Telit GM862 Product Description

Contents

1 Overview

Aim of this document is the description of features, functions and interfaces of the **Telit GM862 module**.

The **Telit GM862 module** is a small, lightweight and low power consumption device that allows digital communication services wherever there is a GSM 900 and DCS 1800 network

The **Telit GM862 module** is the first of a new generation line of wireless telecommunication modules specifically designed and developed by **Telit** for OEM usage and dedicated to voice and telematics applications such as:

- **Telemetry and Telecontrol (SCADA applications)**
- **Security systems**
- **Vending machines**
- **POS terminals**
- **PDAs**
- **Phones and Payphones**
- **Automotive applications and Fleet Management**

The **Telit GM862 module** will evolve in future in order to face the competitive telecommunication market requirements supporting the new incoming standards:

- **GPRS Class B**
- **Compliance to PCS standard (1900 MHz)**
- **Bluetooth support**
- **GPS embedded functionality**
- **Support to Satellite voice and data communication (Globalstar System)**

Telit **GM862 Module Pin-to-Pin Upgrade Policy** will enable you to include in your application the new **Telit GM862 module** versions, allowing you to save your investments and to successful penetrate new markets.

Moreover, Telit is the only world mobile's manufacturer that produces Satellite ETSI standard compliant telecommunication modules (Globalstar System) compatible with the **Telit GM862 module**; (for more info on Globalstar system see www.globalstar.com; for more info on Telit Globalstar telecommunication modules see www.telital.com and www.GM862.com).

In areas where the GSM system is not accessible or the application requires a back-up solution, Globalstar system provides reliable voice and data telecommunication compliant to the ETSI standard.

By developing your application with the **Telit GM862 module** you will be capable to simply extend it, if required, to satellite compatible. Your application will even work if no GSM network is available).

In order to meet the competitive OEM and vertical market stringent requirements, Telit supports its customers with a dedicated **GM862 Module Support Policy** with:

- a **Developer Kit** (see par 4, Developer Kit: GM862-S)to help you develop you application;
- a dedicated Website (www.GM862.com) with all updated information available;
- an **Application Module** for your **Telit GM862:** in this configuration (namely **Telit GM862-S1** see par.3, Application Board: GM862-S1) the module has the Full ETSI Type Approval and does not require any other certification effort and expenses (see par 7, Type Approval Issues);
- a **Full Quality Certification Laboratory**, to support you in case your application requires additional certification effort to comply with the European or International laws (see par.7, Type Approval Issues
- a high level specialist technical support (see par.8, GM862 Technical Support) to assist you in your development;
- free SW releases upgrade download (via the Website) every time a new functionality will be added to the **Telit GM862 module** SW.

For more updated information concerning product Roadmap and availability, technical characteristics, commercial and other issues please check the **Telit GM862 module** dedicated Website www.GM862.com or mail to:

ts-gm862@telital.com , for any **Technical** information or support you may need
ci-gm862@telital.com , for any **Commercial**, sales or marketing related info
af-gm862@telital.com , for **After Sales** issues

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*NOTE: Some of the performances of the **Telit GM862 module** depend on SW version installed on the module itself. In particular on Chapter 6, dedicated to the supported AT commands, the minimum SW version required to support each specific AT command is reported.*

*The **Telit GM862 module** SW group is continuously working in order to add new features and improve the overall performances. From time to time that a new SW version is releases, it will be freely distributed by the **Telit GM862 module** dedicated Website*

*The **Telit GM862 module** is easily upgradeable by the developer using the **Telit GM862 module** Flash Programmer.*

*For more info about this topic (and not only !) please check **Telit GM862 module** dedicated Website www.GM862.com.*

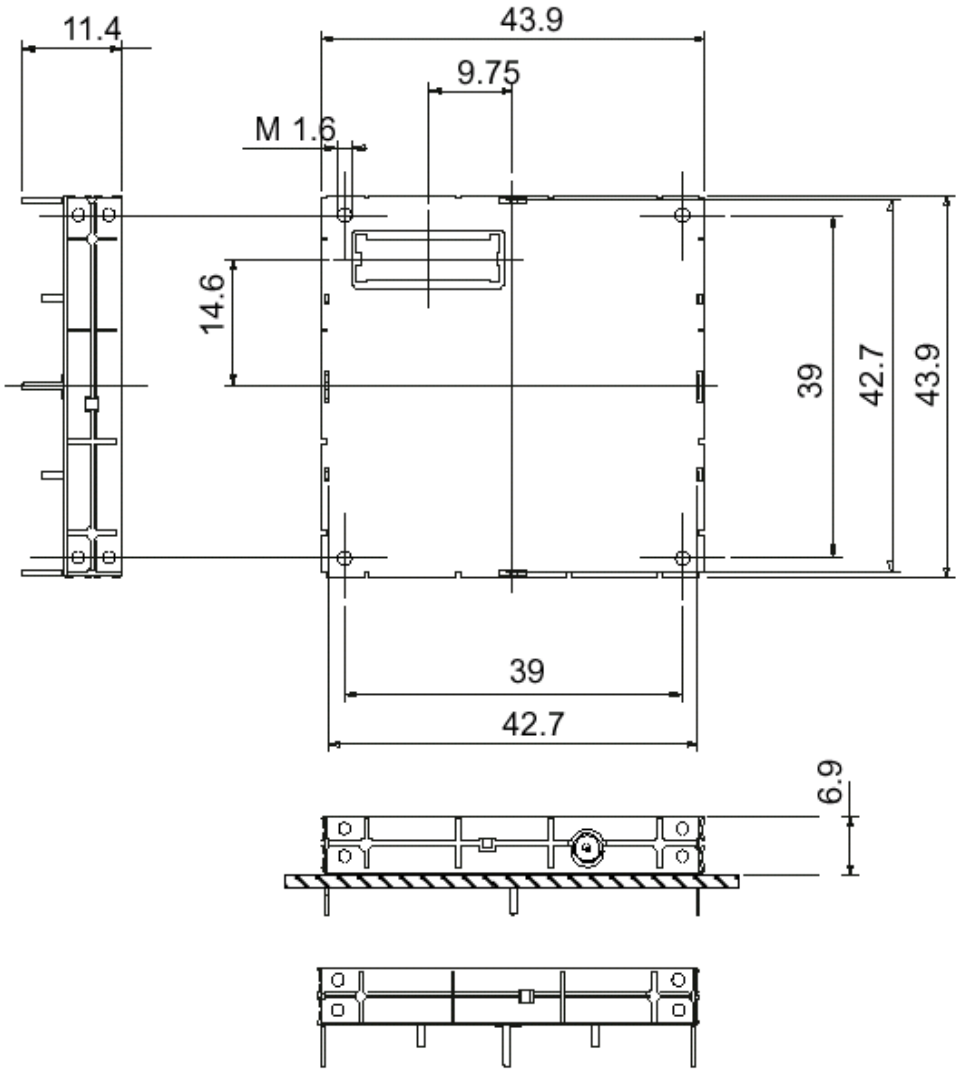
2 General Product Description

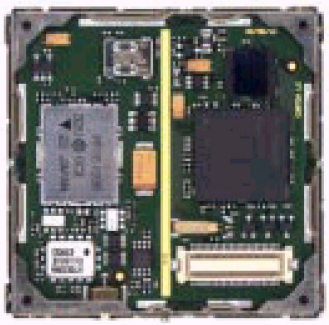
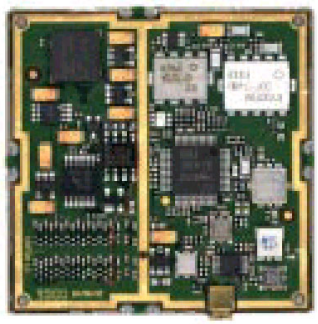
2.1 Dimensions

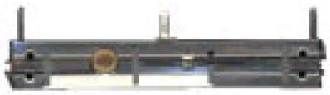
The Telit GM862 module overall dimension are:

- **Lenght:** **43.9 mm**
- **Width:** **43.9 mm**
- **Thickness:** **6.9 mm**
- **Volume:** **≅ 13 cm^3**

The layout of Telit GM862 module is shown in the following figure:



2.2 Weight

The Telit GM862 module weight is **20gr** with shield and **11gr** without shield.

2.3 Environmental requirements

The Telit GM862 module is compliant with the applicable ETSI reference documentation GSM 05.05 Release1999 ETSI EN300910 V8.4.1

2.3.1 Temperature range

- Temperature in normal functional conditions –10°C ÷ +55°C
- Temperature in extreme functional conditions* –25°C ÷ +65°C
- Temperature in storage conditions –40°C ÷ +85°C

*these temperature can affect the sensitivity and performance of the module

2.3.2Vibration Test (non functional)

- 10 ÷12Hz ASD = 1.92m 2 /s 3
- 12 ÷ 150Hz –3dB/oct

2.4 Operating Frequency

The operating frequencies in GSM and DCS modes are conform to the GSM specifications.

Mode	Freq. TX (MHz)	Freq. RX (MHz)	Channels (ARFC)	TX - RX offset
E-GSM-900	890.0 - 914.8	935.0 - 959.8	0 – 124	45 MHz
	880.2 - 889.8	925.2 - 934.8	975 - 1023	
DCS-1800	1710.2 - 1784.8	1805.2 - 1879.8	512 – 885	95 MHz

2.5 Transmitter output power

GSM–900

The GM862 transceiver module in GSM–900 operating mode are of **class 4** in accordance with the specification which determine the nominal 2W peak RF power (+33dBm) on 50 Ohm.

DCS–1800

The GM862 transceiver module in DCS–1800 operating mode are of **class 1** in accordance with the specifications which setting the nominal 1W peak RF power (+30dBm) on 50 Ohm.

2.6 Reference sensitivity

GSM–900

The sensitivity of the GM862 transceiver module according to the specifications for the class 4 GSM–900 portable terminals is better than **–102dBm** in all the operational conditions.

DCS–1800

The sensitivity of the GM862 transceiver module according to the specifications for the class 1 portable terminals GSM 1800 is better than **–102dBm** in normal operating conditions.

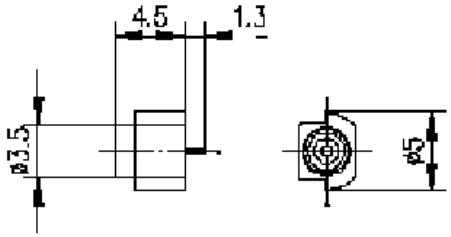
2.7Antenna

The antenna that the customer chooses to use, depending on his application, should fulfil the following requirements:

Frequency range	Standard Dual Band frequency range.
Bandwith	80 MHz in GSM & 170 MHz in DCS band
Gain	> 0 dB (referenced to l/2 dipole)
Impedance	50 ohm
Input power	> 2 W peak power

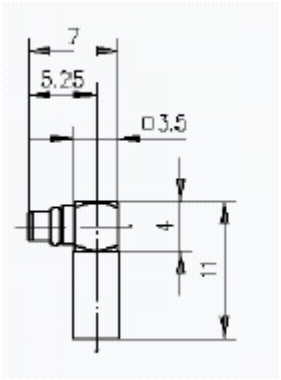
2.7.1 Antenna connector

The **Telit GM862 module** includes a 50 Ohm MMCX coaxial female 2 PIN Angle Coax SMD J01341A0081 connector to allow the antenna connection.



On the user application side one of the following connectors must be used:

a) Telegärtner MMCX angle plug crimp - Order n. J01340A0121



b) Telegärtner MMCX straight plug crimp - Order n. J01340A0001

Both connectors are locatable at:

Telegärtner - K. Gärtner GmbH
Lerchenstrasse 35, D-71144 Steinenbronn
Phone: (+49) 71 57 125 100

NOTE: be very careful when connecting the Telit GM862 module RF connector. The Telit GM862 module RF connector can be damaged if not connected with the proper antenna RF connector. The minimum number of insertion cycles are recommended.

2.8 Supply voltage

The external power supply must be connected to VBATT signal (see paragraph 2.13,Interface connectors on GM862) and must fulfil the following requirements:

- Nominal operating voltage 3.8 V
- Operating voltage 3.4 V - 4.2 V

2.9 Power consumption

The typical current consumption of the **Telit GM862 module** are:

- Power off current (typical) 42 µA;
- Stand–by current < 17 mA (5 mA using command AT+CFUN)
- Operating current (GSM–900) 250 mA 1.9A peak @ TX level=5
- Operating current (DCS–1800) 240 mA 1.9A peak @ TX level=0

2.10 User Interface

The user interface is managed by AT commands specified on the GSM 07.07 and 07.05 specification and listed in the chapter 6, AT Command.

2.10.1 Speech Coding

The **Telit GM862 module** vocoder supports the following rates:

- Half Rate.
- Full rate,
- Enhanced Full Rate

2.10.2 Sim Reader

The **Telit GM862 module** supports phase 2 GSM11.14.

SIM 3/5 volts

2.10.3 SMS

The **Telit GM862 module** supports the following SMS types:

Mobile Terminated (MT) class 0 – 2 (Ver. B SW release or higher) with signalling of new incoming SMS, SIM full, SMS read

Mobile Originated class 0 – 3 with writing, memorise in SIM and sending

Cell Broadcast compatible with CB DRX (Ver. B SW release or higher) with signalling of new incoming SMS, SIM full, SMS read

2.10.4 Data/fax transmission

The **Telit GM862 module** supports:

- Data transmission according to the GSM 07.07.07.05
- CSD up to 14.4 Kbps (Ver. C SW Release or higher)
- Fax service, Class 1 Group 3 (Ver. C SW Release or higher)
- Fax service, Class 2 Group 3 (Ver. D SW Release or higher)

2.10.5 Local security management

With lock of Subscriber Identity module (SIM), and security code request at power–up.

2.10.6 Call control

Call cost control and User determined User Busy (UDUB) function (Ver. B SW Release or higher)

2.10.7 Phonebook

Function available to store the telephone numbers in SIM memory.

Capability depends on SIM version/memory

2.10.8 Characters management

Availability of lowercase, uppercase and IRA characters. (international reference alphabet)

2.10.9 SIM related functions

Activation/deactivation of the numbers stored in phone book FDN, ADN and PINs. Extension at the PIN2 for the PUK2 insertion capability for lock condition.

2.10.10 Tones management

DTMF managed by specific AT commands.

2.10.11 Call status indication

By AT commands.

2.10.12 Indication of network service availability

By AT commands and LED indication on dedicated output.

2.10.13 Automatic answer (Voice, Data or FAX)

After n (depends of settings) rings automatically answers with beep (see S0 param).

2.10.14 Supplementary services (SS)

- Call Barring,
- Call Forwarding,
- Advice of Charge,
- Calling Line Identification Presentation (CLIP),
- Calling Line Identification Restriction (CLIR),
- Unstructured SS Mobile Originated (MO),
- Call Waiting, other party call Waiting Indication,
- Call Hold, [other party Hold / Retrieved Indication in Ver. B SW Release or higher]
- Closed User Group supplementary service (CUG)

2.10.15 Acoustic signaling

The acoustic signalling of **Telit GM862 module** on the selected acoustic device are the following:

- Auto redial tone;
- Call waiting;
- Ringing tone;
- Error tone;
- One minute tone;
- SMS received tone;
- Busy tone;
- Power on/off tone;
- Off Hook dial tone;
- Congestion tone;
- Connected tone;
- Call dropped;
- No service tone.

2.10.15.1 DTMF tones

These tones are generated with AT commands.

The minimum duration of a DTMF tone is 100 ms.

	Group high		
Group low	1209 Hz	1336 Hz	1477 Hz
697 Hz	1	2	3
770 Hz	4	5	6
852 Hz	7	8	9
941 Hz	*	0	#

2.11 EMC

Compliant to & ETS 300–342–1 and all applicable GSM Specifications.

Compliant to Directive 1999/05/CE.

2.12 Logic level specification

Where not specifically stated, all the interface circuits work at 2.8V CMOS logic levels.

The following table shows the logic level specifications used in the **Telit GM862 module** interface circuits:

Level	Min	Max
Input high level	2.1V	3.0V
Input low level	0V	0.5V
Output high level	2.1V	3V
Output low level	0V	0.5V

2.12.1 Reset signal

Signal	Function	I/O	Pin
RESET	Phone reset	I/O	23 (connector SO301)

RESET is used to reset the **Telit GM862 module**. Whenever this signal is pulled low, the GM862 is reset and powered off.

NOTE: do not use this signal to power off the Telit GM862 module. Use the ON/OFF signal (Pin 17 of SO301) to perform this function.

Signal levels:

Signal	Min	Max
RESET Input high	2.2V	3V
RESET Input low	0V	0.9V

If unused, this signal may be left unconnected.

