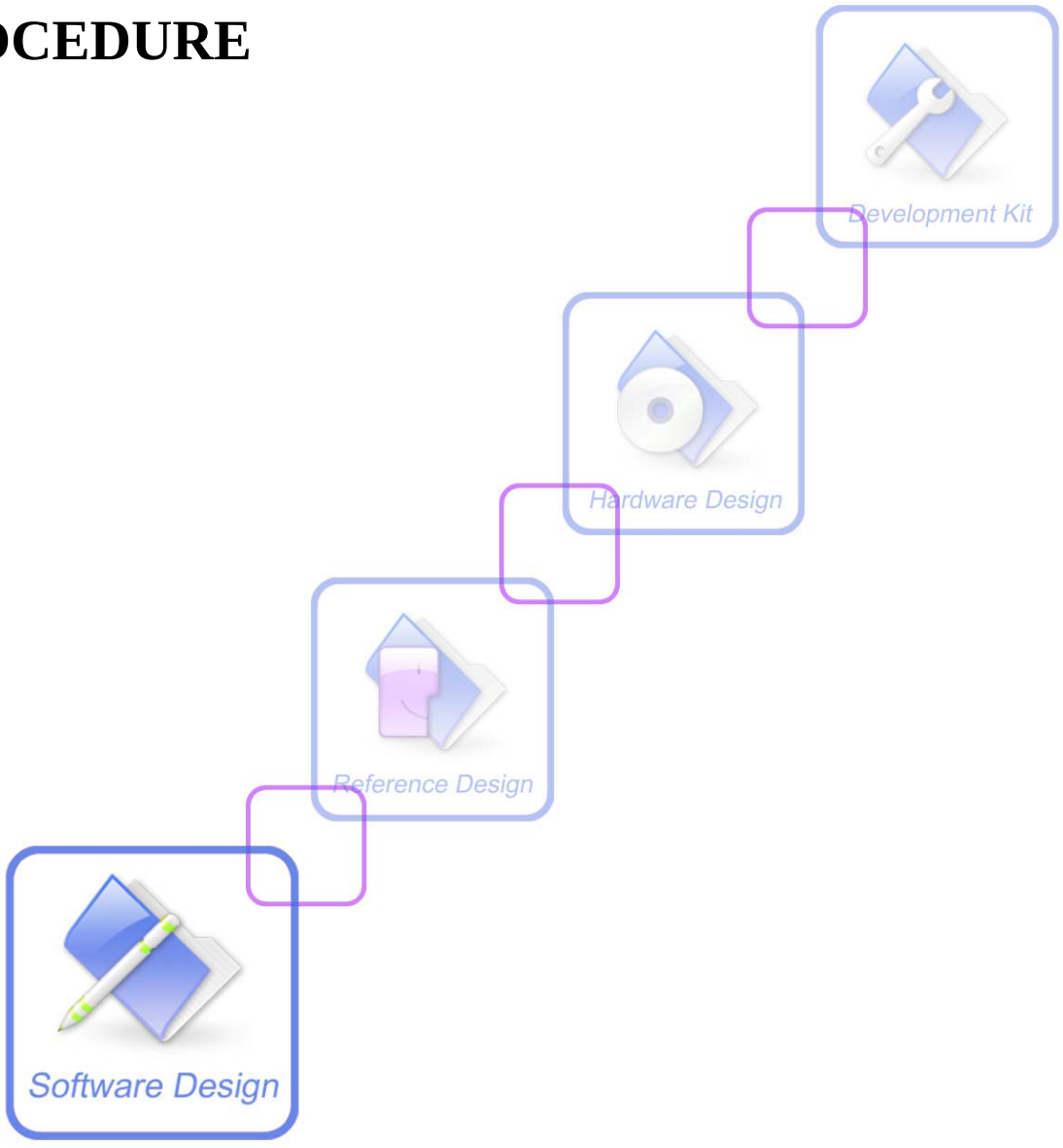
A company of SIM Tech

MT3333/MT3339 PLATFORM

FIRMWARE UPDATE

PROCEDURE



Document Title:	MT3333/MT3339 Platform Firmware Update Procedure
Version:	V1.00
Date:	2013-09-17
Status:	Release
Document Control ID:	MT3333/MT3339_Platform_Firmware Update Procedure_V1.00

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Version History

Version	Chapter	What is new
V1.00	Original version	Original

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1 Introduction

1.1 Scope of the document

This document presents details of Boot ROM handshaking and flash download/format.

