



MRM OT User Guide

HPRM1



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Glossary

ARFCN	Absolute Radio Frequency Channel Number
BCCCH	Broadcast Control CHannel
BS	Base Station
CI	Cell ID
DCS 1800	GSM 1800, Digital Communication System
GSM	Global System for Mobile communication
GSM-R	Global System for Mobile – Railway
HMI	Human Machine Interface
IE	Information Element
LA	Location Area
MS	Mobile Station
MRM:	Mobile Radio Module
OT:	Outil de Test : Trace Tool
PBCCH	Packet Broadcast Control Channel
PCS 1900	GSM1900, Personal Communication Service
PLMN	Public Land Mobile Network
RXLEV	Received Signal Level
RXQUAL	Received Signal Quality
SCH	Synchronization Channel
SI	System Information
TBF	Temporary Blok Flow
TTR	Traces Temps Réel: proprietary trace system.
VBS :	Voice Broadcast Service
VGCS:	Voice Group Call Service

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Overview

A GSM-R Network monitoring feature can be activated on MRM to record GSM measurement and Layer 3 protocol messages. Serving and Neighbors cells parameters are collected periodically in idle mode, listener mode and dedicated mode whereas layer messages are logged synchronously.

The feature offers a record mode and a live tracing mode. Depending on the selected mode, collected data can be stored into MRM internal memory of 10 MBytes and recovered later by FTP/ USB link or if live tracing mode is selected then the data are transmitted in real time on Ethernet/USB interface to a connected computer.

This feature uses a proprietary but fully documented protocol allowing the user to either use SierraWireless dedicated application or build its own tool.

Purpose of this document is to help user to configure and handle the OT Feature on MRM.

List of References

- [1] 2174004 SGCM HPRM1 OT interface protocol specification
- [2] SCOT User Manual
- [3] 5620.1 - 154 - 72222 - MRM GPRM1 User Guide - Ed 01.doc

3. Generalities

3.1. Communication Mode

There are three different sets of GSM parameters to trace, depending on the following communication modes:

- **Idle mode:** Default mode when no communication is ongoing.
- **Dedicated mode:** mode when a communication is ongoing.
- **Listener mode:** mode specific to ASCII feature, when the user is listener in a group/broadcast call.

3.2. Tracing Mode:

The MRM OT can be configured according to environment constraint of the trace session. It can be connected to a PC for Live Tracing experience or run in standalone mode (Recording mode).

Live Tracing: OT traces are sent in real time to a connected port (USB or Ethernet). It requires a dedicated application on PC side to collect, decode and monitor Data stream.

Trace Recording: OT traces are stored into a MRM flash memory zone. Its size is 9 437 184 bytes. On MRM HPRM1 an SDCARD could be optionally used in the future to increase internal memory capacity in this mode.

Trace File Transfer: Once recording session is over, the content of the trace file can be recovered from MRM memory either on Trace link or by FTP. This file could be decoded and analyzed by the dedicated PC tool.

3.3. Trace Protocol

Sierra Wireless uses for OT Feature a proprietary fully documented protocol to decode the trace frame. Protocol allows future evolution for additional requirement. See [1] for a complete understanding of the protocol and decoding rules for each GSM Field.

In current protocol version 1.2 the MRM OT Feature delivers 6 kinds of report:

- Layer 1 Report,
- MM Report
- RR Report,
- Message Layer 3
- AT Log,
- Trace Information

A Simple filtering system allows to select what kind of report to activate in order to decrease memory footprint especially in record mode.

Some customers may prefer developing their own PC tools instead of using the one provided by Sierra Wireless in order to interface directly with MRM OT feature. To do so a basic overview of OT protocol is necessary before reading “2174004 SGCM HPRM1 OT interface protocol specification” document. OT Feature uses two distinct protocols on two separate COM port if USB is used, on the same COM port if serial link is used.

- o The bidirectional STMA protocol that controls the features is the protocol used by Scot to start, stop, add marker, configure clock, get information, start the downloading, checking Memory usage. This STMA stream is associated to “modem” Com port.
- o The unidirectional Real Time Trace OT protocol is used to output OT trace on a dedicated “Trace” Com port

3.4. PC GSM-R Trace Tool

A PC Tool called SCOT has been specially developed to provide an ergonomic, easy to use and complete toolbox to handle trace feature and analyze network information collected during a trace session.

Tool's main features are listed below. Further details are available in dedicated chapter.