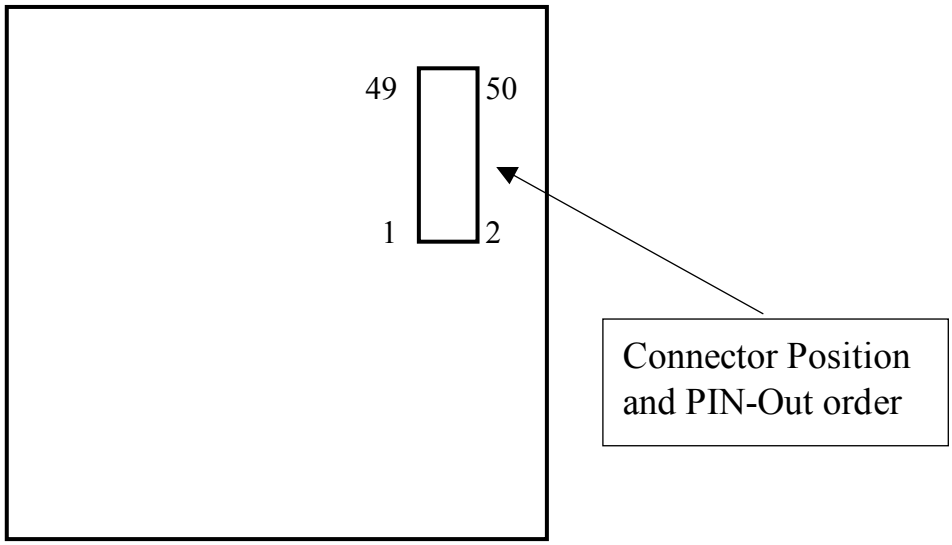
2.13 Interface connectors on GM862

The Telit GM862 module has two interface connectors:

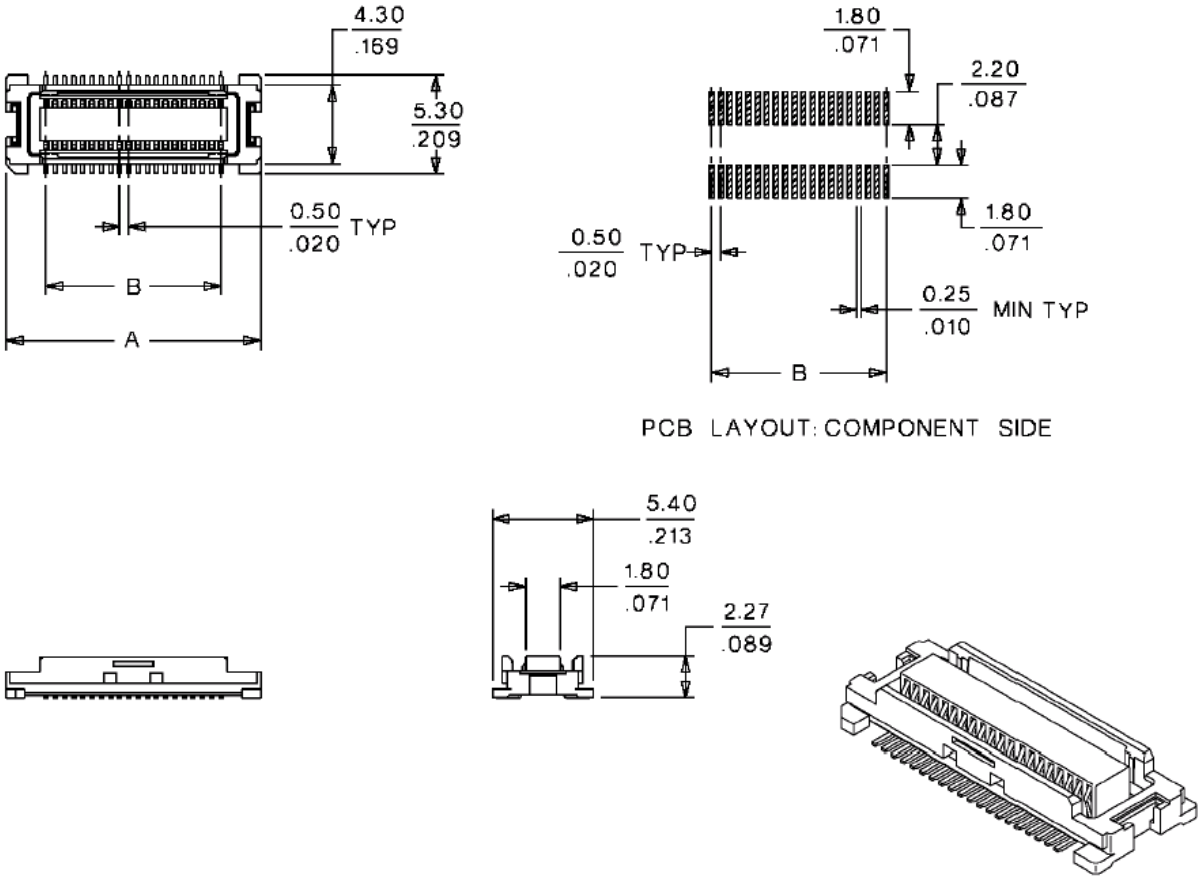
1) JP601: Antenna connector (see 2.7.1, Antenna connector)

2) SO301: Interface connector

The GM862 transceiver module interface connector SO301 is a CSTP 50 pin vertical SMD Molex 52991–0508 (male). Its pin-out (down view) is:



Molex 52991-0508 (male) GM862 Connector LAY-OUT



Molex 52991-0508 (male) GM862 Connector PIN-OUT					
Pin	**Signal**	**I/O**	**Function**	**Pull up**	**Type**
1	VBATT	-	Main power supply		Power
2	GND	-	Ground		Power
3	VBATT	-	Main power supply		Power
4	GND	-	Ground		Power
5	VBATT	-	Main power supply		Power
6	GND	-	Ground		Power
7	VBATT	-	Main power supply		Power
8	GND	-	Ground		Power
9	EAR_HF+	AO	Handsfree ear output, phase +		Audio
10	EAR_MT-	AO	Handset earphone signal output, phase -		Audio
11	EAR_HF-	AO	Handsfree ear output, phase -		Audio
12	EAR_MT+	AO	Handset earphone signal output, phase +		Audio
13	MIC_HF-	AI	Handsfree microphone input; phase -, nominal level 3 – 8.5mVpp		Audio
14	MIC_MT+	AI	Handset microphone signal input; phase+, nominal level 140mVpp		Audio
15	MIC_HF+	AI	Handsfree microphone input; phase +, nominal level 3 – 8.5mVpp		Audio
16	MIC_MT-	AI	Handset microphone signal input; phase-, nominal level 140mVpp		Audio
17	ON/OFF	I	Input command for switching power ON or OFF (toggle command). The pulse to be sent to the GM862 must be equal or greater than 1 second.	47KΩ	CMOS 2.8V
18	AXE	I	Handsfree switching	20KΩ	CMOS 2.8V
19	SIMIO	I/O	External SIM signal - Data I/O		3/5 V
20	C103/TXD	I	Serial data input (TXD) from DTE		CMOS 2.8V
21	PWRCTL	O	Module Status ON indication (Signal output for power on/off control of external devices)		2.1V signal
22	SIMVCC	-	External SIM signal – Power		3/5V
23	RESET	I	Reset input		CMOS 2.8V
24	SIMRST	O	External SIM signal – Reset		3/5V
25	TEST32kHz		For test purpose (1)		

26	SIMCLK	O	External SIM signal – Clock		3/5V
27	CCIN	I/O	External SIM signal - Presence (active low)	47KΩ	CMOS 2.8V
28	GPIO2	O	General purpose output (Open Collector)		Open Collector
29	C106/CTS	O	Output for Clear to send signal (CTS) to DTE		CMOS 2.8V
30	C125/RING	O	Output for Ring indicator signal (RI) to DTE		CMOS 2.8V
31	GPIO1	I	General purpose input		transistor base
32	CLKSXM		DAI - For test purpose (1)		
33	C107/DSR	O	Output for Data set ready signal (DSR) to DTE		CMOS 2.8V
34	TXDD		DAI - For test purpose (1)		
35	EMMI TX	O	TX Data for debug monitor (1)		
36	C109/DCD	O	Output for Data carrier detect signal (DCD) to DTE		CMOS 2.8V
37	C104/RXD	O	Serial data output to DTE	47KΩ	CMOS 2.8V
38	SCLK		DAI - For test purpose (1)		
39	STAT_LED	O	Status indicator led		Open Collector
40	RXDD		DAI - For test purpose (1)		
41	EMMI RX		RX Data for debug monitor (1)		
42	RFSD		DAI - For test purpose (1)		
43	C108/DTR	I	Input for Data terminal ready signal (DTR) from DTE		CMOS 2.8V
44	TFSD		DAI - For test purpose (1)		
45	C105/RTS	I	Input for Request to send signal (RTS) from DTE		CMOS 2.8V
46	NC	-	Reserved for future use. Leave unconnected.		
47	NC	-	Reserved for future use. Leave unconnected.		
48	NC	-	Reserved for future use. Leave unconnected.		
49	NC	-	Reserved for future use. Leave unconnected.		
50	NC	-	Reserved for future use. Leave unconnected.		

(1) For the exclusive use of the Technical Support Service

(2) An earphone with a 150 ohm impedance can be directly connected to EAR+ and EAR–

2.14 Mounting the GM862 on your Board

In order to electrically connect your board to the **Telit GM862 module,** use a **CSTP 2x25 pin vertical SMD SCH–SCH Molex 53748 - 0504 (female, low profile)** as a counterpart to the **CSTP 50 pin vertical SMD Molex 52991–0508 (male)** of your **Telit GM862 module**.

When mounting the **Telit GM862 module** on your board, take care of soldering the GM862 shielding reeds on a ground plane or signal.

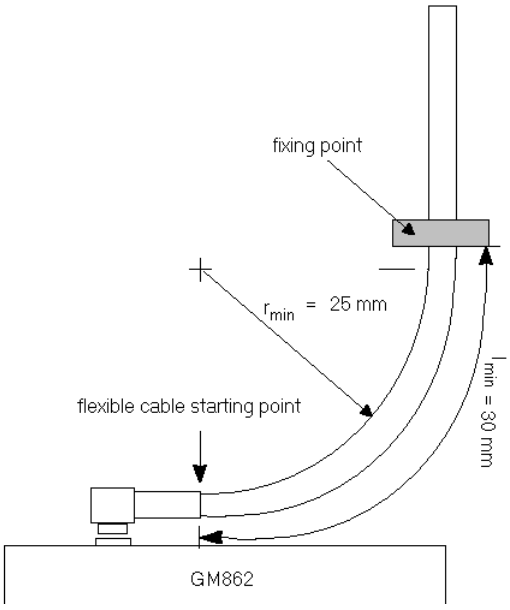
NOTE: be very careful when connecting the Telit GM862 module RF connector. The Telit GM862 module RF connector can be damaged if not connected with the proper antenna RF connector. The minimum number of insertion cycles are recommended.

2.14.1 Antenna Coaxial cable fixing

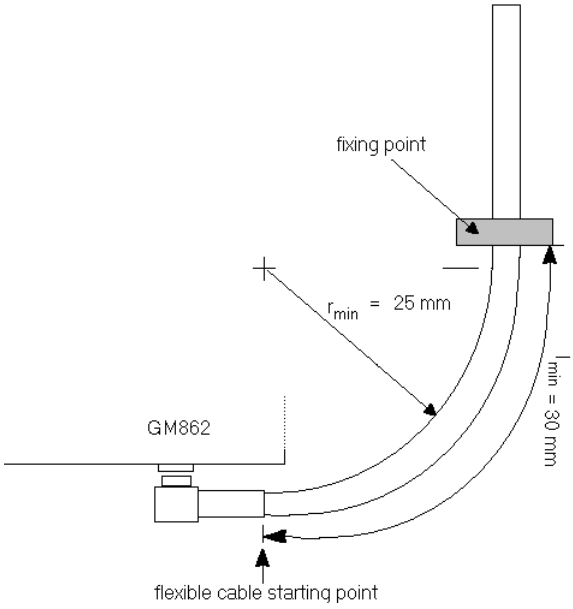
The following constraints must be respected in the GM862 antenna cable connection:

- The fixing point of the coaxial cable must not be placed too close to the antenna connector of the GM862, leaving at least 30mm of flexible cable between the fixed point and the plug end.
- The fixing point must be at the same height of the GM862 antenna connector, eventually using a wedge between the PCB and the cable if it is directly fixed to the PCB.
- The flexible cable must never be bent with a radius lower than 25mm (RG174 cable).
- The cable must be a RG174 type or more flexible ones.

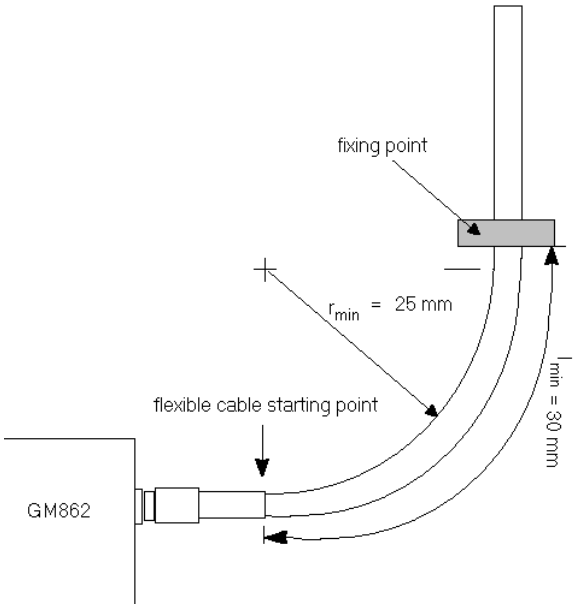
The following pictures explain these constraints:



- Angle connector fixing example -



- Angle connector fixing example 2 -



- straight connector fixing example -

NOTE: in the examples the cable is always bent, this is not a constrain. If the installation does not require it, then the cable can be kept straight, ensuring that the fixing is without sliding.

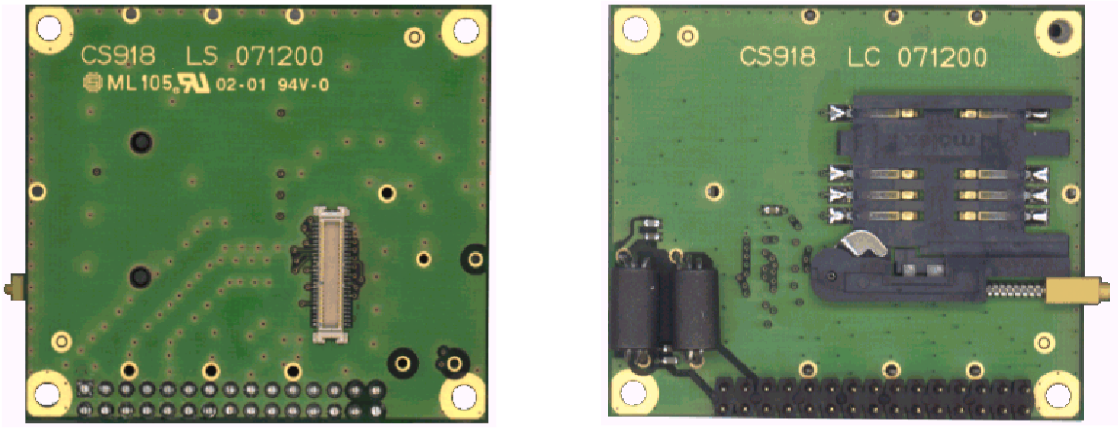
2.14.2 Precautions

- The plug should be inserted in the connector only after the installation of the GM862 module in the board. This is to prevent accidental breaking of the antenna connection during the transport.
- The coaxial cable must be fixed at least in one point, without sliding possibilities.
- The plug insertion/removal must be done axially with the female connector of the GM862, keeping lateral strains to a minimum.
- The insertion/crimping pull out force must be less than 15N.

3 Application Board: GM862-S1

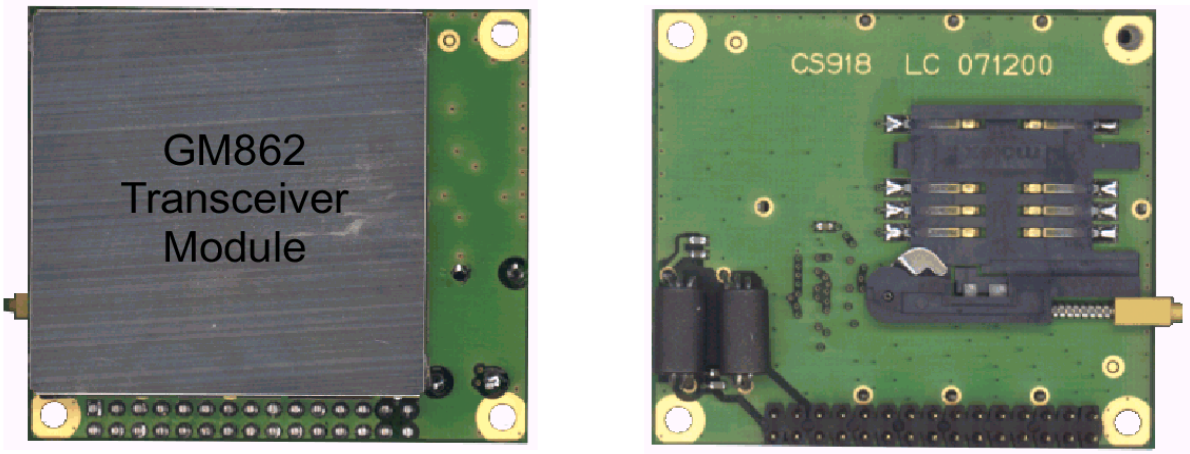
In order to use the **Telit GM862 module** as a stand-alone product, Telit supplies an **Application Board** (namely **Telit S1 Board**) that interfaces the **Telit GM862 module** with appropriate power supply filters, SIM card reader and UART port.