This update procedure support MT3339 platform modules，including: SIM28, SIM28C, SIM39EA and SIM928A. And support MT3333 platform modules also，including: SIM68R, SIM68V, SIM968 .

Following this procedure, user can download built image to target side via RS232.

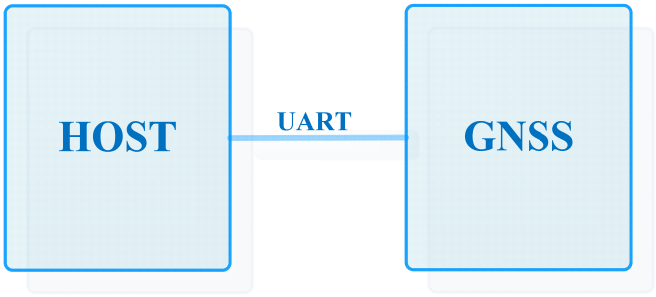

Figure 1-1: firmware update connection

1.2 Related documents

(1) 《MT3333 Platform NMEA Message Specification For GPS+GLONASS_V1.00》
(2) 《MT3339 Platform NMEA Message Specification_V1.00》

1.3 Term abbreviation

Table 1-1: Term abbreviation

Term	Definition
DA	Download Agent
BROM	Boot ROM
SRAM	Static random-access memory
ACK	Acknowledge
NACK	Negative Acknowledge

2 Procedure

The whole procedure has two stages:
Stage I:
Download DA to Internal SRAM, and then jump to DA Start Address to execute DA in Internal SRAM.
Stage II:

Download BIN file to flash, then jump to flash Start Address to execute program..

Table 2-1: firmware update procedure

Stage	Step	Command	Description
I	1	CMD_Start	Send update start commands
	2	CMD_Write	write DA file to SRAM
	3	CMD_Jump	Jump to DA start address and execute
II	4	CMD_Sync	Sync and report flash information
	5	CMD_SetMemBlock	Set memory block information
	6	CMD_WriteData	Write BIN file to flash
	7	CMD_Finish	Notify DA to power off target

2.1 CMD_Start

After GNSS module is power on. Send NMEA_START_CMD "$PMTK180*3B\r\n" to GNSS to start update procedure.