- Control of the MRM Trace feature.
- Trace file recovering, decoding and recording in clear text.
- Online and Offline trace analysis tool with dedicated screen and toolbox
 - o Periodic Layer 1 report Tab
 - o Layer 3 protocol messages with decoding facilities
 - o Graphical Signal Strength level representation.
 - o AT Log Screen

3.5. OT feature specificities on GPRM1 versus HPRM1

	GPRM1	HPRM1	Comments
Interface			
Ethernet	☒	☒	Front
Usb	☐	☒	Front
Monitoring Capacity			
Cell ID	☒	☒	Serving Cell and 6 Neighbors (N/A for neighbors in dedicated mode)
BCCH	☒	☒	Serving Cell and 6 Neighbors
BSIC	☒	☒	Serving Cell and 6 Neighbors
BCCH	☒	☒	Serving Cell and 6 Neighbors
RxLev	☒	☒	Serving Cell and 6 Neighbors
C1 and C2	☒	☒	Serving Cell and 6 Neighbors
Neighbor position	☒	☒	
Rxqual	☒	☒	Depend on communication state
Timing Advance	☒	☒	Depend on communication state
TCH	☒	☒	Depend on communication state
Time Slot	☒	☒	Depend on communication state
Layer 1 report Periode	☒	☒	2 s in idle, 500ms in dedicated mode
LAC	☒	☒	
MNC	☒	☒	
MCC	☒	☒	
Layer 3 messages	☒	☒	
AT command	☒	☒	
Internal clock Time stamp	☒	☒	Tdma Tick (4,615ms)
Storage Capacity			
MRM Internal Memory	☒	☒	
type	NOR Flash	NOR Flash	
Capacity	10MBytes	10Mbytes	Depend on Trace Filter ~ 10 hours of L1 report for example
Recover by FTP	☒	☒	
SDCARD	☐	☒	Hardware capable on HPRM1 but Not available on current software version.
PC Tools			
Graphical presentation	☒	☒	
Report in clear text	☒	☒	

3.6. Trace Information Summary

	Info	mode IDLE	mode DEDICATED	mode LISTENER
Serving cell	Band Indicator	L1 REPORT	L1 REPORT, RR REPORT	L1 REPORT, RR REPORT
	BCCH	L1 REPORT	L1 REPORT, RR REPORT	L1 REPORT, RR REPORT
	NCC	L1 REPORT	L1 REPORT, RR REPORT	L1 REPORT, RR REPORT
	BCC	L1 REPORT	L1 REPORT, RR REPORT	L1 REPORT, RR REPORT
	CI	L1 REPORT	L1 REPORT	L1 REPORT
	MCC (digit 1,2,3)	MM REPORT	MM REPORT	MM REPORT
	MNC (digit 1,2,3)	MM REPORT	MM REPORT	MM REPORT
	LAC	MM REPORT	MM REPORT	MM REPORT
	Measurements for cell reselection			
	C1	L1 REPORT	NA	L1 REPORT
	C2	L1 REPORT	NA	L1 REPORT
	RXLEV (RLA_C)	L1 REPORT	NA	NA
	DSC	L1 REPORT	NA	NA
	DSC Max	L1 REPORT	NA	NA
	Channel description			
	TS	NA	L1 REPORT, RR REPORT	L1 REPORT, RR REPORT
	TCH / Hopping mode	NA	L1 REPORT, RR REPORT	L1 REPORT, RR REPORT
	Timing Advance	NA	L1 REPORT	NA
	Power Level	NA	L1 REPORT	NA
	channel mode	NA	RR REPORT	RR REPORT
	channel type	NA	RR REPORT	RR REPORT
	subchannel	NA	RR REPORT	RR REPORT
	MAIO	NA	RR REPORT	RR REPORT
	HSN	NA	RR REPORT	RR REPORT
	MA frequency list	NA	RR REPORT	RR REPORT
	Radio link control (handover in dedicated mode, cell resel in listener mode)			
	RXLEV-SUB	NA	L1 REPORT	L1 REPORT

	RXQUAL-SUB	NA	L1 REPORT	L1 REPORT
	RXLEV-FULL	NA	L1 REPORT	L1 REPORT
	RXQUAL-FULL	NA	L1 REPORT	L1 REPORT
	RXLEV-BCCH	NA	L1 REPORT	L1 REPORT
	Radio Link Counter	NA	L1 REPORT	L1 REPORT
	Radio Link Timeout	NA	L1 REPORT	L1 REPORT
Neighbouring cells	BCCH	L1 REPORT	L1 REPORT	L1 REPORT
	NCC	L1 REPORT	L1 REPORT	L1 REPORT
	BCC	L1 REPORT	L1 REPORT	L1 REPORT
	CI	L1 REPORT	NA	L1 REPORT
	Same LA identifier	L1 REPORT	NA	L1 REPORT
	Cell Barred	L1 REPORT	NA	L1 REPORT
	Measurements for cell reselection			
	C1	L1 REPORT	NA	L1 REPORT
	C2	L1 REPORT	NA	L1 REPORT
	RXLEV (RLA_C)	L1 REPORT	NA	NA
	Radio link control (handover in dedicated mode, cell resel in listener mode)			
	RXLEV	NA	L1 REPORT	L1 REPORT

4. Working with Network Monitoring Feature

Almost each control of the Network Monitoring feature is possible through three different interfaces. This let the user to choose the most suitable way for its need

Control	Interface	Comment
Sierra Tool	Java Tool GUI (SCOT)	Sierra Wireless Java application for PC
Customer Tool	STMA protocol	Let the user develop its own Tool by implementing STMA protocol
	.bcs Parameter file to download	No Need to connect a host to control the feature.
FTP Client	Ethernet	Useful to access MRM internal Memory only for Read or Delete