Application Board - S1



Furthermore the **Telit GM862-S1** has the Full ETSI Type Approval, and can be immediately used into customer application without the need of additional certification work.

Telit GM862-S1



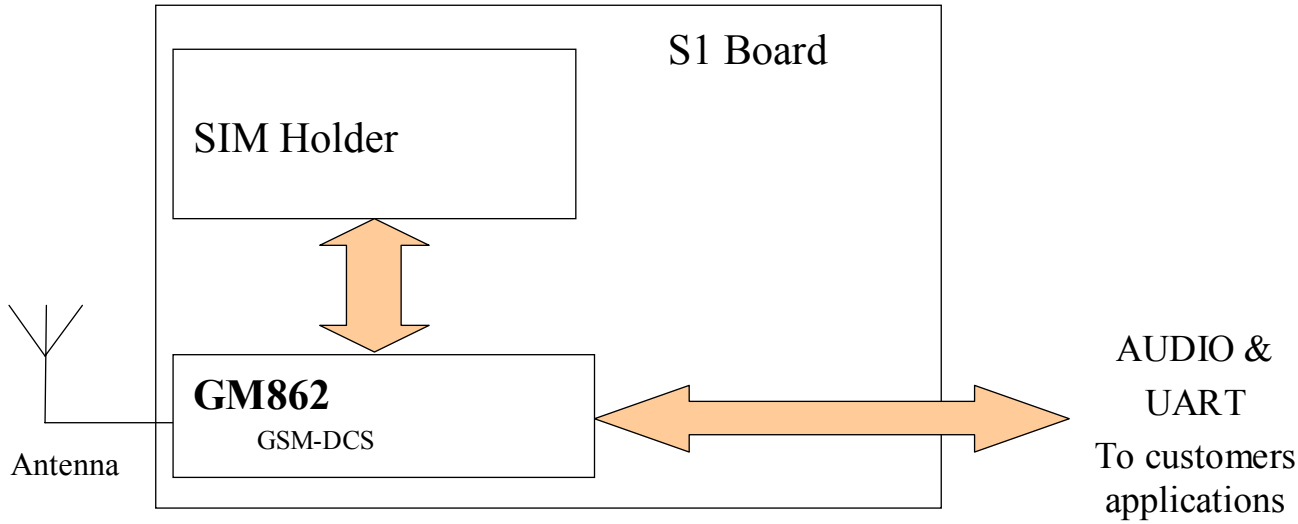
3.1 Application Board Description

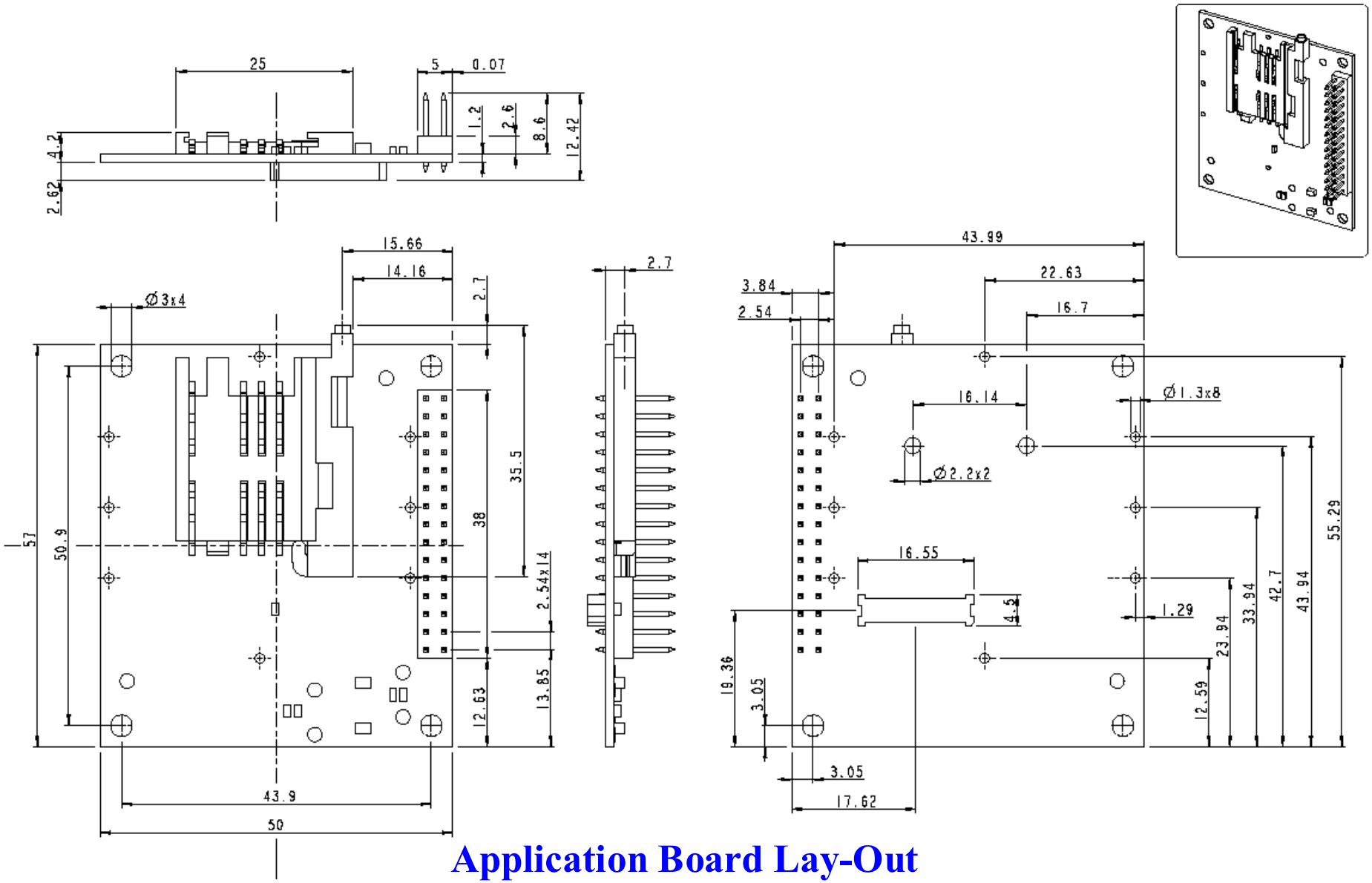
This chapter gives to the customer all the necessary information to correctly install and interface the **Telit GM862-S1** with his own applications.

A description of the recommended accessories and the connections to the **Telit GM862-S1** is also given.

The following simplified block diagram shows the modules connections and the system identification.

GM862S1 Configuration





Application Board Lay-Out

3.1.1Hardware interfaces description

The **Application Board** interface is connected to the **Telit GM862 Module** through the PL103 connector.

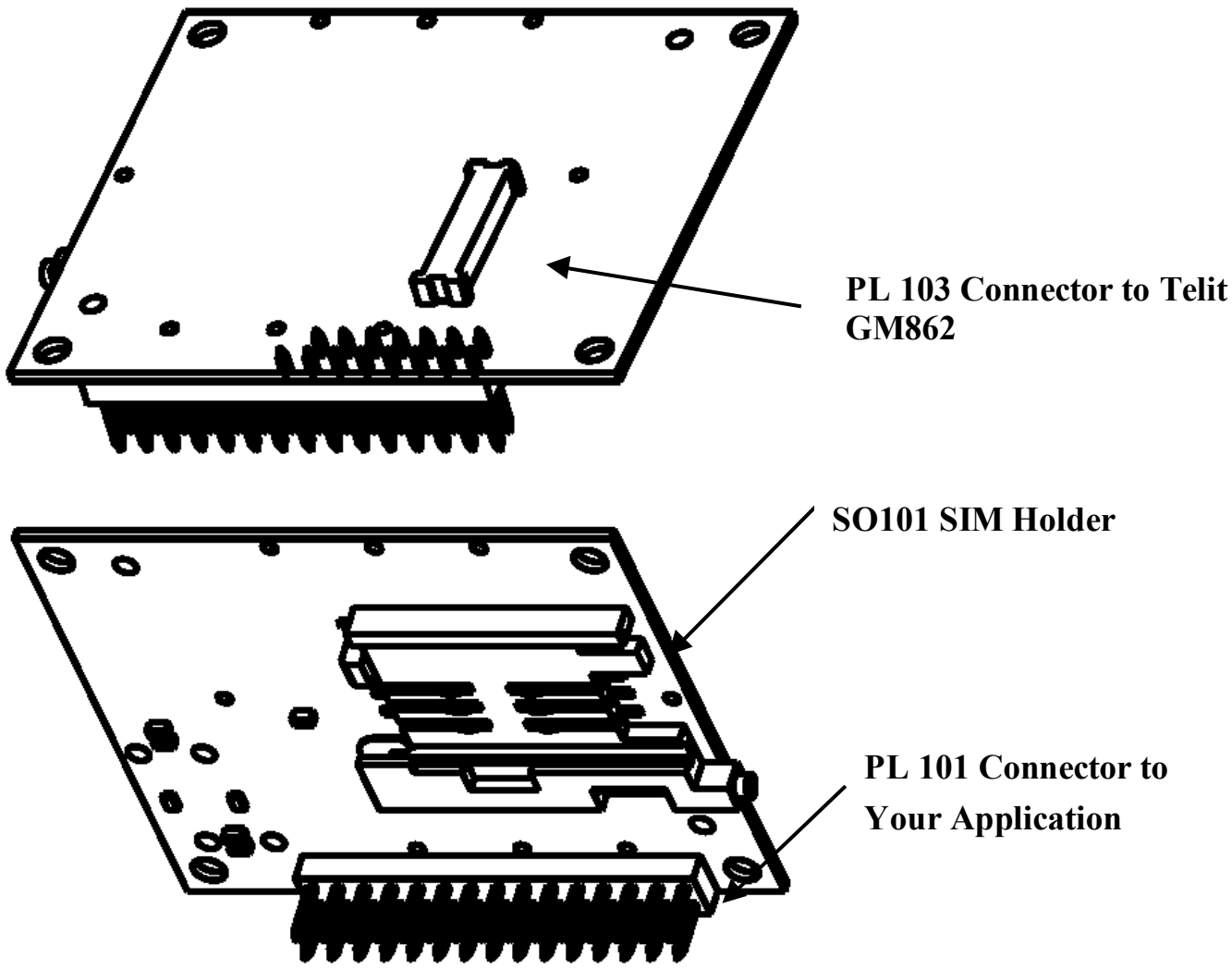
Your application will be connected the **Telit GM862-S1** through the PL101 connector (shown in the next figure).

The S0101interface is the SIM Holder.

Connectors on Interface board

1) PL101: Connector to customer Board/Application

2) PL103: Connector to the Telit GM862 module

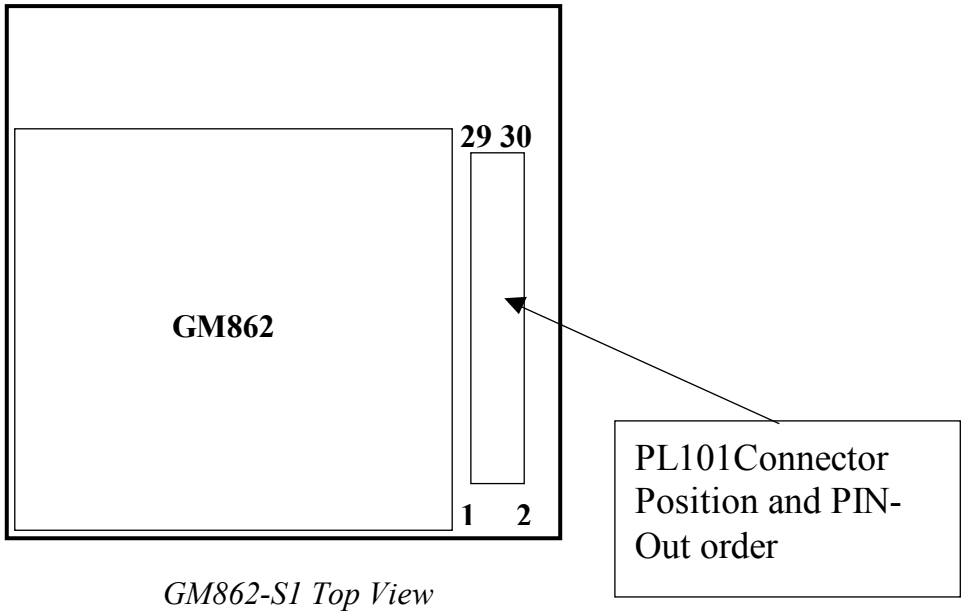


3.1.1.1 Connector to customer Board/Application (PL101)

The PL103 customer board application interface connector placed on interface module (S1) is a standard pin strip male dual row pitch 2.54mm 2x15 pin. You'll need the female connector on your custom board to interface with the PL101.

GM862-S1 PL101 Connector PIN-OUT

Pin	Signal	I/O	Function
1	EAR_HF+	AO	Handsfree ear output, phase +
2	EAR_MT-	AO	Handset earphone signal output, phase -
3	EAR_HF-	AO	Handsfree ear output, phase -
4	EAR_MT+	AO	Handset earphone signal output, phase +
5	GND	-	Signal ground
6	MIC_HF-	AI	Handsfree microphone input; phase -, nominal level 3 - 8.5mVpp
7	MIC_MT+	AI	Handset microphone signal input; phase+, nominal level 140mVpp
8	MIC_HF+	AI	Handsfree microphone input; phase +, nominal level 3 - 8.5mVpp
9	MIC_MT-	AI	Handset microphone signal input; phase-, nominal level 140mVpp
10	ON/OFF	I	Input command for switching power ON or OFF (toggle command)
11	PWRCTL	O	Module Status ON indication (Signal output for power on/off control of external devices)
12	RESET	I/O	Reset input
13	GPIO2	O	General purpose output (open collector)
14	AXE	I	Handsfree switching
15	GPIO1	I	General purpose input
16	STAT_LED	O	Status indicator led
17	GND	-	Signal ground
18	C103/TXD	I	Serial data input (TXD) from DTE
19	C106/CTS	O	Output for Clear to send signal (CTS) to DTE
20	C125/RING	O	Output for Ring indicator signal (RI) to DTE
21	C107/DSR	O	Output for Data set ready signal (DSR) to DTE
22	C109/DCD	O	Output for Data carrier detect signal (DCD) to DTE
23	C104/RXD	O	Serial data output (RXD) to DTE
24	C108/DTR	I	Input for Data terminal ready signal (DTR) from DTE
25	C105/RTS	I	Input for Request to send signal (RTS) from DTE
26	GND	-	Signal ground
27	GND	-	Power Ground
28	VBATT	-	Main power supply
29	GND	-	Power Ground
30	VBATT	-	Main power supply



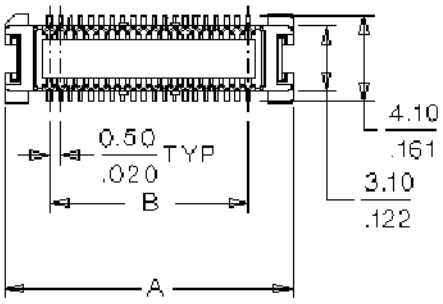
GM862-S1 Top View

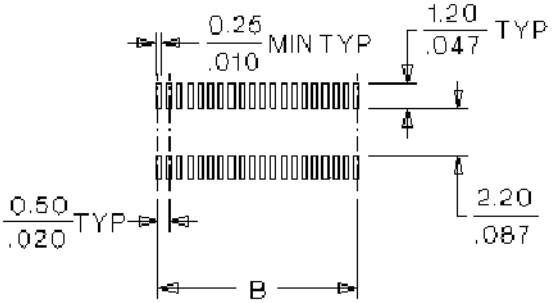
3.1.1.2 Connector to the Telit GM862 module

The PL103 transceiver interface connector placed on interface module is a female CSTP 2x25 pin vertical SMD SCH–SCH Molex 53748-0504 (low profile).

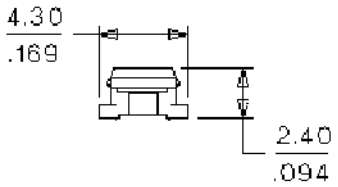
See pin out on the SO301 connector on **Telit GM862 module** (par. 2.13, Interface connectors on GM862).