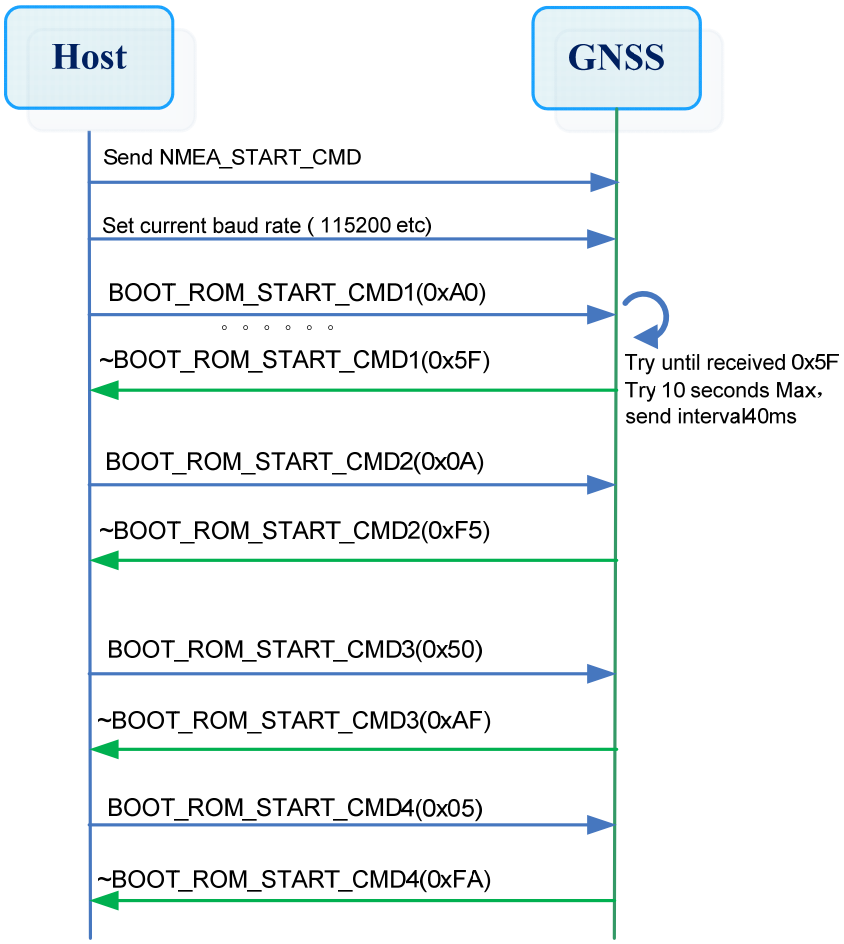

Figure 2-1: CMD_start

2.2 CMD_Write

This command will write DA file to SRAM.