4.1. Trace Feature activation

Feature is automatically activated depending on MRM Software release downloaded into a given product. Upgrading an MRM with OT Release is a prerequisite before being able to use the trace mode. The OT Software release naming rules are as follow: Bx5_YY_OT_20200006.bcs.

x: indicates MRM HARDWARE version :

W = ERTMS GPRM1,

M = TDMA GPRM1

E = ERTMS HPRM1

L = TDMA HPRM1

YY: specifies the Major and minor version Formal release

For example BE5_FC_OT_20200006.bcs is an ERTMS HPRM1 release including OT Feature with the same level of Software as the formal release BE5_FC. The software version returned by ATi3 command will be same as for equivalent Formal release, i-e ATi3 = BW5_FC on a MRM upgraded with BW5_FC_OT_20200006.bcs.

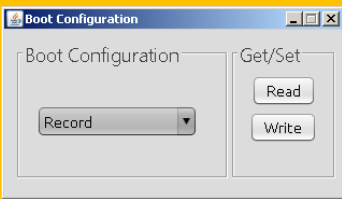
Trace Feature Activation has no effect until a start trace command is received by the MRM.

4.2. Trace activation at startup

Trace recording (or Live tracing) can be activated at start up using a specific field in flash memory. This is interesting only when no external connection is possible during the trace session.

Flash is written sequentially, the recording stops when the flash memory is full.

If a record session is stopped in the middle of the memory, the next record starts where the previous record stopped.

Interface	Procedure
Java Tool GUI	1. Go to Boot Config Menu 2. Select Record  3. Click the Write Button Reboot the MRM
Stma protocol	1. Send the STMA Command <code>BOOT_TRACE_MODE</code> with parameter set to Live Tracing or record mode. 2. Reboot your MRM 3. Live tracing or record mode depending on step1 is automatically started at startup 4. Send the STMA <code>TRACING_STOP</code> command
Parameter File	1. Download the parameter file <code>OT_Activate_Boot_Live_Trace.bcs</code> or <code>OT_Activate_Boot_Recording.bcs</code> to activate live tracing or recording on boot. 2. Reboot your MRM 3. Live tracing or Recording is automatically started at startup.

There is 3 ways to stop the record session:

1. Connect the MRM with the Java Too GUI (USB or Ethernet) and to choose to stop the session.
2. Wait for the flash memory is full
3. Download parameter file `OT_DeActivate_Boot_Trace.bcs`

Important:

If MRM is switched off during a record session, the recording will restart at next startup

FTP dump is not available during recording.

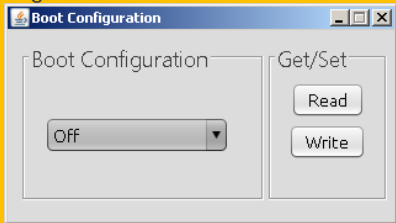
Therefore if no USB or Ethernet link is available, it is recommended to **wait until the full memory is filled**. In that way, the record is stopped safely (it takes approximately 10 hours to fill the memory).

In case MRM is switched off during a record session:

A mechanism is implemented to keep the flash memory in a valid state and preventing from dumping invalid data. At next startup, the current sector in write access is erased (*). The Write Pointer is set to the beginning of this sector.

(*) The flash memory is divided in 128 KB sectors. It is not possible to erase less than one sector at a time.

To deactivate the trace at startup:

Interface	Procedure
Java Tool GUI	1. If a record session is running, Scot will ask ""Do you want to stop recording?", click yes button 2. Go to Boot Config Menu  3. Select Off 4. Click the Write Button 5. Reboot the MRM 6. No trace session will start
Stma protocol	1. Send the STMA TRACING_STOP command 2. Send the STMA Command BOOT_TRACE_MODE with parameter set to Off 3. Reboot your MRM 4. No trace session will start
Parameter File	1. Download the parameter file <i>OT_DeActivate_Boot_Trace.bcs</i> to deactivate live tracing or recording on boot. 2. Reboot your MRM 3. No trace session will start.

4.3. Insert a Marker.

While recording the trace or during live tracing, it is possible to insert markers to indicate milestones in the Trace. The Markers are automatically incremented (first index is 1 and maximum index is 99).

This counter is reset when:

- The Record Tracing mode is stopped or The Trace Record is reset.
- The Live Tracing mode is activated.
- The Trace Tool feature is deactivated.

The Markers will appear in the stored trace with a normalized format, for instance:

```
...  
#Marker_01  
...  
#Marker_02
```

Interface	Procedure
Java Tool GUI	Click on Marker button. 
Stma protocol	Send INSERT_MARKER
Parameter File	NA.