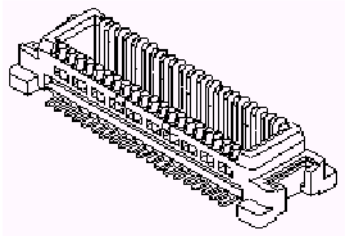
Molex 53748-0504 (female, low profile) Connector LAY-OUT





PCB LAYOUT: COMPONENT SIDE





4 Developer Kit: GM862-S

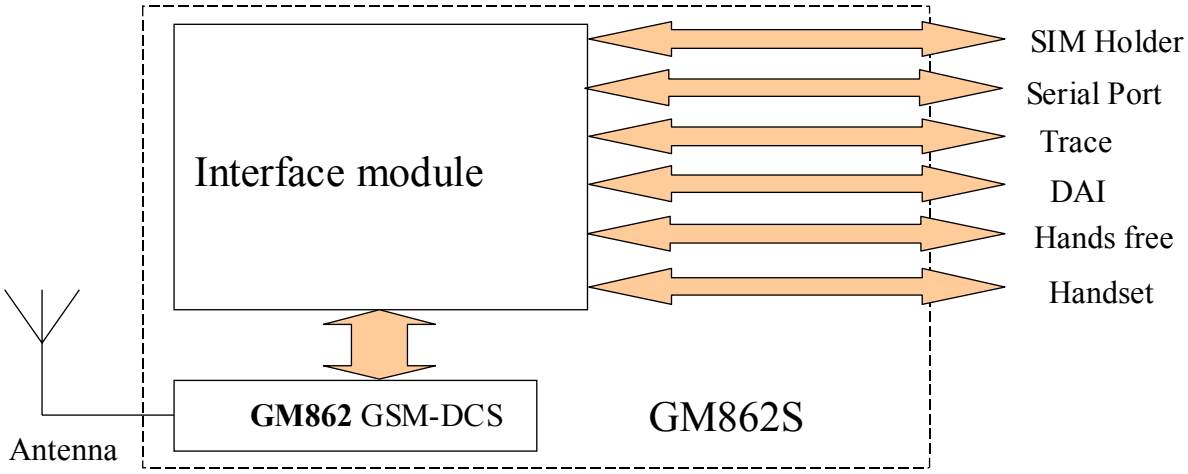
In order to develop your **Telit GM862 module** based application, Telit can supply a **Developer Kit** that interfaces the **Telit GM862 module** with appropriate power supply, SIM card reader, RS 232 serial port, DAI Port (Digital Audio Interface), Handset, Hands-free and Trace connectors.

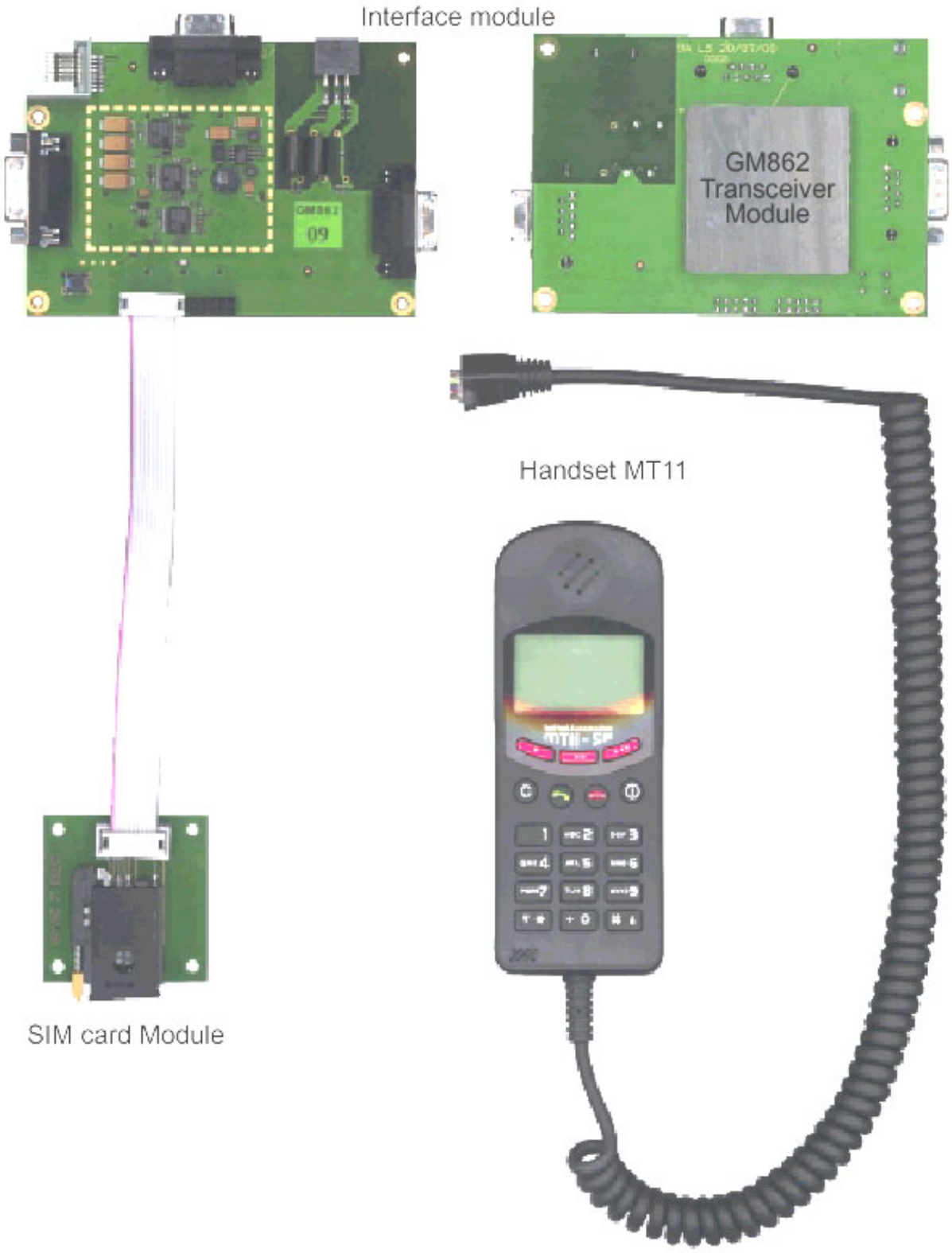
The standard serial RS232 9 pin connector placed on the **Developer Kit** allows the connection of the GM862S system with a PC or other DTE.

Developer Kit description

This chapter gives to the customer all the necessary information to correctly install and interface the **Telit GM862 module Developer Kit** with the user's applications.

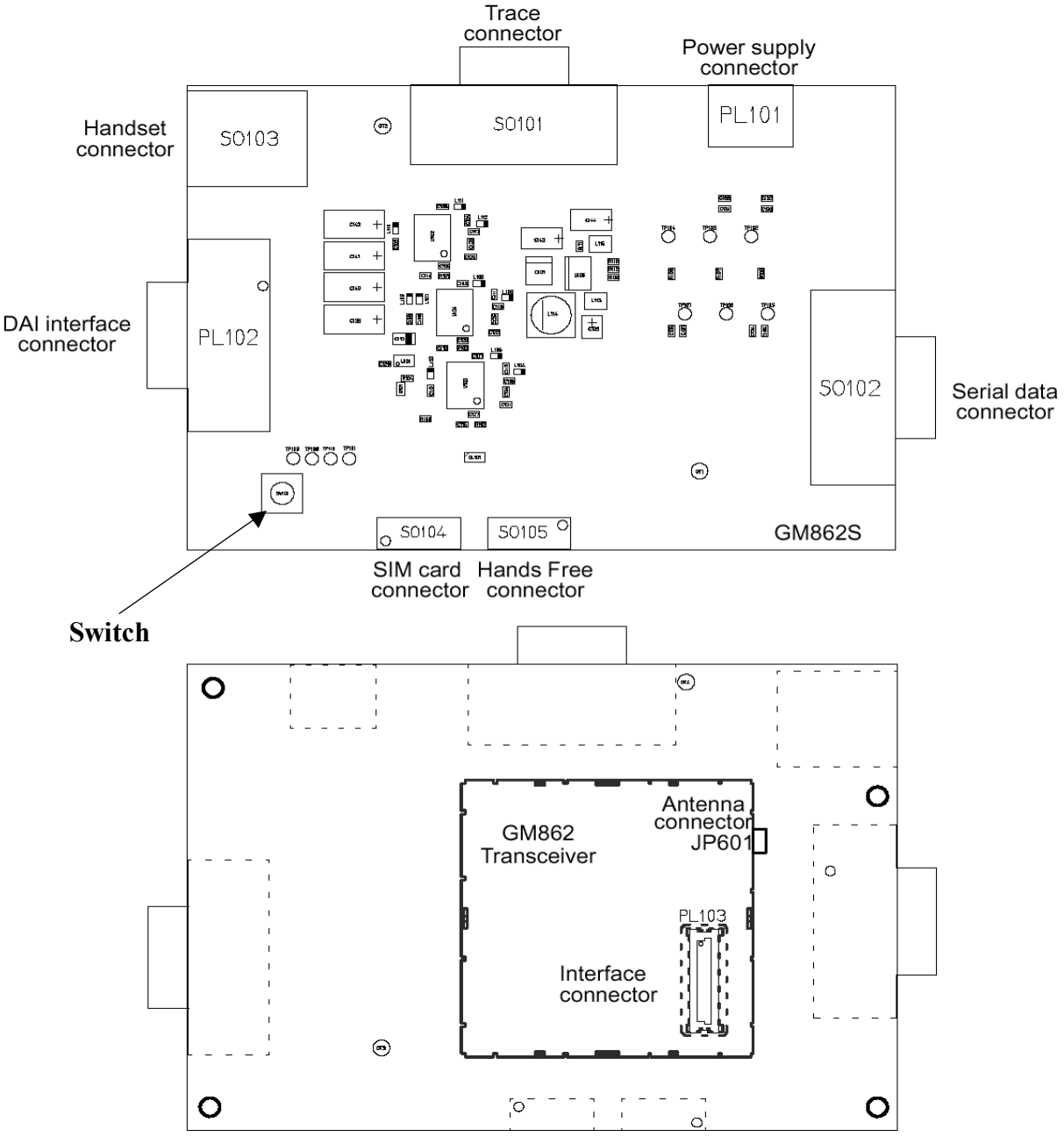
A description of the recommended accessories and the connections to the **Telit GM862 module Developer Kit** is also given.




Interface module
GM862
Transceiver
Module
Handset MT11
SIM card Module

4.1.1Hardware interfaces description

The interface of **Telit GM862 module Developer Kit** is made through the following connectors shown on figure.



Switch

Push the Switch button on the **Telit GM862 module Developer Kit** for at least one second to swich On or Off the **Telit GM862 module**

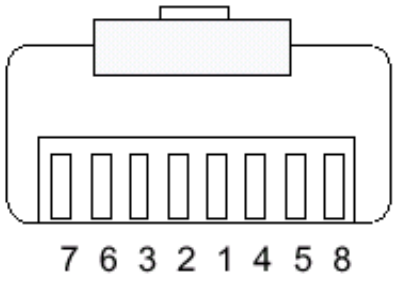
Connectors on Interface board

- SO103: Handset connector
- SO105: Handsfree connector
- PL102: DAI interface connector
- SO104: SIM CARD connector
- SO102: Serial data connector
- PL101: Power supply connector
- SO101: Trace data connector
- PL103: GM862 transceiver interface connector

4.1.1.1 Handset connector

This SO103 connector Molex telephone Jack 8 pin SMD 90 can be used to connect the MT11 handset.

Pin	Name	I/O	Function
1	5V	O	5V_OUT Power supply
2			Not connected
3			Not connected
4	MIC_MT-	I	Microphone balanced line Input
5	MIC_MT+	I	Microphone balanced line Input
6	EAR_MT+	O	Ear balanced line Input
7	EAR_MT-	O	Ear balanced line Input
8	GND		Ground



MIC_MT+ is the microphone input pin; an electred microphone can be directly connected to this input and a DC polarization/supply is given. All other application should use a coupling capacitor.

The microphone that can be directly connected to the MIC_MT+ input must fulfil these requirements:

Sensitivity: nominal 50 mVrms

max 360 mVrms

The nominal value indicates the electrical level in state of normal spoken from a distance of 7cm from the microphone, corresponding at –4.7 dB_{Pa} of acoustic pressure on the microphone diaphragm.

The usually mounted microphones have a nominal sensitivity of –40 ± 3 dB $_{Vrms/Pa}$.

EAR_MT+ is the earpiece output pin; an earpiece with minimum 32 ohm impedance can be directly connected to these output.

The earpiece that can be directly connected between EAR_MT+ and EAR_MT– outputs must fulfil these requirements:

Maximum output signal (measured between EAR_MT+ and EAR_MT –): max 850 mVrms (at max volume)

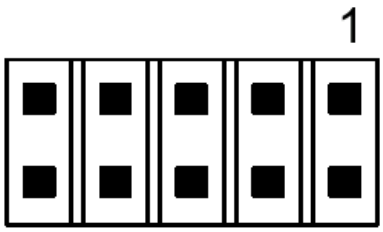
The volume regulation steps are about –2 dB/step (20 dB of maximum regulation).

All unused pins may be left unconnected.

4.1.1.2 Handsfree connector

This SO105 connector CSTP 2 x 5 pin allows to connect the external headset or mic/loudspeaker for hands-free operations.

Pin	Name	I/O	Function
1	EAR_HF+	O	HF Earpiece output +
2	EAR_HF-	O	HF Earpiece output -
3	MIC_HF-	I	HF MIC -
4	MIC_HF+	I	HF MIC +
5	AXE	I	HF Enable
6	GND	-	Ground
7	GND	-	Ground
8	NC		Not connected
9	NC		Not connected
10	3V	-	Power supply 3V



MIC_HF+ is the microphone input pin; an electred microphone can be directly connected to this input and a DC polarization/supply is given. All other application should use a coupling capacitor.

The microphone that can be directly connected to the MIC_HF+ input must fulfil these requirements:

Sensitivity: nominal 3 mVrms

max 22 mVrms

The nominal value indicates the electrical level in state of normal spoken from a distance of 7cm from the microphone, corresponding at –4.7 dB_{Pa} of acoustic pressure on the microphone diaphragm.

The usually used microphones have a nominal sensitivity of –45 ± 3 dB $_{Vrms/Pa}$.

EAR_HF+ is the earpiece output pin; an earpiece with minimum 32 ohm impedance can be directly connected to these outputs.

The earpiece that can be directly connected between EAR_HF+ and EAR_HF– outputs must fulfil these requirements:

Maximum output signal (measured between EAR_HF+ and EAR_HF –): max 425 mVrms (at max volume)

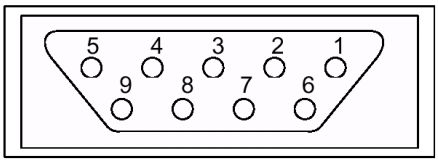
The volume regulation steps are about –2 dB/step (20 dB of maximum regulation).

All unused pins may be left unconnected.

4.1.1.3 DAI interface connector

This PL102 connector Molex D type 9 pin 90 is used only for testing purposes.

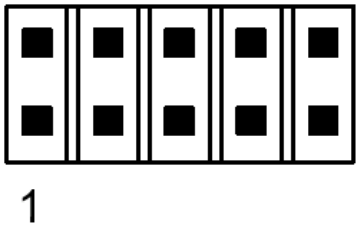
Pin	Name	I/O	Function
1	GND		Ground
2	JP104		
3	NC		Not connected
4	JP102		
5	GND		Ground
6	JP101		
7	JP103		
8	JP105		
9	JP106		



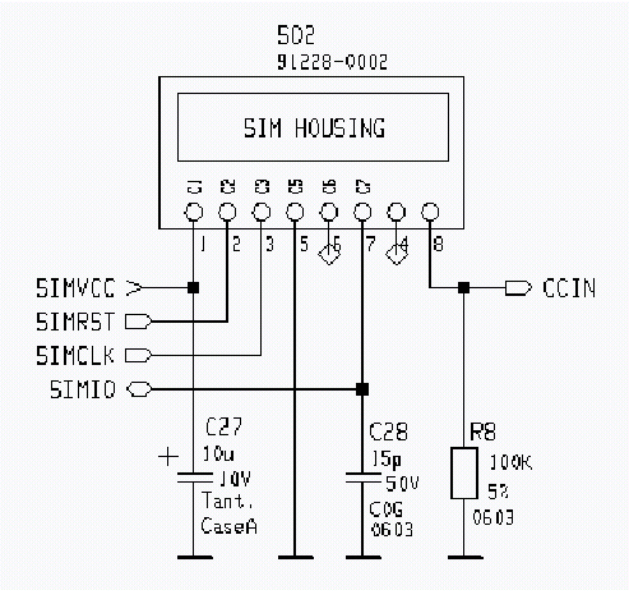
4.1.1.4 External SIM carrier connector

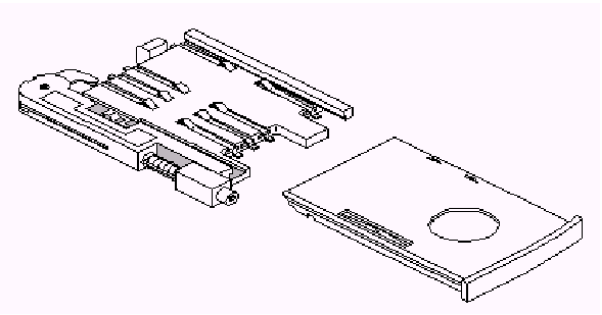
This SO104 connector CSTP 2 x 5 pin allows to connect the SIM on the external SIM carrier to activate the GMS transceiver connected into the **Telit GM862 module Developer Kit**.

Pin	Name	I/O	Function
1	GND	-	Ground
2	SIMVCC	-	SIM power contact
3	NC	-	
4	SIMRST	O	SIM reset contact
5	SIMIO	I/O	SIM I/O contact
6	SIMCLK	O	SIM clock contact
7	CCIN	I	SIM detect signal
8	GND	-	Ground
9	NC	-	
10	NC	-	



The SIM holder is a MOLEX 91228-0002





The recommended SIM carrier flat cable length must be less than 20cm.

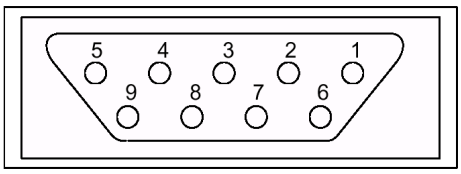
4.1.1.5 Serial data connector

This SO102 connector Molex D type 9 pin 90° is used to connect the **Telit GM862 module Developer Kit**. to any DTE .

