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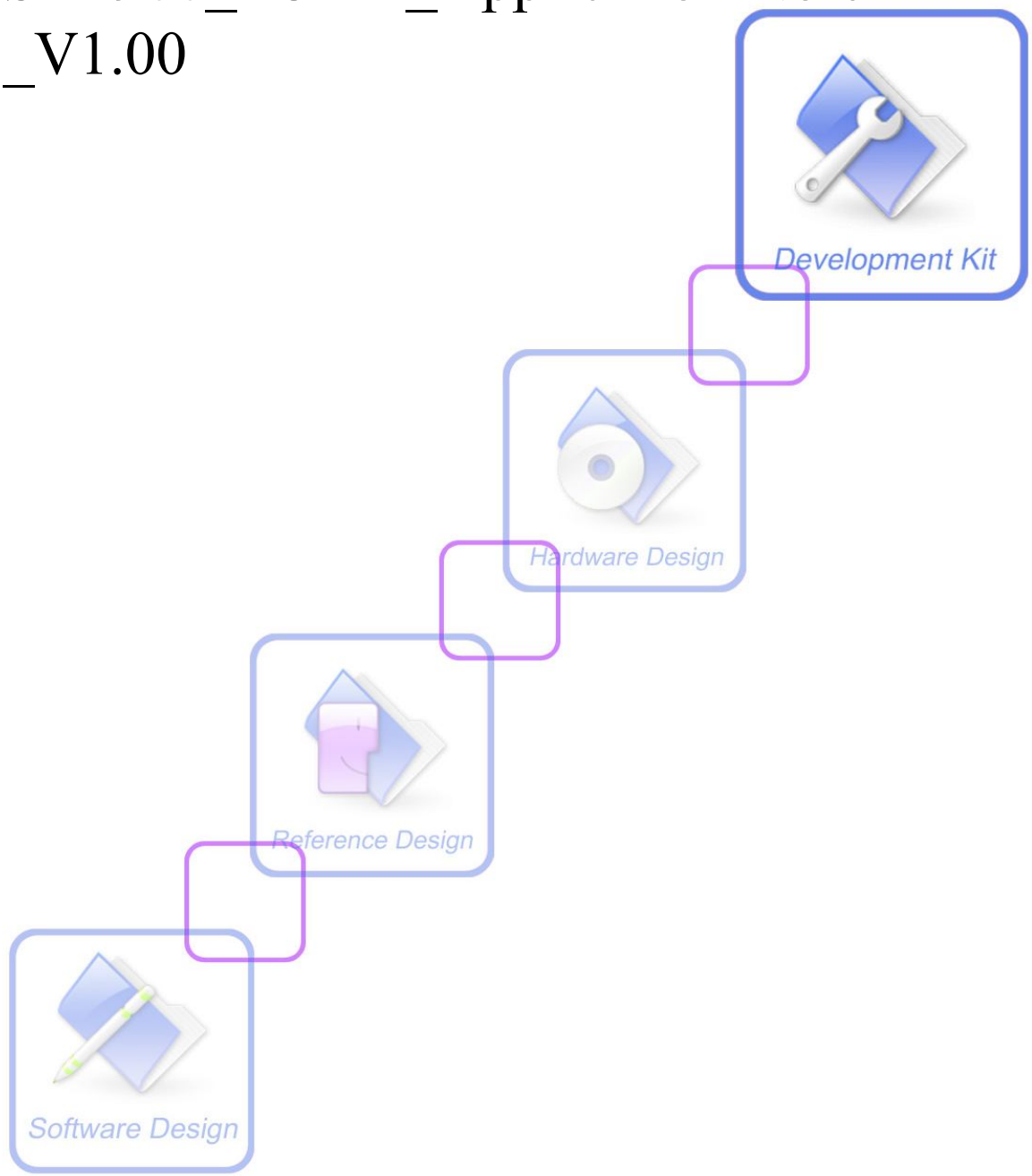
SIM900_FOTA _Application Note _V1.00



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CONTENT

Version history

Date	Version	Description of change	Author
2011-11-21	1.00	Origin	kongfanbing

SCOPE

This document describes how to use the FOTA function of SIM900 through AT commands. Examples are also given for reference. This document can be used for SIM900 serial modules, like SIM900, SIM900D, SIM900B and SIM900A.