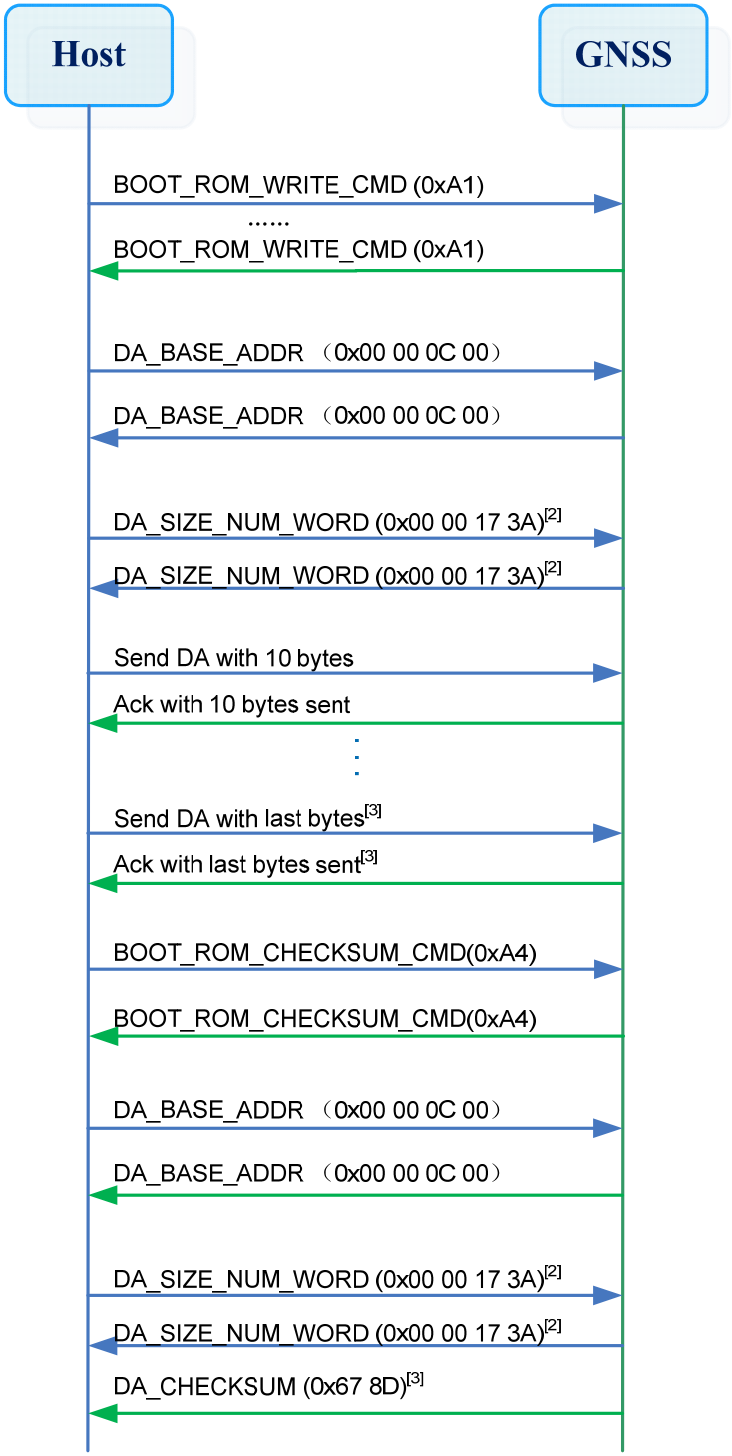

Figure 2-2: CMD_write

2.3 CMD_Jump

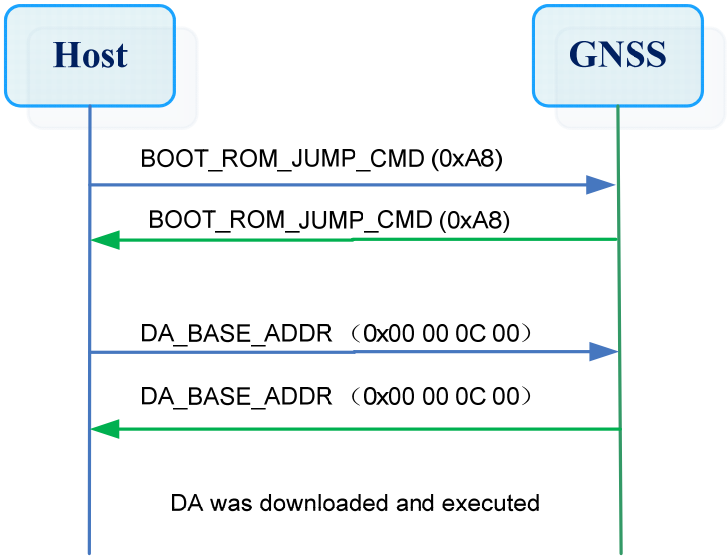

Figure 2-3: CMD_Jump

2.4 CMD_Sync

When DA was downloaded and executed, it will actively report one byte **SYNC_CHAR**, two bytes **DA_VERSION**, one byte **FLASH_DEVICE_ID**, four bytes **FLASH_SIZE**, eight bytes **FLASH_HW_ID** and four bytes **EXT_SRAM_SIZE**.

- **SYNC_CHAR:**

When DA was executed, it will return **SYNC_CHAR** (0xC0). If the return byte isn't **SYNC_CHAR**, which means it's possibly downloading a wrong DA.

- **DA_VERSION:**

After **SYNC_CHAR**, DA will return DA's version number, it contains two bytes, one is major version, and the other is minor version. Program should check whether if it supports this DA.

- **FLASH_DEVICE_ID:**

After report the DA version, DA will automatically detect the flash type on target.

- **FLASH_SIZE:**

Four bytes flash size, for example: 128Mbits flash will be 0x01000000 bytes; DA will send 0x01, 0x00, 0x00, and 0x00.

- **FLASH_MANUFACTURE_CODE:**

Two bytes flash manufacture code. (Users should refer to the datasheet for each flash.)

- **FLASH_DEVICE_CODE:**

Two bytes flash device code. (Users should refer to the datasheet for each flash.)

- **FLASH_EXT_DEVICE_CODE1:**

Two bytes flash extended device code1. (Users should refer to the datasheet for each flash.)