All levels are conform to V.24 standard and a PC serial port can be directly connected to this connector.

The serial cable used for the communication with a PC should not exceed a length of 1mt.

Pin	Name/CCITT	I/O	Function
1	DCD/C109	O	Data Carrier Detect
2	TX_PROG/C103	O	Tx data
3	RX_PROG/C102	I	Rx data
4	DTR/C108	I	Data Terminal Ready
5	GND	-	Ground
6	DSR/C107	O	Data Set Ready
7	RTS/C105	I	Request to Send
8	CTS/C106	O	Clear to Send
9	RING/C125	O	Ring Indicator



The serial interface is used as:

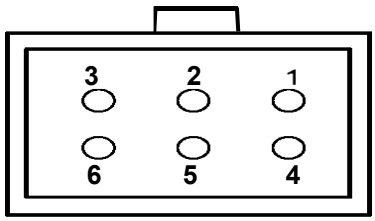
• AT command interface

• Serial interface for data/Fax/SMS

4.1.1.6 Power supply connector

Male connector CSTP 2x 3 Pin Horizontal SMD mount. MICRO–FIT SDA–43045 Molex.

Pin	Name	I/O	Function
1	VA_IN	+3.8V	GM862 power supply (+3.8V)
2	GND		Ground
3	5V_IN		MT11 Power supply (do not use)
4	VA_IN	+3.8V	GM862 power supply (+3.8V)
5	GND		Ground
6	5V_IN		MT11 Power supply (do not use)

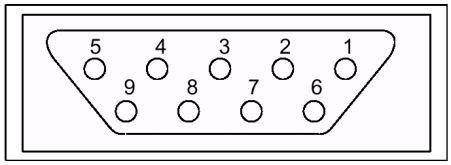


The recommended power cable length must be less than 0.5 mt.

4.1.1.7 Trace data connector

This SO101 connector Molex D type 9 pin 90° .

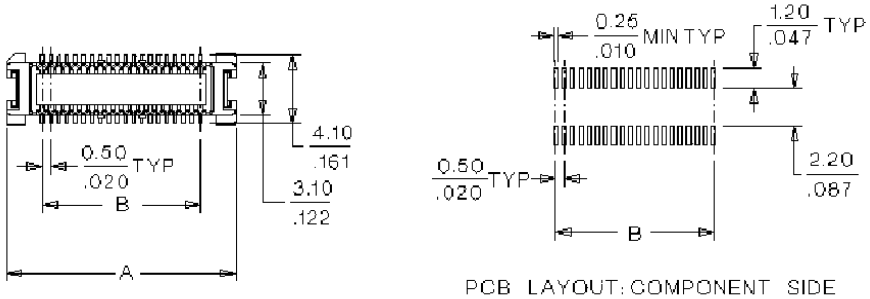
Pin	Name	I/O	Function
1	n.c.		
2	TX_TRACE	O	Trace data output
3	RX_TRACE	I	Trace data intput
4	n.c.		
5	GND		Ground
6 - 9	n.c.		

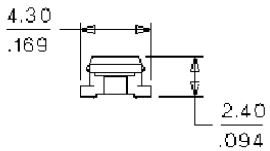


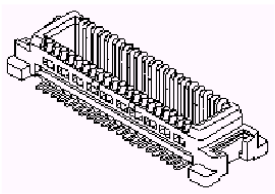
4.1.1.8 Telit GM862 module interface connector

The PL103 transceiver interface connector placed on interface module is a female CSTP 2x25 pin vertical SMD SCH–SCH Molex 53748 - 0504 (low profile). See pin out on the SO301 connector on Telit GM862 module.

Molex 53748-0504 (female, low profile) Connector LAY-OUT







5 Service and firmware update

The serial cable used for the communication with a PC can be also used to update the **Telit GM862 module** firmware. The RS232 connector Molex D type 9 pin 90° is used to connect the **Telit GM862 module Developer Kit**. to any DTE .

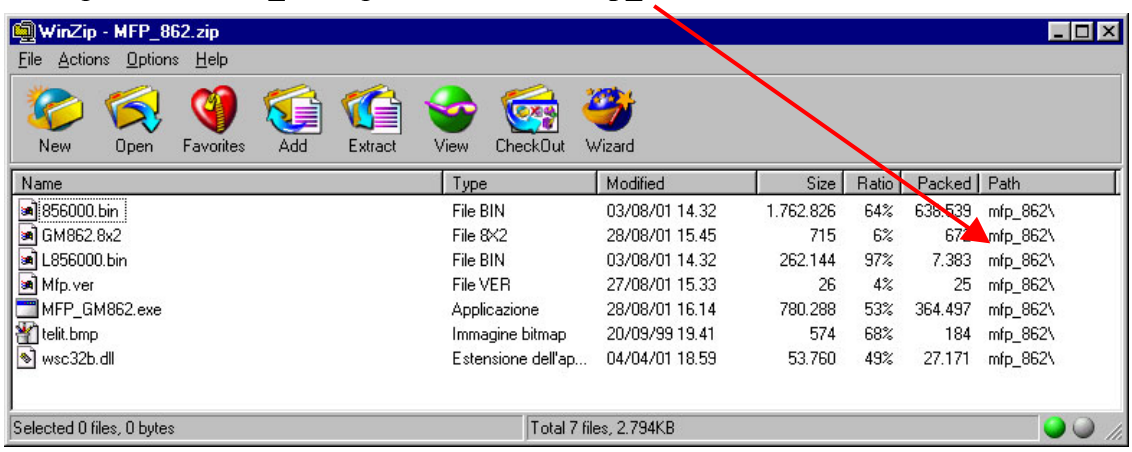
All levels are conformed to V.24 standard and a PC serial port can be directly connected to this connector.

The firmware update can be done with a specific software tool provided by Telit that runs on windows based PCs.

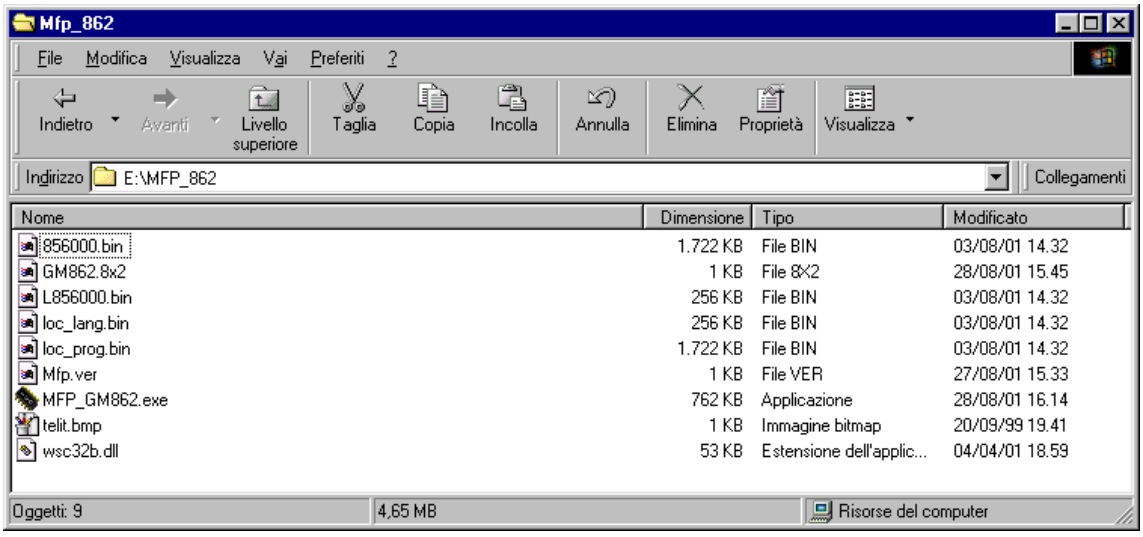
5.1.1.1 Step-by-Step upgrade procedure

I. Download the specific software for upgrading (Flashprogrammer MFP_862.zip).from the site www.gm862.com, or request it at this e-mail address ts-gm862@telital.com

II. Unzip the file MFP_862.zip. A new folder **mfp_862/** will be created

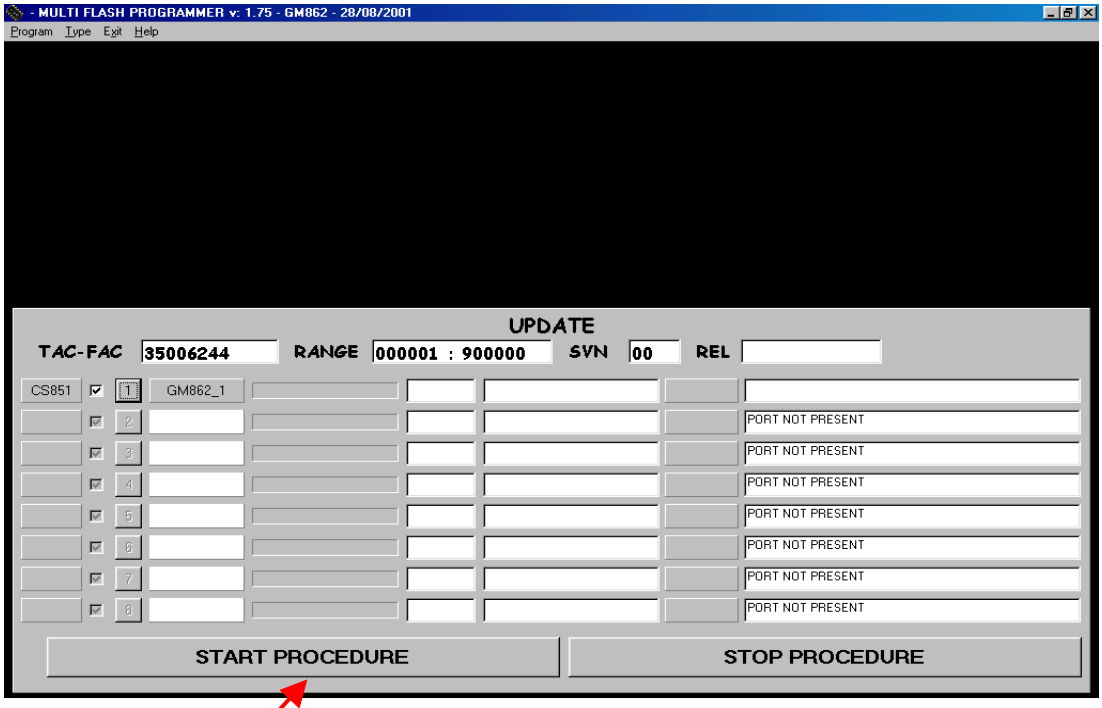


This new folder should contain the following files



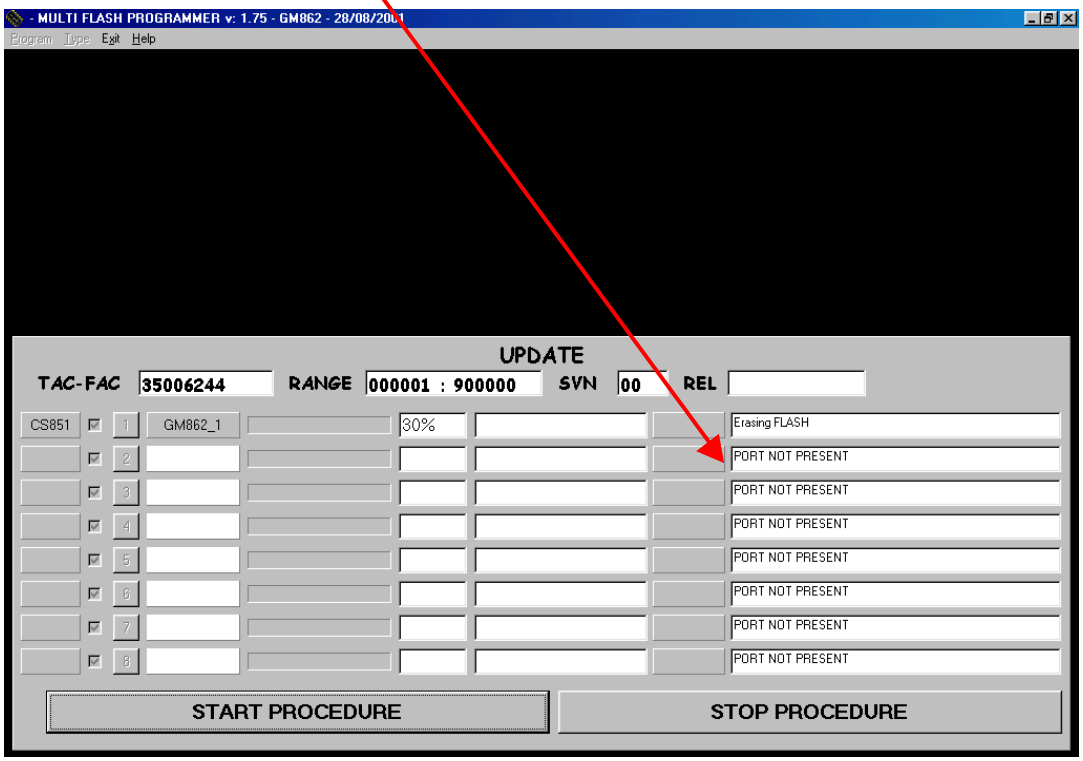
III. Mount the **Telit GM862 module** in the **Developer Kit** and supply power

IV. Run the file *MFP_GM862.exe*. The following window should be displayed

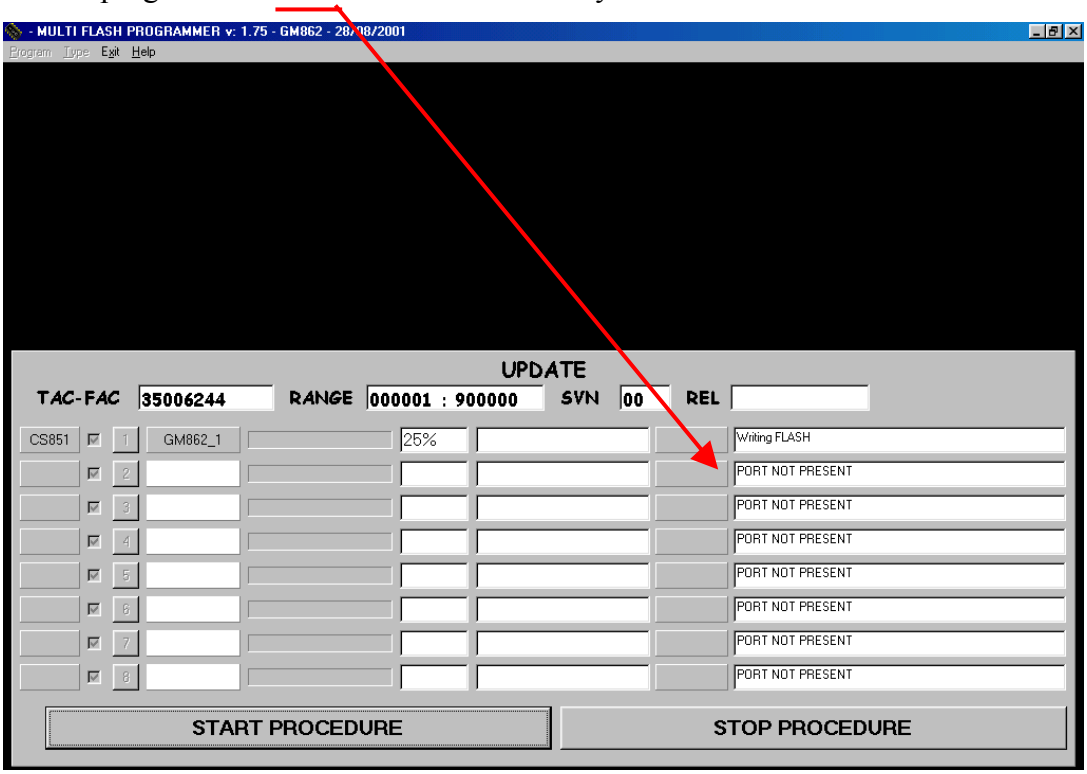


V. Press the Start Procedure button and within 5 seconds press the ON/OFF button on the S interface. Keep pressed the ON/OFF button for 5 seconds and then leave it.