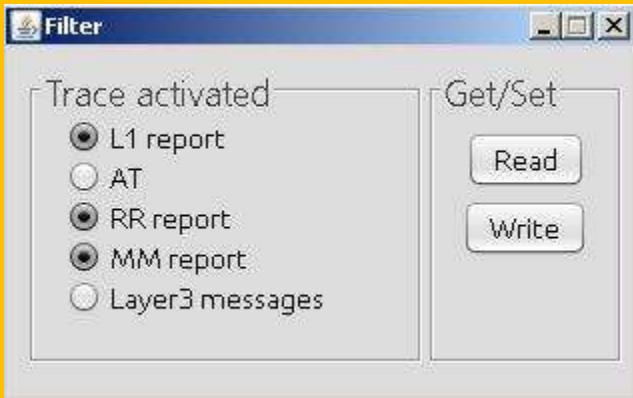
4.4. Set Trace Filter

5 kinds of OT Traces can be activated independently. The main interest is to save memory and increase session duration in record mode.

- L1 Report
- RR Report
- MM Report
- Layer Messages
- AT

No operation should be running, otherwise the SET_TRACE_FILTER command is rejected.

This command takes effect immediately, no need to restart the MRM. The trace filter information can be found in the response to GET_TRACE_INFO command.

Interface	Procedure
Java Tool GUI	Pick radio button in Filter submenu. And use the Read Write button to read or update current configuration. 
Stma protocol	Read current configuration with GET_TRACE_INFO command Send SET_TRACE_FILTER Stma command with the Filter configuration.
Parameter File	Download one of the <i>OT_Filter_xx.bcs</i> parameter file.

File Name	L1	MM	RR	Layer Msg	AT
<i>OT_Filter_L1_AT.bcs</i>	YES	NO	NO	NO	YES
<i>OT_Filter_L1_MM_RR_AT.bcs</i>	YES	YES	YES	NO	YES
<i>OT_Filter_LAYER_AT.bcs</i>	NO	NO	NO	YES	YES
<i>OT_Filter_L1_LAYER_AT.bcs</i>	YES	NO	NO	YES	YES

4.5. Set Horodate

MRM is not able to keep an updated when it is switched off. In order to record the right time information into the traces, it is necessary to synchronize the host time with the MRM RTC. So the first think to do before starting any tracing operation is to set horodate to update MRM Hour. The hour of the OTTraces.bin can differ from local PC Time, because of Daylight Saving Time issue

Interface	Procedure
Java Tool GUI	Click clock button on Tool menu bar  Clock
Stma protocol	SEND_HOST_HORODATE command with local time correctly configured
Parameter File	NA

4.6. Live Tracing Mode

4.6.1. Start/Stop Live session

This **Live Tracing** mode configures the MRM to send in real time the GSM parameters to a PC interface. It allows the user to directly monitor on a PC the GSM parameters in Idle, Dedicated or Listener modes and to save these parameters on the PC.

This mode is totally independent from the Trace Record mode: the GSM parameters are not stored in MRM memory.

The GSM parameters are displayed and stored in a log file on the PC via the specific application. It is refreshed every 2 seconds in idle mode and every 500ms in dedicated and listener modes, with no limitation of time or memory.

The Trace Tool feature has to be activated before using this mode and MRM shall be connected to a PC. Selecting the **Live Tracing** option will enable the **Start** button mode.

Interface	Procedure
Java Tool GUI	Select Live tracing mode in option Menu.  Push the start/stop button. 
Stma protocol	Send LIVE_TRACING_START then STMA Frame TRACING_STOP.
Parameter File	NA

4.6.2. Output files generated by the Java Tool GUI

After a live tracing, two files are created on the host, [date]Live.bin and [date]Live.txt, with [date] equals to the current host date. The .bin file contains the raw traces in binary and the .raw file is an exact copy of the log part.

After a dump, only the binary file is created and it can be decoded in the Tool GUI.

4.6.3. Select trace Link

As briefly explained in chapter §3.3 Trace protocol, OT feature requires Two separate port, one for controlling the feature and the other for receiving OT traces. User can connect USB or Ethernet on Front plane to monitor the Feature. If both cables are plugged then USB has priority over Ethernet.

Once the Trace Tool feature is activated, plugging micro USB cable on MRM will emulate two serial COM ports :

- TRACE port: This port is dedicated to get the trace data from the MRM (i.e. Trace Record or real time traces)
- MODEM port: This port is dedicated to send and receive commands to/from the MRM

Ethernet uses the TCP protocol.

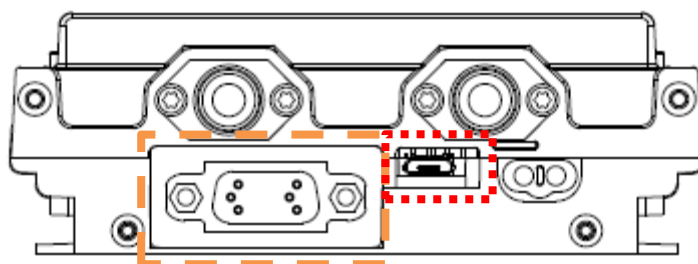
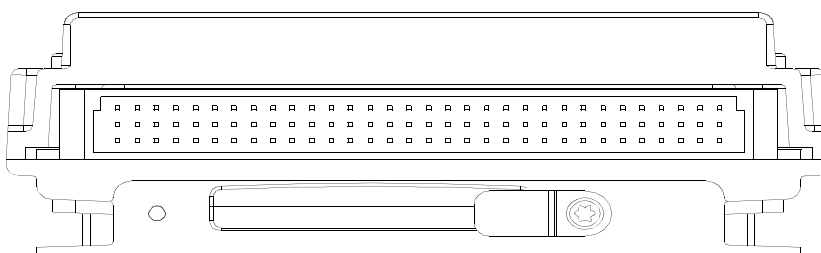