- **FLASH_EXT_DEVICE_CODE2:**

Two bytes flash extended device code2. (Users should refer to the datasheet for each flash.)

- **EXT_SRAM_SIZE:**

Four bytes external SRAM size, for example: 64Mbits external SRAM will be 0x00800000 bytes; DA will send 0x00, 0x80, 0x00, and 0x00.

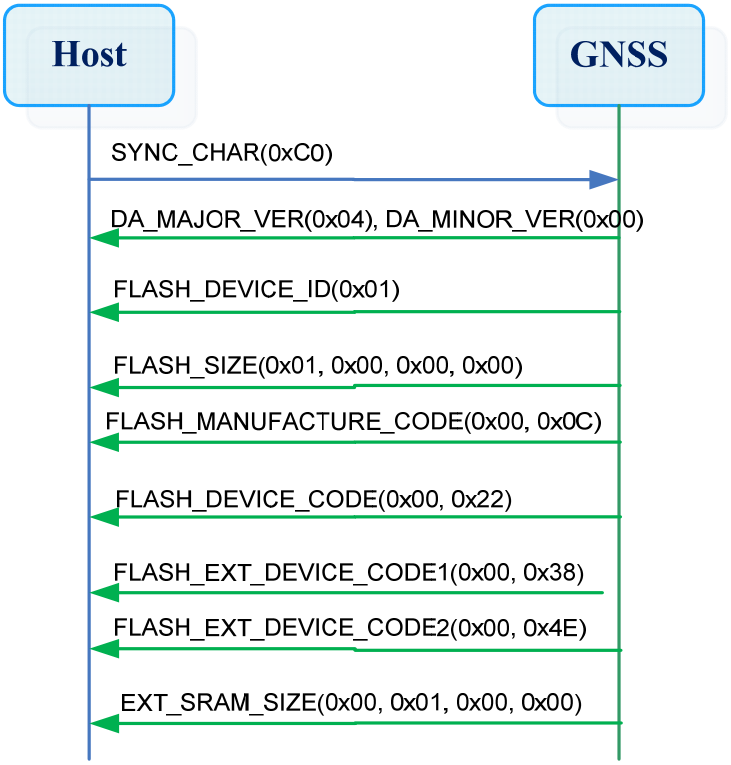

Figure 2-4: CMD_Sync

Note:

1. The Flash related information are fixed for handshake authorization, not real flash information.

2.5 CMD_SetMemBlock

This command is used to notify DA the total memory block count and the range for each block. The block Information indicates how many BIN files will be downloaded and the range of each BIN file. If any memory block exceeds the flash size, DA will return NACK (0xA5) to indicate the **DA_MEM_CMD** command is fail. If all the download memory blocks are valid, DA will return ACK (0x5A) and **UNCHANGED_BLOCK_COUNT** to notify PC side how many unchanged block should be recovery after downloading.