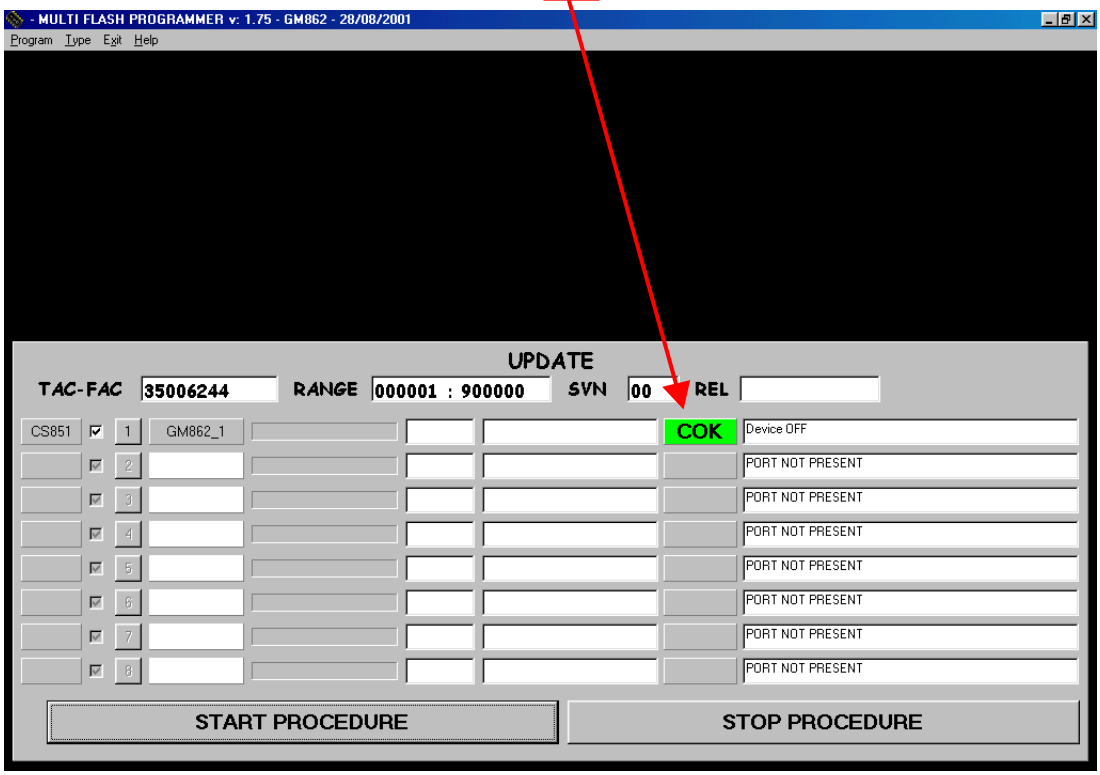
First the program will erasure the content of flash memory



Then the program will write on the flash memory



Wait for the end of programming green message COK



Your GM862 is now programmed with the new firmware.

6 AT Command

The **Telit GM862 module** can be driven via the serial interface using the standard AT commands[1]. The **Telit GM862 module** is compliant with:

1. Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.
2. ETSI GSM 07.07 specific AT command
3. ETSI GSM 07.05 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)
4. FAX Class 1 compatible commands

Moreover the **Telit GM862 module** supports also Telit proprietary AT commands for special purposes.

In the following the dedicated description of how to use the AT commands with the **Telit GM862 module.**

6.1 Definitions

The following syntactical definitions apply:

<CR> Carriage return character, is the command line and result code terminator character, which value, in decimal ASCII between 0 and 255,is specified within parameter `S3`.

The default value is 13.

<LF> Linefeed character, is the character recognised as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter `S4`. The default value is 10.

The line feed character is output after carriage return character if verbose result codes are used (V1 option used) otherwise, if numeric format result codes are used (V0 option used) it will not appear in the result codes.

<...> Name enclosed in angle brackets is a syntactical element. They do not appear in the command line.

[...] Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a read command, new value equals to its previous value. In AT commands which do not store the values of any of their subparameters, and so have not a read command, which are called *action type* commands, action should be done on the basis of the recommended default setting of the subparameter.

[1] The AT is an ATTENTION command and is used as a prefix to other parameters in a string. The AT command combined with other parameters can be set up in the communications package or typed in manually as a command line instruction.

6.2 AT Command Syntax

GSM commands use syntax rules of *extended* commands.

Every extended command has a *test command* (trailing =?) to test the existence of the command and to give information about the type of its subparameters. There are two types of extended command:

- *Parameter type* commands which also have a *read command* (trailing ?) to check the current values of subparameters.
- *Action type* commands do not store the values of any of their possible subparameters, and therefore do not have a read command.

6.2.1Command lines

The basic structure of the command lines are:

- ATCMD1<CR> where AT is the command line prefix, CMD1 is a basic command (i.e. it have not + prefix) and CR is the command line terminator character
- ATCMD2=10<CR> where 10 is a subparameter
- AT+CMD1;+CMD2=, ,10<CR> These are two examples of extended commands (which have a + prefix). They are delimited with semicolon. In the second command the subparameter is omitted
- +CMD1?<CR> This is a read command for checking current subparameter values
- +CMD1=?<CR> This is a test command for checking possible subparameter values

These commands could be performed in a single command line as shown below:

ATCMD1 CMD2=10;+CMD1;+CMD2=, ,10;+CMD1?;+CMD1=?<CR>

If command V1 is enabled (verbose responses codes) and all commands in a command line has been performed successfully, result code <CR><LF>OK<CR><LF> is sent from the TA to the TE, if subparameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code <CR><LF>ERROR<CR><LF> is sent and no subsequent commands in the command line are processed.

If command V0 is enabled (numeric responses codes), and all commands in a command line has been performed successfully, result code 0<CR> is sent from the TA to the TE, if sub-parameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code 4<CR> and no subsequent commands in the command line are processed.

In case of errors depending on ME operation, ERROR (or 4) response may be replaced by +CME ERROR: <err> (refer clause 9) or +CMS ERROR: <err>.

6.2.2 Information responses and result codes

The TA response, in case of verbose response format enabled, for the previous examples command line could be as shown below:

information response to +CMD1? <CR><LF>+CMD1:2,1,10<CR><LF>

information response to +CMD1=? <CR><LF>+CMD1(0-2),(0,1),(0-15)<CR><LF>

final result code <CR><LF>OK<CR><LF>

Moreover there are other two types of result codes:

- *result code*s that inform about progress of TA operation (e.g. connection establishment `CONNECT`)
- *result code*s that indicate occurrence of an event not directly associated with issuance of a command from TE (e.g. ring indication `RING`).

Here the basic result codes according to ITU-T V25Ter recommendation

Result Codes	
Numeric form	Verbose form
0	OK
1	CONNECT
2	RING
3	NO CARRIER
4	ERROR
6	NO DIALTONE
7	BUSY
8	NO ANSWER

6.2.3 Command Response Timeout

Every command issued to the Telit GM862 returns a result response if response codes are enabled (default). The time needed to process the given command and return the response varies from command to command and may depend also from the network on which the command may interact. As a result every command is provided with a proper timeout time, if this time elapses without any result from the operation, then an ERROR response is reported as if the operation was not successful and the operation is terminated.

The timeout time is quite short for commands that imply only internal set up commands, but may be very long for command that interact with the network (or even Networks).

The default timeout is 100 ms for all the commands that have no interaction with the network or upper software layers.

In the table below are listed all the commands whose timeout differs from the default 100 ms and their effective timeout is reported:

Command	Timeout (Seconds)
AT+CBST	0.2
AT+CR	0.2
AT+CRC	0.2
AT+CRLP	0.2
AT+CSCS	0.2
AT+CEER	5
AT+CGMI	5
AT+CGMM	5
AT+CGMR	5
AT+CGSN	20
AT+CIMI	20
AT+CNUM	20
AT+CREG	5
AT+COPS	180
AT+CLCK	180
AT+CPWD	180
AT+CLIP	180
AT+CLIR	180
AT+CCFC	180
AT+CCWA	20
AT+CHLD	20
AT+CUSD	180
AT+CAOC	20
AT+CSSN	20
AT+CLCC	20
AT+CPAS	5
AT+CPIN	20
AT+CSQ	5
AT+CPBS	5
AT+CPBR	20
AT+CPBF	20
AT+CPBW	20

AT+CALM	5
AT+CRSL	5
AT+CLVL	5
AT+CMUT	5
AT+CACM	20
AT+CAMM	20
AT+CPUC	20
AT+CMEE	5
AT+VTS	20
AT+GMI	5
AT+GMM	5
AT+GMR	5
AT+GSN	20
ATI3	5
ATI4	5
ATI5	5
AT+CSMS	5
AT+CPMS	5
AT+CMGF	5
AT+CSCA	20
AT+CSMP	5
AT+CSDH	5
AT+CSAS	5
AT+CRES	5
AT+CNMI	5
AT#CAP	10
AT#SRS	10
AT#SRP	10
AT#STM	10
AT#PCT	10
AT#SHDN	10
AT#QTEMP	10
AT#SGPO	10
AT#GGPI	10
AT#MONI	10

6.3 Hayes Compliant AT Commands

6.3.1 Generic Modem Control

6.3.1.1 &F - restore factory configuration

&F – restore factory configuration	
Execute command **AT&F**	Calls the factory configuration, resetting the default profile.
Read command	
Write command	
Test command	
Example	
Reference	V25ter.
SW release	Version A

6.3.1.2 Z - soft reset

Z – soft reset	
Execute command **ATZ <n>**	Send a software reset to device, loading on the configuration the specified default profile. Parameter: <n > = 0…1 - profile Note: Must be the last command on the line.
Read command	
Write command	
Test command	
Example	
Reference	V25ter.
SW release	Version A

6.3.1.3 +FCLASS - select active service class

+FCLASS - select active service class	
Execute command	
Read command **AT+FCLASS?**	Returns the current configuration value of the parameter <n>.
Write command **AT+FCLASS= <n>**	Set the GM862 in specified connection mode (data, fax, voice), hence all the calls done after, will be data or voice. Parameter: <n>: 0 = data <n>: 1 = fax class 1 <n>: 8 = voice
Test command **AT+FCLASS=?**	Returns all supported values of the parameters <n>.
Example	
Reference	GSM 07.07
SW release	Version A

6.3.1.4 &Y - designate a default reset profile

&Y – designate a default reset profile	
Execute command **AT&Y <n>**	The GM862 is able to store 2 complete configurations (see command &W). The command &Y defines which one of the 2 profiles will be the default profile to be loaded on startup. Parameter: <n> = 0…1 - profile Note: Differently from ATZ<n> command which simply loads the desired profile , with the command AT&Y the chosen profile becomes the one which will be loaded on every startup.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.1.5 &W - store current configuration

&W – store current configuration	
Execute command **AT&W <n>**	Stores on profile n the complete configuration of the device. Parameter: <n> = 0…1 - profile
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.1.6 &Z - store telephone number in the Telit GM862 module internal phonebook

&Z – store telephone number in the GM862 internal phonebook	
Execute command **AT&Z <n> = <nr>**	The GM862 has a built in non volatile memory in which telephone numbers of a maximum 24 digits can be stored. The command AT&Z <n> = <nr> stores in the record n the telephone number nr. The records cannot be overwritten, they must be cleared before rewriting. Parameter: <n>: phonebook record <nr>: telephone number Note1: To delete the record <n> the command AT&Z<n>= must be issued. Note2: The records in the GM862 memory can be viewed with the command AT&N, while the telephone number stored in the record n can be dialled by giving the command ATDS=<n>.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.1.7 &N - display internal phonebook stored numbers

&N – display internal phonebook stored numbers	
Execute command **AT&N <n>**	Returns the telephone number stored in the internal memory at the record number <n>. Parameter: <n> - phonebook record Note: if parameter <n> is omitted then all the internal records are shown.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.1.8 +GMI - request manufacturer identification

+GMI – request manufacturer identification	
Execute command **AT+GMI**	Returns the manufacturer identification.
Read command	
Write command	
Test command	
Example	
Reference	V.25ter
SW release	Version A

6.3.1.9 +GMM - request model identification

+GMM – request model identification	
Execute command **AT+GMM**	Returns the model identification.
Read command	
Write command	
Test command	
Example	
Reference	V.25ter
SW release	Version A

6.3.1.10 +GMR - request revision identification

+GMR – request revision identification	
Execute command **AT+GMR**	Returns the software revision identification.
Read command	
Write command	
Test command	
Example	
Reference	V.25ter
SW release	Version A

6.3.1.11 +GCAP - request capabilities list

+GCAP – request capabilities list	
Execute command **AT+GCAP**	Returns the equipment supported command set list.
Read command	
Write command	
Test command	
Example	
Reference	V.25ter
SW release	Version A

6.3.1.12 +GSN - request serial number

+GSN – request serial number	
Execute command **AT+GSN**	Returns the device board serial number. Note: The number returned is not the IMSI, it is only the board number
Read command	
Write command	
Test command	
Example	
Reference	V.25ter
SW release	Version A

6.3.1.13 &V - display current configuration & profile

&V – display current configuration & profile	
Execute command **AT&V**	Returns all the configuration parameters settings.
Read command	
Write command	
Test command	
Example	AT&V DTE SPEED : 19200 DTE FORMAT : 8N1 CELLULAR PHONE : GSM TELIT: Operative GSM DATA MODE : \N4=Not Trasparent AUTOBAUD : +IPR0=YES COMMAND ECHO : E1=YES RESULT MESSAGES : Q0=YES VERBOSE MESSAGES : V1=YES EXTENDED MESSAGES : X1=YES ECM TYPE MESSAGES : \V0=NO LINE SPEED : F8=9600 CONSTANT DTE SPEED : \J0=YES FLOW CONTROL OPTIONS : &K3=HW bidirect. ERROR CORRECTION MODE : \N4=RLP CTS (C106) OPTIONS : &B2=OFF while disc. DSR (C107) OPTIONS : &S3=PHONE ready->ON DTR (C108) OPTIONS : &D0=ignored DCD (C109) OPTIONS : &C1=follows carrier RI (C125) OPTIONS : \R1=OFF dur. off-hk C108/1 OPERATION : &D4=NO POWER SAVING ON DTR : +CFUN:1=NO CALL ABORT : *K1=YES DEFAULT PROFILE : &Y0=user profile 1 OK
Reference	V25ter
SW release	Version A

6.3.1.14 &V0 - display current configuration & profile

&V0 – display current configuration & profile	
Execute command **AT&V0**	Returns all the configuration parameters settings. Note: this command is the same as &V, it is included only for backwards compatibility.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.1.15 &V1 - display S registers values

&V1 – display S registers values	
Execute command **AT&V1**	Returns the value of the S registers in decimal and hexadecimal value in the format: REG DEC HEX <reg> <dec> <hex> where <reg> - S register number (0 .. 52) <dec> - current value in decimal notation <hex> - current value in hexadecimal notation
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.1.16 &V2 - display last connection statistics

&V2 – display last connection statistics	
Execute command **AT&V2**	Returns the last connection statistics & connection failure reason.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.1.17 \V - single line connect message

\V – Single line connect message	
Execute command **AT\V <n>**	Set single line connect message. Parameter: <n> = 0 - off <n> = 1 on
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.1.18 %L - report line signal level

%L – report line signal level	
Execute command **AT%L**	Reports the line signal level. Note: Since on mobile phone there's no line connection, command is included only for compatibility and returns only OK. To check signal strength (level) use the +CSQ command.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.1.19 %Q - report line quality

%Q – report line quality	
Execute command **AT%Q**	Reports the line quality indicator. Note: Since on mobile phone there's no line connection, command is included only for compatibility and returns only OK. To check signal quality use the +CSQ command.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.2 DTE - modem interface control

6.3.2.1 E - command echo

E – command echo	
Execute command	
Read command	
Write command **ATE <n>**	Controls the command echo response of the device, enabling or disabling the echo. Parameter: <n> = 0 - disables command echo, hence after this command the only characters received by DTE are the responses to commands sent to device. <n> = 1 - enables command echo (default) , hence command sent to the device are echoed back to the DTE before the response is given.
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.2.2 Q - quiet resut codes

Q – quiet result codes	
Execute command	
Read command	
Write command **ATQ <n>**	Enables or disables the result codes. Parameter: <n> = 0 - enables result codes <n> = 1 - disables result codes Note: After disabling result codes with ATQ1, the device does not return a response to commands (usually OK), but command are executed anyway.
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.2.3 V- result code form

V – result code form	
Execute command	
Read command	
Write command **ATV <n>**	Sets the result code format. Parameter: <n> = 0 set the short format (terse) return codes are numbers 0-9. <n> = 1 set the long form (verbose) return codes. Note: Line feed is not issued before a short format result code.
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.2.4 X - extended result codes

X – extended result codes	
Execute command	
Read command	
Write command **ATX <n>**	Selects the result code messages subset used by the modem to inform the DTE of the result of the commands. Parameter: <n> = 0 - send only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER results. Busy tones reporting is disabled. <n> = 1,2,3,4 - reports all messages (default).
Test command	
Note	For complete control on CONNECT response message see also +DR command.
Reference	V25ter
SW release	Version A

6.3.2.5 I - Request identifier and software checksum

I – request identifier and software checksum	
Execute command	
Read command	
Write command **ATI <n>**	Returns the identifier and a software checksum. Parameter: <n> = 0 numerical identifier. <n> = 1 GM862 checksum <n> = 2 checksum check result <n> = 3 manufacturer, software product code <n> = 4 product name <n> = 5 DOB version
Test command	
Example	
Reference	V25ter
SW release	Version B

6.3.2.6 &C - data carrier detect (DCD) control

&C – Data carrier detect (DCD) control	
Execute command	
Read command	
Write command **AT&C <n>**	Controls the RS232 DCD output behaviour. Parameter: <n> = 0 DCD remains high always. <n> = 1 DCD follows the Carrier detect status: if carrier is detected DCD is high, otherwise DCD is low. (default)
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.2.7 &D - data terminal ready (DTR) control

&D – data terminal ready (DTR) control	
Execute command	
Read command	
Write command **AT&D <n>**	Controls the GM862 behaviour to the RS232 DTR transitions. Parameter: <n> = 0 DTR transitions are ignored. <n> = 1 when the GM862 is connected, the high to low transition of DTR pin sets the device in command mode, the current connection is NOT closed. <n> = 2 when the GM862 is connected , the high to low transition of DTR pin sets the device in command mode and the current connection is closed. Note: if AT&D2 command is issued, the device does not answer to incoming calls if DTR is low, even if ATA command is given.
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.2.8 &K - flow control