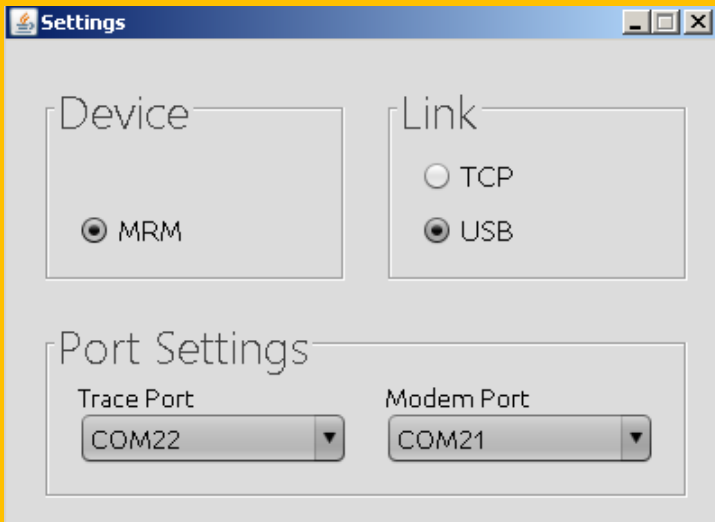
Figure 1: MRM front view

4.6.3.1. Trace over 96pin Serial trace link

OT feature can be configured over serial com port on the 96pin back plan connector. This mode is supported by the MRM but not taken into account by Scot PC Tool, indeed this interface is generally not accessible by an external Tool when MRM is plugged inside a CAB Radio.

However user can decide to develop its own application inside the CAB radio to control and collect data from OT feature following implementation rules details in [1]. In that case, a dispatcher must be developed on the host, as both traces and commands are sent on the same Serial Port.



Interface	Procedure
Java Tool GUI	Configure the link in Option/Settings Sub menu. 
Stma protocol	NA. Link depend on which physical interface is connected (USB or ETHERNET TCP)
Parameter File	NA. Link depend on which physical interface is connected (USB or ETHERNET TCP)

Ethernet connections are established on TCP Port 9999 for traces and TCP Port 9998 for STMA.

The USB connection has the higher priority. So USB cable must be unplugged in order to establish the TCP connections.

Link Used	USB plugged	Ethernet plugged
USB	YES	YES
ETHERNET	IMPOSSIBLE	YES

4.7. Record tracing mode

The Record Tracing mode allows a user to store the GSM parameters within the MRM.

Reports are saved periodically, every 2 seconds in idle mode and every 500ms in dedicated and listener modes whereas layer 3 messages are logged synchronously within the MRM memory (NOR Flash).

The duration of trace recording depends on the communication mode and on trace filter selected. The Trace Tool feature has to be activated before using this mode.

4.7.1. Start / Stop recording

There is one single Trace Record file with a limited size of 9Mbytes.

It is possible for the user to start and stop the trace recording as much as needed, the Trace Record will be sequentially filled up and the history of the previous recordings will not be impacted.

Each beginning and end of traces session is clearly indicated in the final output file with specific tags and timestamps.

User can repeat the same steps until the trace file is full. New traces are added at the end of the file.

There is no circular buffer which means that when the memory is full the record session will stop and user cannot record a new session until the memory has been reset. The file Size is updated during recording. Because of MRM implementation, the file size is incremented by 8 Kbytes steps.

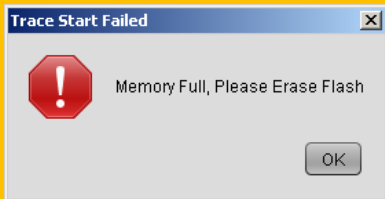
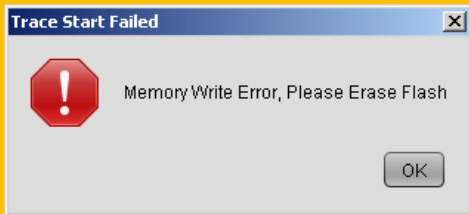
Interface	Procedure
Java Tool GUI	Select File Recording mode. Push the Record/stop button.  
Stma protocol	Send TRACE_RECORD_START stma command Send TRACE_RECORD_STOP
Parameter File	NA

4.7.2. Mandatory erase cases

In order to start a new live session, user **must** erase the MRM File in these two cases:

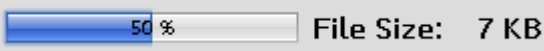
- Memory is full
- Memory write Error: incoherency between the write pointer and the flash content

These two errors may be displayed after a record start.