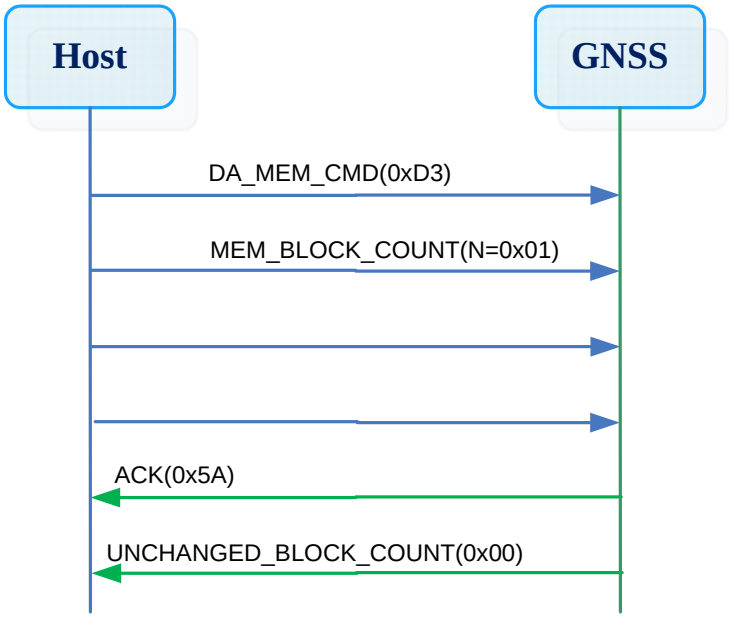

Figure 2-5: CMD_SetMemBlock

2.6 CMD_WriteData

This command is used to write all the data of BIN files to target side flash. Every packet is fixed length; that is PACKET_LENGTH plus two bytes checksum. The last packet is usually not enough for PACKET_LENGTH, Program should fill 0x00 as padding until reach PACKET_LENGTH.

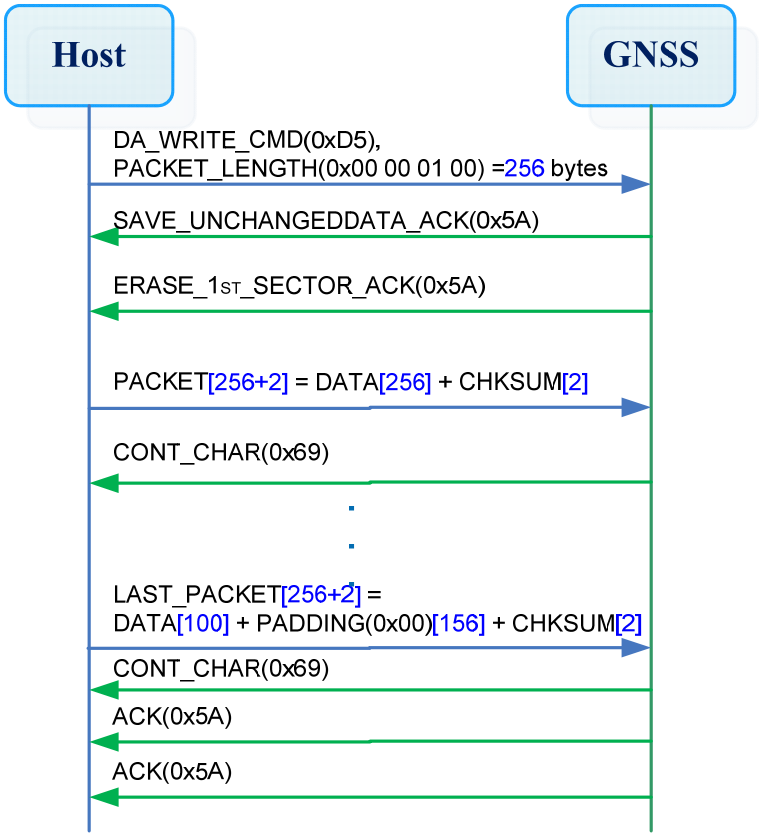

Figure 2-6: CMD_WriteData

2.7 CMD_Finish

This command is used to notify DA to power off target by unlocks RTC power key. And then GNSS will output NMEA sentences. The firmware update procedure is finished.

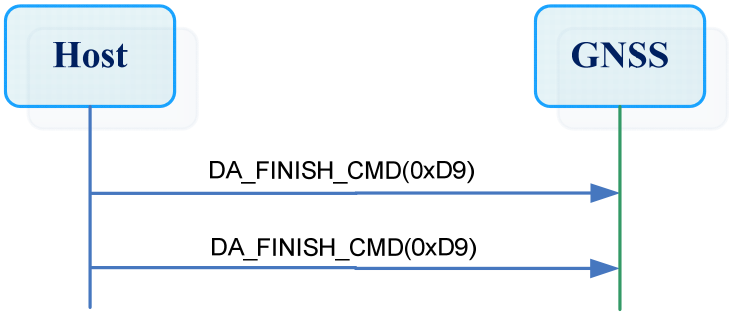

Figure 2-7: CMD_Finish

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