&K – flow control	
Execute command	
Read command	
Write command **AT&K <n>**	Controls the RS232 flow control behaviour. Parameter. <n> = 0 - disabled <n> = 1 - only CTS active, Hardware mono-directional <n> = 2 - XON/XOFF software mono direction <n> = 3 - RTS/CTS active, Hardware bi-directional (default) <n> = 4 - XON/XOFF, Software bi-directional with filtering <n> = 5 - XON/XOFF, Software bi-directional without filtering (Pass Through) <n> = 6 - RTS/CTS active, Hardware bi-directional & software XON/XOFF (bi-directional) with filtering
Test command	
Example	
Reference	
SW release	Version A

6.3.2.9 &B - clear to send (CTS) control

&B – clear to send (CTS) control	
Execute command	
Read command	
Write command **AT&B <n>**	Controls the RS232 CTS pin behaviour. Parameter: <n> = 0 - always ON (high) <n> = 1 - follows C105 (RTS) <n> = 2 - always ON when connected, OFF otherwise Note: if flow control is enabled CTS pin is controlled by the hardware serial port, hence this setting works only if hardware flow control is disabled. See also command &K.
Test command	
Example	
Reference	
SW release	Version A

6.3.2.10 &S - data set ready (DSR) control

&S – data set ready (DSR) control	
Execute command	
Read command	
Write command **AT&S <n>**	Controls the RS232 DSR pin behaviour: n = 0 - always ON n = 1 - follows the GSM traffic channel indication. n = 2 - ON when connected n = 3 - ON when device is ready to receive commands Note: if option 1 is selected then DSR is tied up when the device receives from the network the GSM traffic channel indication.
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.2.11 \R - ring (RI) control

\R – ring (RI) control	
Execute command	
Read command	
Write command **AT\R <n>**	controls the RING output pin behaviour. Parameter: <n> = 0 - RING off when disconnecting <n> = 1 - RI off at off-hook time <n> = 2 - RI follows the ring signal Note: to check the ring option status use the &V command.
Test command	
Example	
Reference	
SW release	Version A

6.3.2.12 +IPR - fixed DTE interface rate

+IPR – fixed DTE interface rate	
Execute command	
Read command **AT+IPR?**	Returns the current value of +IPR parameter.
Write command **AT+IPR = <rate>**	Specifies the DTE speed at which the device accepts commands during command mode operation, it may be used to fix the DTE-DCE interface speed. Parameter: <rate> = 0/300/1200/2400/4800/9600/19200/38400/57600/115200 If <rate> is unspecified or set to 0, then automatic speed detection is enabled and also character format (see +ICF) is set to auto-detect. If <rate> is specified and not 0, DTE-DCE speed is fixed at that speed, hence no speed auto-detection (autobauding) is enabled.
Test command **AT+IPR=?**	Returns the supported serial port speed list.
Example	
Reference	V25ter
SW release	Version A

6.3.2.13 +IFC - DTE - DTA flow control

+IFC – DTE-DTA flow control	
Execute command	
Read command **AT+IFC?**	Returns active flow control settings.
Write command **AT+IFC = <by_te>, <by_ta>**	Response Selects the flow control behavior of the serial port in both directions: from DTE to DTA (<by_ta> option) and from DTA to DTE (<by_te>) Parameter: <by_te> - flow control option for the data received by DTE, <by_ta> - flow control option for the data sent by DTA (GM862) <by_te> = 0 - flow control None <by_te> = 1 - XON/XOFF filtered <by_te> = 2 - C105 (RTS) <by_te> = 3 - XON/XOFF not filtered <by_ta> = 0 - flow control None <by_ta> = 1 - XON/XOFF <by_ta> = 2 - C106 (CTS) Note: This command is equivalent to &K command.
Test command **AT+IFC=?**	Response Returns all supported values of the parameters <by_te> and <by_ta>.
Example	
Reference	V25ter
SW release	Version A

6.3.2.14 +ILRR - DTE - modem rate reporting

+ILRR – DTE-modem rate reporting	
Execute command	
Read command **AT+ILRR?**	Returns active setting of port speed rate reporting information.
Write command **AT+ILRR = <n>**	Controls whether or not the +ILRR:<rate> information text is transmitted from the GM862 to the DTE. Parameter: <n> = 0 - local port speed rate reporting disabled <n> = 1 - local port speed rate reporting enabled Note: this information if enabled is sent upon connection.
Test command **AT+ILRR=?**	Returns all supported values of the parameter <n>
Example	
Reference	V25ter
SW release	Version A

6.3.2.15 +ICF - DTE - modem character format

+ICF – DTE-modem character format	
Execute command	
Read command **AT+ICF?**	Returns current value of the character format.
Write command **AT+ICF = <format>[,<parity>]**	Defines the asynchronous character format to be used when autobauding is disabled. Parameter: <format> = 0..5, < parity> = 0/1 AT+ICF = 0 - auto detect AT+ICF = 1 - 8N2 AT+ICF = 2,0 - 8O1 AT+ICF = 2,1 - 8E1 AT+ICF = 3 - 8N1 AT+ICF = 5,0 - 7O1 AT+ICF = 5,1 - 7E1 Note: the character format is defined as: number of bit per char, parity bit and stop bit; where parity can be None, Odd and Even. E.g. 8E1 means 8 bit per char with the even parity bit and 1 stop bit.
Test command **AT+ICF=?**	Returns all supported values of the parameters <format> and <parity>
Example	
Reference	V25ter
SW release	Version A

6.3.3 Call Control

6.3.3.1 D - dial

D – dial	
Execute command **ATD <number>**	Starts a call to the phone number given as parameter. Parameter: <number> - phone number to be dialled Note: The call is a data call or voice call depending on `+FCLASS` setting. If `AT+FCLASS=8` command was issued before calling then the call will be done as a voice call, instead if `AT+FCLASS=0` command was issued the call will be a data one. The default value of `+FCLASS` is 0 hence calls are by default data ones. The numbers accepted are 0-9 and *,#,"A", "B", "C", "D","+". For backwards compatibility with landline modems modifiers "T", "P", "R", ",", "W", "!", "@" are accepted but have no effect.
ATD <number> ;	Issues a VOICE call to the number given regardless of the current value of the parameter +FCLASS, which remains unaffected. Parameter: <number> - phone number to be dialled.
ATD <n> [;]	Issues a call (VOICE if ";" modifier is added to the end of the command) to the number stored in the GM862 internal phonebook position number <n>. Parameter: <n> - internal phonebook position to be called
ATD> <n> [;]	Issues a call (VOICE if ";" modifier is added to the end of the command) to the number stored in the SIM phonebook in the record number <n>. Parameter: <n> - SIM phonebook position to be called
ATDL	Issues a call to the last number dialled.
ATDS=<nr>	Issues a call to the internally stored number at the position <nr>. (See commands &N and &Z)
ATD<n> I [;]	Issues a call [voice if ; is added] overwriting the CLIR setting in order to hide the CLI to the called party for the current call only.
ATD<n> i [;]	Issues a call [voice if ; is added] overwriting the CLIR setting in order to show the CLI to the called party for the current call only.
ATD<n> G[;] **ATD<n>g[;]**	Issues a call [voice if ; is added] checking the CUG supplementary service for the current call. Refer to +CCUG command.
Read command	
Write command	
Test command	
Example	
Reference	V25ter.
SW release	Version B

6.3.3.2 T - set tone dial

T – set tone dial	
Execute command **ATT**	It has no effect is included only for backward compatibility with landline modems.
Read command	
Write command	
Test command	
Example	
Reference	V25ter.
SW release	Version A

6.3.3.3 P - set pulse dial

P – set pulse dial	
Execute command **ATP**	It has no effect is included only for backward compatibility with landline modems.
Read command	
Write command	
Test command	
Example	
Reference	V25ter.
SW release	Version A

6.3.3.4 A - answer

A – answer	
Execute command **ATA**	It is used to answer to an incoming call if automatic answer is disabled. Note: This command MUST be the last in the command line and must be followed immediately by a <CR> character.
Read command	
Write command	
Test command	
Example	
Reference	V25ter.
SW release	Version A

6.3.3.5 A/ - Last command automatic repetition

A/ – last command automatic repetition	
Execute command **A/**	It is used to execute again the last received command. Note: You mustn't end this command with a <CR> character.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version B

6.3.3.6 H - disconnect

H - disconnect	
Execute command **ATH**	It is used to close the current conversation (voice, data or fax). **Note**: When a data conversation is active the device is in on-line mode commands are not sensed, instead characters are sent to the other interlocutor. To issue this command you must be in command mode operation, hence escape sequence (see register S2) may be required before issuing this command, otherwise if &D1 option is active, DTR pin should be tied low to return in the command mode. When a voice call is active, no escape sequence is needed.
Read command	
Write command	
Test command	
Example	
Reference	V25ter.
SW release	Version A

6.3.3.7 O - return to On Line Mode

O – return to on line mode	
Execute command **ATO**	It is used return to On-line mode from command mode. If there's no connection active returns ERROR. Note: After the issue of this command, if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence or lowering DTR if &D1 option is active.
Read command	
Write command	
Test command	
Example	
Reference	V25ter.
SW release	Version A

6.3.3.8 &G - guard tone

&G – guard tone	
Execute command **AT&G**	It is has no effect is included only for backward compatibility with landline modems.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.3.9 &P - pulse dial make/break ratio

&P – pulse dial make/break ratio	
Execute command **AT&P**	It is has no effect is included only for backward compatibility with landline modems..
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.4 Modulation control

6.3.4.1 +MS - modulation control

+MS – modulation control	
Execute command	
Read command	
Write command **AT+MS = <modulation>, <automode>, <min_speed>, <max_speed>**	This command has no effect is included only for backward compatibility with landline modems. Parameter: <modulation> =V21 / V22 / V22B / V23C / V32 / V34 <automode> = 0/1 <min_speed> = 0 <max_speed> = 300-14400 **Note**: to change modulation requested use +CBST command.
Test command	
Example	
Reference	
SW release	Version A

6.3.4.2 %E - enable/disable line quality monitor and auto retrain or fallback / fallforward

%E – enable/disable line quality monitor and auto retrain or fallback/fallforward	
Execute command **AT%E**	It has no effect is included only for backward compatibility with landline modems.
Read command	
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.5 Compression control

6.3.5.1 +DS - set data compression

+DS – set data compression	
Execute command	
Read command **AT+DS?**	Returns current value of the data compression parameter.
Write command **AT+DS = <n>**	Sets the V42 compression parameter. Parameter: <n> = 0 - no compression <n> = 1 - compression enabled Note: **The only value supported is 0 - no compression**
Test command **AT+DS=?**	Returns all supported values of the parameter n
Example	
Reference	V25ter
SW release	Version A

6.3.5.2 +DR - data compression reporting

+DR – data compression reporting	
Execute command	
Read command	
Write command **AT+DR = <n>**	Controls the data compression reporting upon connection. Parameter: <n> = 0 no data compression reporting is displayed at the connection <n> = 1 a data compression report message is sent by the device upon connection
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.6Break control

6.3.6.1 \B - transmit break to remote

\B – transmit break to remote	
Execute command	
Read command	
Write command **AT\B**	It has no effect is included only for backward compatibility with landline modems
Test command	
Example	
Reference	
SW release	Version A

6.3.6.2 \K - break handling

\K – break handling	
Execute command	
Read command	
Write command **AT\K<n>**	Response It has no effect is included only for backward compatibility with landline modems <n> = 1.. 5
Test command	
Example	
Reference	
SW release	Version A

6.3.7 S parameters

6.3.7.1 S0 - number of rings to auto answer

S0 – number of rings to auto answer	
Execute command	
Read command **ATS0?**	Returns the current value of S0 parameter.
Write command **ATS0 = <n>**	Sets the number of rings required before device automatically answers an incoming call. Parameter: <n> = 0-255 <n> = 0 auto answer disabled
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.7.2 S1 - ring counter

S1 – ring counter	
Execute command	
Read command **ATS1?**	S1 is incremented each time the device detects the ring signal of an incoming call. S1is cleared if no ring occur over an eight seconds interval. This command returns the value of this parameter.
Write command	
Test command	
Example	
Reference	
SW release	Version A

6.3.7.3 S2 - escape character

S2 – escape character	
Execute command	
Read command	
Write command **ATS2 = <char>**	S2 holds the decimal value of the ASCII character used as escape character. This command sets this character equal to <char>. Parameter: <char> - escape character 0-255 Note: The escape sequence consists of three escape characters preceded by n ms of idle and followed by m ms of idle.
Test command	
Example	
Reference	
SW release	Version A

6.3.7.4 S3 - carriage return character

S3 – carriage return character	
Execute command	
Read command	
Write command **ATS3 = <char>**	Sets the command line and result code terminator character in decimal ASCII. Parameter: <char> - carriage return character 0-127 Note: Default 13 (Carriage Return)
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.7.5 S4 - line feed character

S4 – line feed character	
Execute command	
Read command	
Write command **ATS4 = <char>**	Sets the character recognized as line feed character. Parameter: <char> - line feed character 0-127 Note: Default 10 (Line Feed). The line feed character is output after carriage return character if verbose result codes are used (V1 option used).
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.7.6 S5 - backspace character

S5 – backspace character	
Execute command	
Read command	
Write command **ATS5 = <char>**	Sets the decimal ASCII character that is recognized as backspace character. Parameter: <char> - backspace character 1-127 Note: Default 8 (backspace)
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.7.7 S7 - wait time for carrier, silence or dial tone

S7 – wait time for carrier, silence or dial tone	
Execute command	
Read command	
Write command **ATS7 = <sec>**	S7 sets the length of time in seconds that the device will wait for carrier before hanging up the call. The timer is started when the device finishes dialing (originate), or 2 seconds after going off-hook. Parameter: <sec> - 1-255 Note: Default is 60 seconds
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.7.8 S10 - lost carrier to hang up delay

S10 – lost carrier to hang up delay	
Execute command	
Read command	
Write command **ATS10 = <time>**	S10 defines the maximum time allowed to a carrier loss before disconnecting. Parameter: <time> - tenth of seconds 1-255 Note: default is 50 (5 seconds).
Test command	
Example	
Reference	V25ter
SW release	Version A

6.3.7.9 S12 - escape prompt delay

S12 – escape prompt delay	
Execute command	
Read command	
Write command **ATS12 = <time>**	Defines the guard time of silence before and after the escape sequence in order to accept it as a valid one. Parameter: <time> - 20-255 fiftieth of seconds Note: default is 50 (1 second)
Test command	
Example	
Reference	
SW release	Version A

6.3.7.10 S25 - delay to DTR off

S25 –delay to DTR off	
Execute command	
Read command	
Write command **ATS25 = <time>**	Defines how long the DTR must be off to consider the high to low transition as a valid one. Parameter: <time> - 1-255 hundredth of seconds Note: default is 5 (5 hundredth of second)
Test command	
Example	
Reference	
SW release	Version A

6.3.7.11 S30 - disconnect inactivity timer

S30 –disconnect inactivity timer	
Execute command	
Read command	
Write command **ATS30 = <min>**	Defines the inactivity timeout timer value in minutes. The Device disconnects if no characters are exchanged for a time period of at least S30 minutes. Parameter: <min> - 0-127 minutes <min> = 0 - means inactivity timer disabled, hence no disconnect on inactivity feature is enabled. Note: Default is 0
Test command	
Example	
Reference	
SW release	Version A

6.3.7.12 S38 - delay before forced hang up

S38 –delay before forced hang up	
Execute command	
Read command	
Write command **ATS38 = <sec>**	Defines the time in seconds that the device waits after a hang up command for transmit buffer to be emptied. 255 value means that disconnecting is done only after complete buffer upload. Parameter: <sec> - 0-255 s Note: Default is 20 s
Test command	
Example	
Reference	
SW release	Version A

6.4 ETSI GSM 07.07 AT Commands

6.4.1 General

6.4.1.1 +CGMI - request manufacturer identification

+CGMI – request manufacturer identification	
Execute command **AT+CGMI**	Returns the device manufacturer identification code.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.1.2 +CGMM - request model identification

+CGMM – request model identification	
Execute command **AT+CGMM**	Returns the device model identification code.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.1.3 +CGMR - request revision identification

+CGMR – request revision identification	
Execute command **AT+CGMR**	Returns device software revision number.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.1.4 +CGSN - request product serial number identification

+CGSN – request product serial number identification	
Execute command **AT+CGSN**	Returns the product serial number, identified as the IMEI of the mobile.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.1.5 +CSCS - select TE character set

+CSCS – select TE character set	
Execute command	
Read command **AT+CSCS?**	Returns the current value of the active character set.
Write command **AT+CSCS <chset>**	Sets the current character set used by the device. Parameter: <chset> = "IRA" - char set Note: The only character set supported yet is the ITU–T.50 (IRA)
Test command **AT+CSCS=?**	Returns the supported values of the parameter chset. Yet only IRA is supported.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.1.6 +CIMI - request international mobile subscriber identity (IMSI)

+CIMI – request international mobile subscriber identify (IMSI)	
Execute command **AT+CIMI**	Returns the value of the Internal Mobile Subscriber Identity stored in the SIM. Note: A SIM card must be present in the SIM card housing, else the command returns ERROR.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.2 Call control