Interface	Procedure
Java Tool GUI	Error popup is displayed after the Record Button is clicked:  Or 
Stma protocol	after START_RECORD stma command is sent, received status = 0x05, Memory Full or status = 0x07, Write error
Parameter File	NA

4.7.3. Reset the trace record

Trace recording must be stopped before deleting the trace file.

Interface	Procedure
Java Tool GUI	Select Erase Button on File Recording menu bar.  Erase Wait for complete memory erase operation.  
Stma protocol	Send TRACE_RECORD_RESET stma command
Parameter File	MRM Software + Logical Units + OT parameters with File Descriptor=0

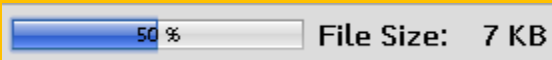
Interface	Procedure
FTP	Connect FTP client to MRM FTP server Delete Trace file OTTRACE.bin toward FTP Client interface. FileZilla for example

4.7.4. Getting File size

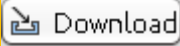
The Flash memory is NOR, mirror bit technology. Each word has to be erased before programming. The Flash memory is about 10 Mo size. Exact size is 9 437 184 bytes: 72 sectors, each sector's size is 128 KB.

During recording, GET_TRACE_INFO returns the **current size** so it's possible to draw a progress bar in an application. The progress bar is reflecting memory occupation for the whole flash and the file size is always displayed near the progress bar.

The horodate of the file is stored in MRM memory each time a recording is started. This information is provided to FTP client and in the GET_TRACE_INFO response.

Interface	Procedure
Java Tool GUI	During recording, The progress bar is reflecting the memory occupation of the whole flash 
Stma protocol	Send GET_TRACE_INFO stma command
Parameter File	NA
FTP	Connect FTP client to MRM FTP server. The File size is displayed near OTTRACE.bin in FTP Client interface, FileZilla for example

4.7.1. Recover Record trace file

Interface	Procedure
Java Tool GUI	Select Dump Trace File mode  Dump MRM internal Memory by clicking  Wait for complete file download :  File Size: 1 KB
Stma protocol	Send TRACE_RECORD_TRANSFER_START stma command
Parameter File	NA
FTP	Connect FTP client to MRM FTP server Copy Trace file OTTRACE.bin to PC directory toward FTP Client interface.

4.7.1.1. Connect FTP client to MRM FTP server

FTP Can be used to download a new software from host to MRM or to transfer the OT Trace File from MRM to host. Free software like Filezilla FTP client can be used for example.

To connect your FTP client to MRM FTP server :

Default IP address is : 10.10.10.03

Login: mrm

password: mrm

When connected to MRM server, user have access to 3 directories:

- firmware (for downloading a new software)
- journal (for future use)
- otraces (this is where you can get the OT trace file OTTraces.bin)

Note: the file OTTraces.bin is displayed only if the trace file is not empty and if there is no OT operation running.