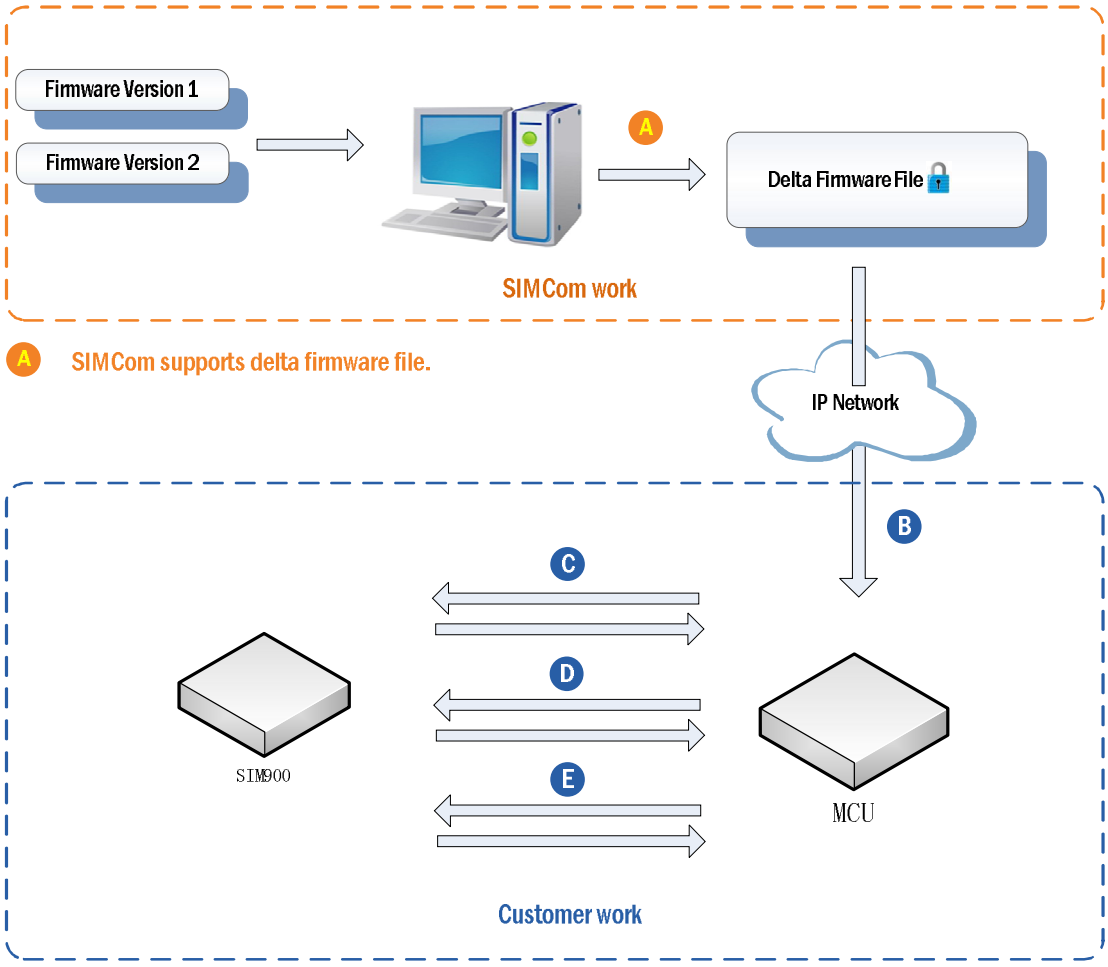
This document is subject to change without notice at any time.

1. Introduction of FOTA Working Method

FOTA is the abbreviation of firmware upgrade Over the Air.

FOTA provides a way which allows device to update the core firmware over the air. Considering the specialty and variety of modern usage, SIMCOM refines the whole FOTA procedure, customers can use ATC interface provided by SIM900, and accomplish SIM900 Firmware upgrading according to their own condition.

SIMCom defines following upgrading process:



B MCU gets the delta firmware file from IP network.

C MCU writes the delta firmware file to the fixed place of SIM900 by AT commands.

D MCU requires SIM900 to update by sending AT commands.

E MCU read the update status by AT commands.

A. SIMCom supports delta firmware file

When customer needs to upgrade the onsite SIM900 Firmware from Version A to Version B, they can send the upgrade requirement to SIMCom via their module provider. SIMCom will provide related delta firmware file according to the information of Version A and Version B provided by customer. The size of the delta firmware file depends on the difference of Version A and Version B.

