Contents

GSM Module Progress Report

Summary:

EPTeck has undertaken the development of an application for GSM module integration. As part of the initial testing phase, a breakout board and a chipset were received. At that time, we were developing our own GSM board and I was asked to do testing and development on our custom board. That custom board had the chipset soldered on it which quectel sends us for testing.

Upon testing the application on Quectel's breakout board, certain issues were identified and are elaborated upon in this comprehensive report.

The problem is not just that those are different versions, but response of M95-R in case of larger packets seems to be slow (multimode testing, work in progress) and there were other reported issues some are resolved in updated firmware some issues were still there but I have made our application compatible to both.

Problem 1:

The module received from them was not responding correctly according to my tested firmware, some responses were not up to expectation (according to application note), due to which I couldn't get the HTTP packet from server.

Things I tried:

1. Tried changing the hardware
2. Tested the module I used to develop firmware, it was working fine
3. I programmed both modules using Quectel software so they have the same states of setting
4. Tried again, and the same problem was there; It was working well with the one we have and not working fine on the one I received

Issue Identification:

1. Noticed that on SoC which I was developing it was: "Quectel_M95 **M95FAR02A08**" and the one we recently received is: Quectel_M95R **M95RMAR01A02** *(Please note that there are the one I received was just a chipset which was mounted on our designed PCB)*
2. After debugging for some hours, I noticed that; A AT command that I was using to suppress response codes from GSM was also suppressing TCP notification of receiving packets (It should not do this as in datasheet and applications notes there are different AT commands to control TCP notifications and Response codes and they are not linked). This problem is not faced in the "Quectel_M95 **M95FAR02A08**" version its only in Quectel_M95R **M95RMAR01A02**.

Meetings with Quectel:

1. I discussed the issue with Sir Amir and he immediately contacted quectel's representative, he confirmed that the firmware is not updated/latest on the modules we received and suggest to update the firmware. Meeting with their dedicated engineer was arranged to understand what firmware changes are there in both versions and guide us on how to update the firmware. For the current 25 modules, we have to do it manually but, in the future, they will send us updated versions
2. Saad (Quectel) asked to update the latest firmware to M95-R Module, he provided some application notes and a software to do so. Told me that many bugs are fixed in this firmware, see if that works for you or otherwise you have to make changes on your application side as quectel is meant to deliver this exact pcb to epteck
3. There are many bug fixes in the new firmware but unfortunately, it does not resolve the issue I was dealing with. Upon confirming from Fahad that we are going to use the board from Quectel in the future and confirmation from Saad that Quectel is meant to deliver that board with that same module in the future.

   Important Note: *During these meetings; Saad asked which EVB kit I was using when I informed him about the breakout board, he initially denied that it was developed by quectel. My concern here is just to inform you so that we can make sure its availability in future.*

Solution:

1. We can just change the firmware a little; Some changes in Logic will be done and some parsing addition will solve this problem 1-2 hours of working, no problem at all but it took me many hours to find the root cause.
2. My concern is just that we should get the module that is the latest and in mass production because this was one thing, I tackled maybe there are other changes like that as well or maybe not.
3. Once Confirmed which version we are using I can develop and test firmware using that model

Conclusion:

I came to a conclusion and started changing and testing the firmware according to the module M95-R, However, I didn't want to delay the integration test so I developed a minimal firmware which was tested on RP7 communicating with parse, the firmware side was ok but there were complications on the hardware side. The GSM module while trying to connect and send data was not receiving enough power on start-up and on backup or maybe there the supply is not clean due to which esp32 keeps restarting. Please ask Fahad for more details regarding hardware.

Problem 2:

Upon confirming from quectel that they will send us M95-R and from fahad that we need the PCB from quectel. I completed the compatibility of application with the quectel and tested the HTTP GET POST PUT and other functionalities with parse. After that I moved toward the OTA part. While downloading larger files the response was very slow of Quectel M95-R and sometimes complete packet is not transferred

Things I tried:

1. I tested downloading the OTA file using their own software using M95-R in single profile mode it seems to be working fine. But we can't test multiple profile mode on software due to some limitations (the one we are using and we need to open a connection with more than one server at a time)

Conclusion:

Work is in progress. I wanted to test single mode with our application side as well and see if it works with our application the same way as it worked with their software. If it worked it means there is no problem on our application side if that goes wrong too, it means there are more hidden issues/changings in the M95-R module which is not mentioned in the application note and firmware notes (the issue we faced before was also not mentioned in firmware notes and it should not behave like that according to application notes and my knowledge)

I was working on it but due to a blockage of cellular communication in the past couple of days, I am unable to do so. The commands we need to test only run if connection services are working. However, as you saw with me, the response of Quectel M95-R in the case of large files is not good. Same firmware with the other module M95 FA works great.