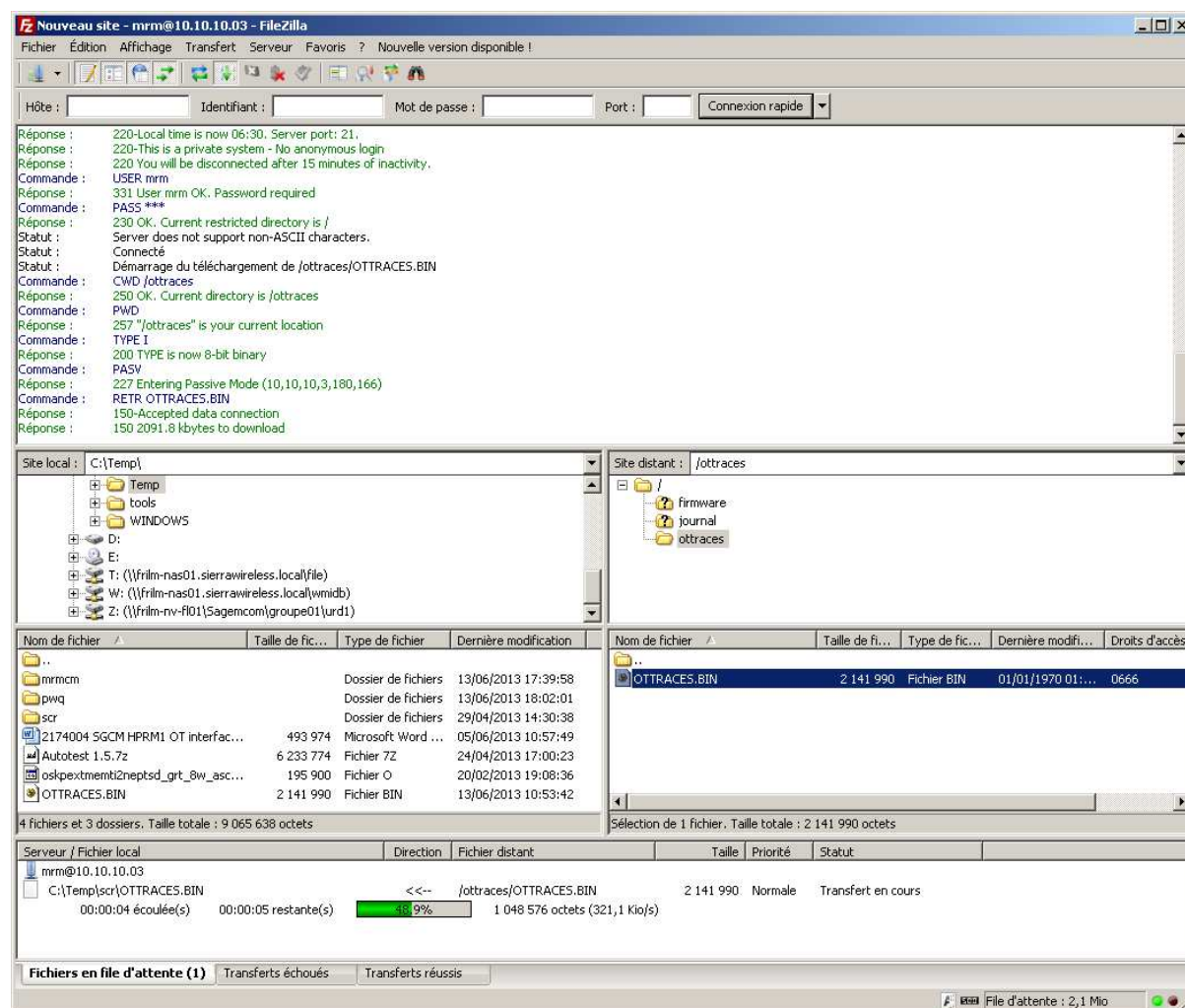


Figure 2: FTP transfer with Filezilla

4.8. Restrictions

4.8.1. Serial Link

If a Serial link is used, a dispatcher must be developed on the host, as both traces and commands are sent on the same Serial Port.

4.8.2. Master/Slave Command/Response STMA Protocol

The MRM is seen as a slave and the host is the master. It means that the MRM will never send any message from his own initiative.

GET_TRACE_INFO command can be sent at any time to get the current state or the remaining free memory and others information. This command can be used in a polling process.

4.8.3. Ethernet Link (TCP)

- Ethernet link is operational one minute after startup. The connection cannot be established before.
- If the Ethernet cable is unplugged during a trace session, the connection is not lost from the MRM point of view. So if the socket is closed on the host, the MRM won't accept any other TCP client and it has to be restarted to establish the connection again.
- USB Cable must be unplugged to be able to use TCP link

4.8.4. Mono Operation

Only one operation can be performed at a given time. For example it's not possible to start a recording and to start a live tracing at the same time.

5. PC interface

5.1. Serial COM ports via USB

Prerequisites:

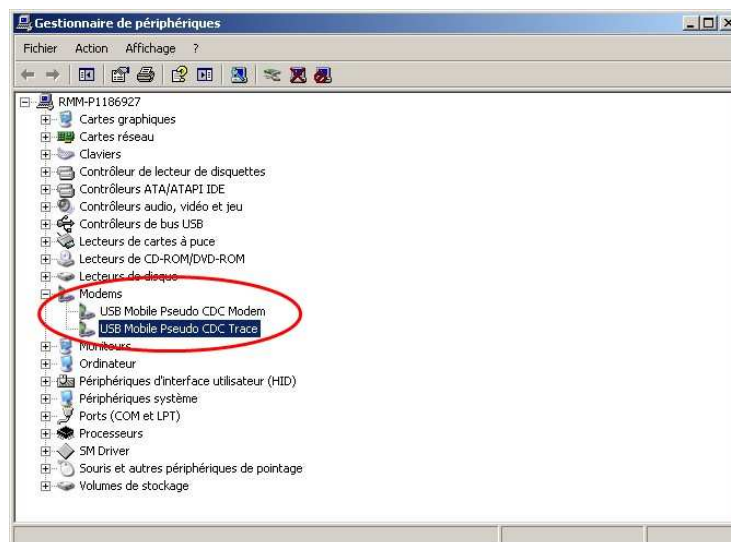
1. Make sure that the latest SAGECOM USB driver is properly installed on your PC
2. Check that the Trace Tool feature is activated on the TiGR (Icon “TR” is displayed in Idle screen)
3. Plug the MRM to PC via the provided USB cable
4. Check the COM ports (see below the “Link setup” part)
5. Open the PC application SCOT

Link setup:

Once the Trace Tool feature is fully activated, two serial COM ports via USB are created:

- TRACE port: This port is dedicated to get the trace data from the MRM (i.e. Trace Record or real time traces)
- MODEM port: This port is dedicated to send commands to the MRM

Check with the Windows Device Manager that the two COM ports are correctly set and note the number of the TRACE port:



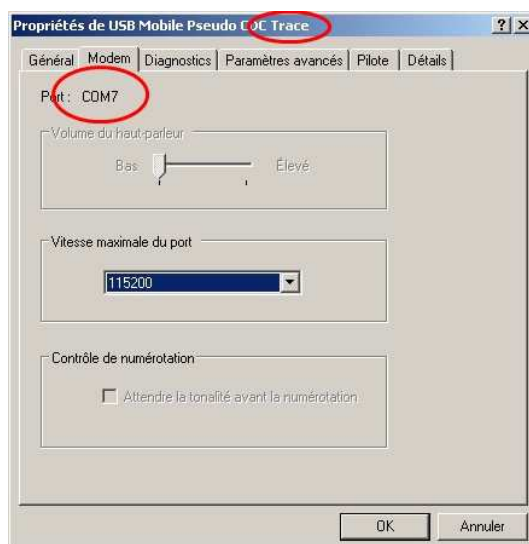


Figure 3: Example of COM port configuration on Windows

5.2. SCOT PC Software

Scot is a PC application specifically designed for easily handling the Trace Tool feature of the MRM.

It allows a user to:

- Upload the OT Trace Record from the MRM to a file on the PC with a text format easy to analyze.
- Monitor in real time the GSM-R parameters of trace on a PC screen with a clear graphical presentation in form of chart, log and table.
- Analyze the raw file of OT or AT trace.

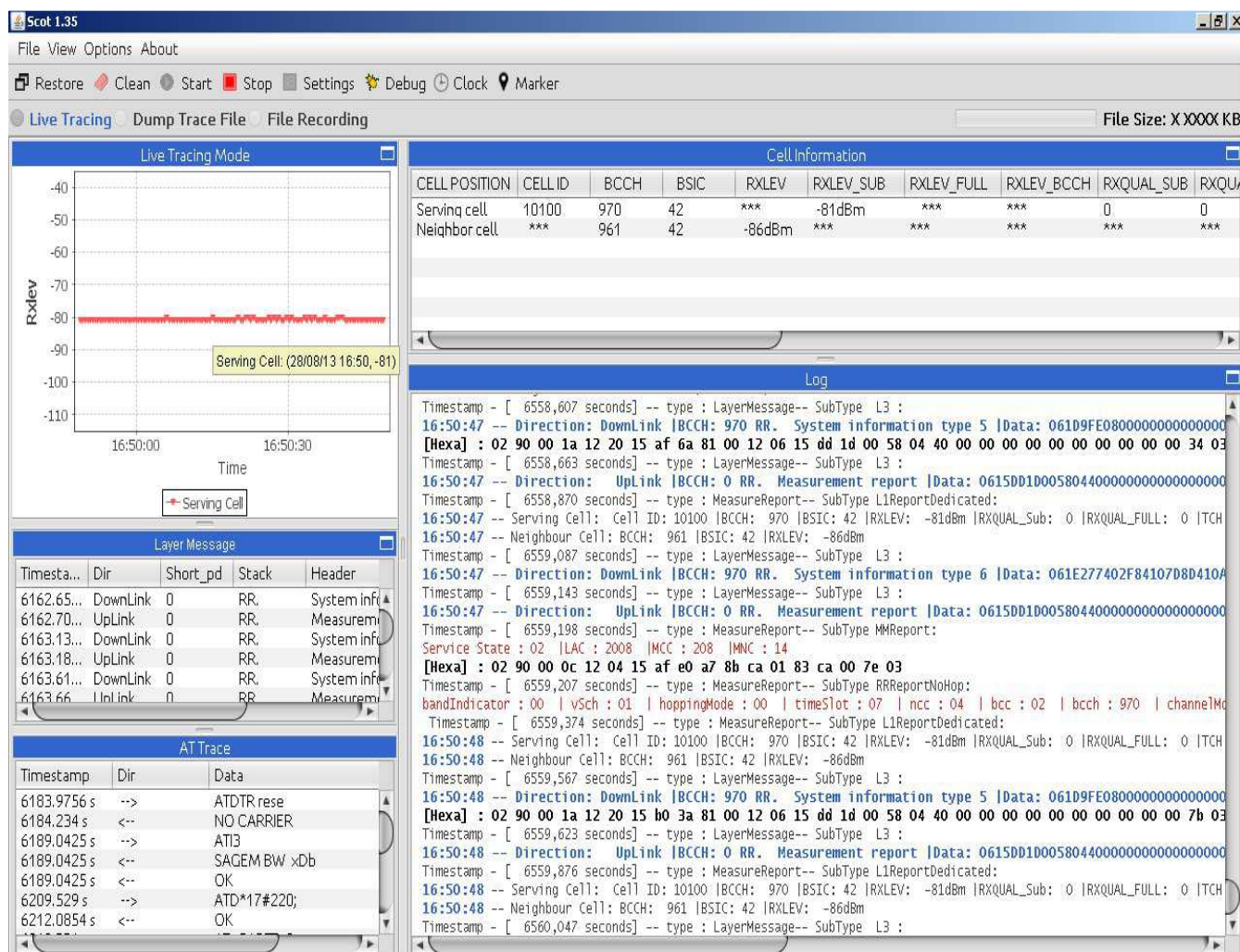


Figure 4 SCOT Software GUI