B. MCU gets the delta firmware file from IP network

Customers usually use MCU to connect with SIM900, therefore customer's MCU needs to get the delta firmware file first. This procedure is diversified, it may be by GPRS， or other methods. If GPRS method is used, customers can consider using FTP, HTTP and other function of SIM900 to download delta firmware file from the customer's server.

If MCU acquires delta firmware file by GPRS method, customer may start a session via SMS or other methods.

Here SIMCom provides an example to acquire delta firmware file by using SIM900 FTP function:

Demonstration	Syntax	Expect Result
Set parameters.	AT+FTPSERV="116.228.221.52"	OK
	AT+FTPUN="sim.cs1"	OK
	AT+FTPPW="******"	OK
	AT+FTPGETNAME="pkg.delta"	OK
	AT+FTPGETPATH="/"	OK
Open the FTP get session.	AT+FTPGET=1	OK
Data are available.		+FTPGET:1,1
Request to read 1024 bytes	AT+FTPGET=2,1024	+FTPGET:2,1024 …… OK
Read data continuously.	……	……..

Data transfer finished.		+FTPGET:1,0

C. MCU writes the delta firmware file to the fixed place of SIM900 by AT commands

MCU writes the delta firmware file to the fixed space of SIM900 flash memory via AT commands, with maximum 8K bytes each time.
If the memory space of customer's MCU is not enough for storing the delta firmware file, Step C can be operated with Step B simultaneously.
Below is an example to write delta firmware file into SIM900 by using GTFOTA command.

Demonstration	Syntax	Expect Result
Initialize FOTA function, full-erase the Data area.	AT+GTFOTA="INIT",1	OK
Use the writing function of GTFOTA command	AT+GTFOTA="WHD",1024, 0, 10000	CONNECT
Write data	…….	OK
Repeat to write data by using GTFOTA	AT+GTFOTA="WHD",1024, 1024, 10000 ……..	…

D. MCU requires SIM900 to update by sending AT commands

After writing the delta firmware file into SIM900 flash memory successfully, MCU should send instruction to module by AT command to start the update. Once getting the instruction, the module will automatically reset itself and then enter FOTA upgrading process. After upgrading finished, the module will restart again automatically.

Demonstration	Syntax	Expect Result
Terminate the FOTA writing function	AT+GTFOTA="TERM"	OK
Set the flag bit for FOTA update, and reset module automatically	AT+GTFOTA="UPD",1	OK

The module enters into FOTA upgrading process, which will last several minutes		update is beginning... …… update is successful... Please wait the module to erase the data area! Erase the data area success!

E. MCU read the update status by AT commands

If upgrading process is finished, the module will restart again automatically. Customer can use AT command to inquire the update result.

Demonstration	Syntax	Expect Result
Inquire the update result by command GTFOTA. 6 means updated and succeeded; 4 means updated but failed	AT+GTFOTA="UPS"	+GTFOTA:6 OK
Inquire the firmware version by AT+GMR	AT+GMR	Revision:1137B10SIM900M64_ST_FOTA_TEST_V2 OK

2. FOTA Related AT commands

This chapter describes AT commands related to FOTA.

AT+GTFOTA FOTA Operation

AT+GTFOTA FOTA Operation	
AT+GTFOTA ="INIT",<mode >	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **"INIT"** Initialize FOTA function，it is mandatory for using reading and writing function of GTFOTA. **<mode>** 0 Not format the data area to be written

	1 Format the data area to be written, it is mandatory for writing data
AT+GTFOTA ="WHD",<length>,<offset>,<timeout>	Response **CONNECT** ….. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **"WHD"** GTFOTA writing function **<length>** The data-length for writing, maximum 8K each time **<offset>** The offset added for writing, not exceeding 320K **<timeout>** Timeout for writing, unit: ms
AT+GTFOTA ="RDD",<length>,<offset>	Response **+GTFOTA: <length>** ….. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **"RDD"** GTFOTA reading function **<length>** The data-length for reading, maximum 8K each time **<offset>** The offset add for reading, not exceeding 320K
AT+GTFOTA ="TERM"	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **"TERM"** GTFOTA termination function, releasing the resources.

AT+GTFOTA ="UPD",<mode >	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters "**UPD**" GTFOTA Set the flag bit for FOTA update <**mode**> 0 Set the flag bit, but module not reset itself to start update 1 Set the flag bit, and module reset itself to start update
AT+GTFOTA ="UPS"	Response **+GTFOTA: <STATE>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters "**UPS**" GTFOTA Inquire the update result <**mode**> 0 not updated 6 updated, succeeded others update failed

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