6.4.2.1 +CBST - select bearer service type

+CBST – select bearer service type	
Execute command	
Read command **AT+CBST?**	Returns current value of the parameters <speed>,<name> and <ce>
Write command **AT+CBST = <speed>, <name>, <ce>**	Selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated. Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls (refer +CSNS). Parameters: The default values of the subparameters are manufacturer specific since they depend on the purpose of the device and data services provided by it. Not all combinations of these subparameters are supported. The supported values are: <speed> 0 – autobauding (automatic selection of the speed) 1 - 300 bps (V.21) 2 - 1200 bps (V.22) 3 - 1200/75 bps (V.23) 4 - 2400 bps (V.22bis) 6 - 4800 bps (V.32) 7 - 9600 bps (V.32) 14 - 14400 bps (V.34) 65 - 300 bps (V.110) 66 - 1200 bps (V.110) 68 - 2400 bps (V.110 or X.31 flag stuffing) 70 - 4800 bps (V.110 or X.31 flag stuffing) 71 - 9600 bps (V.110 or X.31 flag stuffing) 75 - 14400 bps (V110 or X.31 flag stuffing) <name> 0 - data circuit asynchronous <ce> 0 – transparent 1 - non transparent Default is +CBST = 0,0,1
Test command **AT+CBST=?**	Returns the supported range of values of the parameters.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.2.2 +CRLP - radio link protocol

+CRLP – radio link protocol	
Execute command	
Read command **AT+CRLP?**	Returns the current value of the RLP protocol parameters.
Write command **AT+CRLP = <iws>, <mws>, <T1>, <N2>, <ver>**	Radio link protocol (RLP) parameters used when non-transparent data calls are originated may be altered with this command. Parameters: <iws> = 1...61 - IWF window Dimension <mws> = 1...61 - MS window Dimension <T1> = 39…255 – acknowledge timer (10 ms units). <N2> = 1…255 – retransmission attempts <ver> = 0 - protocol Version The default values are: 61,61,78,6,0
Test command **AT+CRLP=?**	Returns supported range of values of the RLP protocol parameters.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.2.3 +CR - service reporting control

+CR – service reporting control	
Execute command	
Read command **AT+CR?**	Returns current intermediate report setting
Write command **AT+CR = <mode>**	Controls whether or not intermediate result code +CR: <serv> is returned from the TA to the TE. If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code CONNECT is transmitted. Parameter: <mode> <mode> = 0 - disables intermediate result code report <mode> = 1 - enables intermediate result code report This command replaces V.25ter [14] command Modulation Reporting Control +MR, which is not appropriate for use with a GSM terminal. The result code parameter <serv> has the meaning: ASYNC - asynchronous transparent SYNC - synchronous transparent REL ASYNC - asynchronous non-transparent REL SYNC - synchronous non-transparent
Test command **AT+CR=?**	Returns the supported range of values of the parameter <mode>.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.2.4 +CEER - extended error report

+CEER – extended error report	
Execute command **AT+CEER**	Reports a information text regarding some error condition that may occur: - the failure in the last unsuccessful call setup (originating or answering) - the last call release Note: if none of this condition has occurred since power up then No Error condition is reported
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.2.5 +CRC - cellular result codes

+CRC – cellular result codes	
Execute command	
Read command **AT+CRC?**	Returns current value of the parameter <mode>.
Write command **AT+CRC = <mode>**	Controls whether or not the extended format of incoming call indication is used. When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING:<type> instead of the normal RING. Parameter: <mode> = 0 - disables extended format reporting <mode> = 1 - enables extended format reporting Note: On +CRING indication <type> parameter is the call type: <type> = DATA - Data call <type> = FAX - Facsimile call <type> = VOICE - Voice call
Test command **AT+CRC=?**	Returns supported values of the parameter <mode>.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3 Network service handling

6.4.3.1 +CNUM - subscriber number

+CNUM – subscriber number	
Execute command **AT+CNUM**	Returns the subscriber number i.e. the phone number of the device that is stored in the SIM card. Note: the returned number format is: +CNUM: [<alpha>] , <number> , <type> <alpha> - optional alphanumeric string associated to <number> <number> - string containing the phone number in the format <type> <type>- type of number: <type> = 145 - international numbering scheme (contains the character "+") <type> = 129 - national numbering scheme
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.2 +CREG - network registration report

+CREG – network registration report	
Execute command	
Read command	
Write command **AT+CREG = <mode>**	Enables/disables network registration reports depending on the parameter mode. Parameter: <mode> 0 – disable network registration unsolicited result code 1 - enable network registration unsolicited result code 2 - enable network registration unsolicited result code with network Cell identification data If mode=1, network registration result code reports: +CREG: <stat> <stat> = 0 - not registered, ME is not currently searching a new operator to register to <stat> = 1 – registered, home network <stat> = 2 - not registered, but ME is currently searching a new operator to register to <stat> = 3 - registration denied <stat> = 4 -unknown <stat> = 5 - registered, roaming If mode=2, network registration result code reports: +CREG: <stat>[,<Lac>,<Ci>] where: <Lac> is the Local Area Code for the currently registered on cell <Ci> is the Cell Id for the currently registered on cell **Note**: <Lac> and <Ci> are reported only if mode=2 and the mobile is registered on some network cell.
Test command **AT+CREG?**	Reports the <mode> and <stat> parameter values in the format: +CREG: <mode>,<stat>[,<Lac>,<Ci>] **Note**: <Lac> and <Ci> are reported only if mode=2 and the mobile is registered on some network cell.

+CREG – network registration report	
Example	AT OK at+creg? +CREG: 0,2 (the GM862 is in network searching state) OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,1 (the GM862 is registered) OK at+creg? +CREG: 0,1 OK
Reference	GSM 07.07
SW release	Version A

6.4.3.3 +COPS - operator selection

+COPS – operator selection	
Execute command	
Read command **AT+COPS?**	Returns current value of <mode>,<format> and <oper>
Write command **AT+COPS =** **[<mode>[,<format>[,<oper>]]]**	Forces an attempt to register the GSM network operator, <mode> parameter defines whether the operator selection is done automatically or it is forced with <oper> parameter. Parameters: <mode> = 0 - automatic choice (the parameter <oper> will be ignored) <mode> = 1 - manual choice <mode> = 3 - set only <format> parameter (the parameter <oper> will be ignored) <format> = 0 - alphanumeric max length 16 digits <format> = 2 - Numeric 5 digits [country code (3) + network code (2)] <oper>: network operator in the <format> parameter defined format. Note: if manual choice selection operator is not available no other operators will be chosen for registration.
Test command **AT+COPS=?**	Returns the list of network operators in the format: +COPS: (<stat> ,<oper (in format=0)>,"",<oper (in format=2)>) where the new parameter stat defines the status of the operator: <stat> = 0 – unknown <stat> = 1 – available <stat> = 2 – current <stat> = 3 – forbidden Note: since with this command a network scan is done, this command may require some seconds before the output is given.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.4 +CLCK - facility lock/ unlock

+CLCK – facility lock/unlock	
Execute command **AT+CLCK =** **<fac>,** **<mode>[,<passwd>** **[,<class>]]**	It is used to lock or unlock a ME o a network facility. Parameters: <fac>: "SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued) "AO"- BAOC (Barr All Outgoing Calls) "OI" - BOIC (Barr Outgoing International Calls) "OX"- BOIC-exHC (Barr Outgoing International Calls except to Home Country) "AI" - BAIC (Barr All Incoming Calls) "IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country) "AB" - All Barring services (applicable only for <mode>=0) "AG" - All outGoing barring services (applicable only for <mode>=0) "AC" - All inComing barring services (applicable only for <mode>=0) "FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>) "PN" - network Personalisation "PU" - network subset Personalisation <mode>: defines the operation to be done on the facility <mode> = 0 - unlock facility <mode> = 1 - lock facility <mode> = 2 - query status (see below) <passwd>: shall be the same as password specified for the facility from the DTE user interface or with command Change Password +CPWD <class>: represents the class of information of the facility (sum of bits) <class> = 1- voice (telephony) <class> = 2 - data (refers to all bearer services) <class> = 4 - fax (facsimile services) ()
Read command **AT+CLCK=<fac>,2**	query the status of the facility <fac>; returns `+CLCK:<status>` where <status> defines the current status of the facility: 0 - not active (locked) 1 - active (unlocked) Note: For some facility the status is requested to the network, hence if no network is available the command returns the ERROR message.

+CLCK – facility lock/unlock	
Write command	
Test command **AT+CLCK=?**	Reports all the facility supported by the device.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.5 +CPWD - change facility password

+CPWD – change facility password	
Execute command **AT+CPWD = <fac>, <oldpwd>, <newpwd>**	Changes the password for the facility lock function of the facility fac. Parameter: <fac>, <oldpwd>, <newpwd> Note: parameter <oldpwd> is the old password while <newpwd> is the new one.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.6 +CLIP - calling line identification presentation

+CLIP – calling line identification presentation	
Execute command	
Read command **AT+CLIP?**	Returns the status of the supplementary service CLI in the format: +CLIP: <n>, <m> where: <n> = 0 - CLI presentation disabled <n> = 1 - CLI presentation enabled <m>: status if the CLIP service on the GSM network <m> = 0 - CLIP not provisioned <m> = 1 - CLIP provisioned <m> = 2 - unknown (e.g. no network is present) Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data with it.
Write command **AT+CLIP = <n>**	Enables or disables the calling line identification supplementary service presentation depending on the value of the parameter <n>. Parameters: <n> <n> = 0 - disables CLI indication <n> = 1 - enables CLI indication If enabled the device reports after each RING the response: +CLIP:<number>,<type> where: <number>: calling line number <type> - type of number: <type> = 145 - international numbering scheme (contains the character "+") <type> = 129 - national numbering scheme Note: The command changes only the report behaviour of the device, it does not change CLI supplementary service setting on the network.
Test command **AT+CLIP=?**	Returns the supported values of the parameter <n>
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.7 +CLIR - calling line identification restriction

+CLIR – calling line identification restriction	
Execute command	
Read command **AT+CLIR?**	Reports the network & the device CLIR setting in the format: +CLIR:<n>,<m> where <n> is the facility status on the Mobile 0 – CLIR facility according to CLIR service network status 1 – CLIR facility active (CLI not sent) 2 – CLIR facility not active (CLI sent) <m> is the facility status on the Network 0 - CLIR service not provisioned 1 - CLIR service provisioned permanently 2 - unknown (e.g. no network present, etc.) 3 - CLI temporary mode presentation restricted 4 - CLI temporary mode presentation allowed
Write command **AT+CLIR = <n>,<m>**	Refers to CLIR – service that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call according to the parameters <n> and <m> given Parameters: <n>, <m> <n> is the facility status on the Mobile 0 – CLIR facility according to CLIR service network status 1 – CLIR facility active (CLI not sent) 2 – CLIR facility not active (CLI sent) <m> is the facility status on the Network 0 - CLIR service not provisioned 1 - CLIR service provisioned permanently 3 - CLI temporary mode presentation restricted 4 - CLI temporary mode presentation allowed Note: This command set the default behaviour of the device in outgoing calls and of the network. The two settings should not be conflicting.
Test command **AT+CLIR=?**	Reports the supported values of the parameter <n>.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.8 +CCFC - call forwarding number and conditions

+CCFC – call forwarding number and condition	
Execute command **AT+CCFC =** **<reason>,** **<cmd>[,<number>[,<type>[,<class>][,,,<time>]]]**	Controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported. Parameters: <reason> = 0 – unconditional <reason> = 1 - mobile busy <reason> = 2 - no reply <reason> = 3 - not reachable <reason> = 4 - all calls (not with query command) <reason> = 5 - all conditional calls (not with query command) <cmd> = 0 – disable <cmd> = 1 - enable <cmd> = 2 - query status (see below for further explanations) <cmd> = 3 – registration <cmd> = 4 – erasure <number>: phone number of forwarding address in format specified by <type> parameter <type>: type of address byte in integer format : 145 - international numbering scheme (contains the character "+") 129 - national numbering scheme <class>: is a sum of integers each representing a class of information which the command refers; default 7 (voice + data + fax) <class> = 1 - voice (telephony) <class> = 2 - data <class> = 4 - fax (facsimile services, from SW release C) <time>: is the time in seconds after which the call is diverted if "no reply" reason is chosen. Valid only for "no reply" reason.

+CCFC – call forwarding number and condition	
Read command **AT+CCFC = <reason>,2,[number>[,<type>[,dopo <time>s]]]**	Queries the network for forwarding service settings on a specific reason. The result is in the form: +CCFC:<status>,<class>[,<number>[,<type>[,dopo <time>s]]] where: <status> = 0 - service not active <status> = 1 - service active (calls will be forwarded) <time>: - 1...30 when "no reply" option for reason is enabled or queried, this gives the time in *seconds* to wait before call is forwarded, default value is 20. The other parameters are as seen before. Note: When querying the status of a network service (<cmd>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>.
Write command	
Test command **AT+CCFC=?**	Reports supported values for the parameter <reason>.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.9 +CCWA - call waiting

+CCWA – call waiting	
Execute command **AT+CCWA =** **[<n>[,<cmd>[,<class>]]]**	Controls the call waiting indication supplementary service. Activation, deactivation, and status query are supported. Parameters: <n>: enables/disables call waiting indication reporting: <n> = 0 – disable <n> = 1 - enable <cmd> enables/disables or queries the service at network level: <cmd> = 0 - disable <cmd> = 1 – enable <cmd> = 2 - query status <class>: is a sum of integers each representing a class of information which the command refers; default 7 (voice + data + fax) <class> = 1 - voice (telephony) <class> = 2 - data <class> = 4 - fax (facsimile services) The response to the query command is in the form: +CCWA=<status>,<class> Where <status> represents the status of the service: <status> = 0 - inactive <status> = 1 - active <class> is the class of calls the service status refers to. Note: if parameter <cmd> is omitted then network is not interrogated. Note2: In the query command the class parameter must not be issued. Note3: The difference between call waiting report disabling (AT+CCWA = 0,1,7) and call waiting service disabling (AT+CCWA = 0,0,7) is that in the first case the call waiting indication is sent to the device by network but this last one does not report it to the DTE; instead in the second case the call waiting indication is not generated by the network. Hence the device results busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party. Note4: The command AT+CCWA=1,0 is a non sense and must not be issued.
Read command **AT+CCWA?**	Reports the current value of the parameter <n>.
Write command	

+CCWA – call waiting	
Test command **AT+CCWA=?**	Reports the supported values for the parameter <n>.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.10 +CHLD - call holding services

+CHLD – call holding services	
Execute command **AT+CHLD = <n>**	Controls the network call hold service. With this service it is possible to disconnect temporarily a call and keep it suspended while it is retained by the network, contemporary it is possible to connect another party or make a multiparty connection. The action of the command depends on the value of the parameter Parameter: <n> = 0 Releases all pending calls <n> = 1 Releases all active calls (if present), and accepts or reconnects the pending or waiting call <n> = 2 Suspends (into pending status) the active call and accepts or reconnects the waiting or pending call. <n> = 3 NOT SUPPORTED Note: ONLY for VOICE calls
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.11 +CUSD - unstructured supplementary service data

+CUSD – unstructured supplementary service data	
Execute command **AT+CUSD = <n>,[<str>]**	Enables /disables the unstructured service data reporting. Parameters: <n>: is used to disable/enable the presentation of an unsolicited result code: +CUSD: <m>[,<str>,<dcs>] to the TE. <n>: <n> = 0 - disable the result code presentation in the DTA <n> = 1 - enable the result code presentation in the DTA <dcs> indicates which alphabet is used (Data Coding Scheme),refer to command Select TE Character Set +CSCS <str> - USSD-string (when <str> parameter is not given, network is not interrogated): - if TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set according to rules of GSM 07.05 - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character Π (GSM 23) is presented as 17 (IRA 49 and 55)) -if<dcs> indicates that 8-bit data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)) <m>: <m> = 0 - no further user action required, hence network initiated USSD-Notify, or no further information needed after mobile initiated operation. <m> = 1 - further user action required, hence network initiated USSD-Request, or further information needed after mobile initiated operation <m> = 2 - USSD terminated by the network <m> = 3 - other local client has responded <m> = 4 - operation not supported <m> = 5 - network time out Note: only mobile initiated operations are supported. Warning: In case of successful mobile initiated operation, DTA waits the USSD response from the network and sends it to the DTE before the final result code. This will block the AT command interface for the period of the operation.

+CUSD – unstructured supplementary service data	
Read command **AT+CUSD?**	Reports the current value of the parameter <n>
Write command	
Test command **AT+CUSD=?**	Reports the supported values for the parameter <n>: <n> = 0 - result code presentation in the TA disabled <n> = 1 - result code presentation in the TA enabled
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.12 +CAOC - advice of charge

+CAOC – advice of charge	
Execute command **AT+CAOC = <mode>**	Controls the advise of charge service; the command also includes the possibility to enable an unsolicited event reporting of the CCM information. If unsolicited reporting is enabled DTE sends the result code +CCCM: <acm> when the CCM value changes, but not more than every 10 seconds. <acm> - accumulated call meter value hexadecimal representation (3 byte) Parameter: <mode> = 0 - ACM (Accumulated Call Meter) read request <mode> = 1 - disables unsolicited ACM reporting <mode> = 2 - enables unsolicited ACM reporting Note: +CAOC command uses the ACM of the device internal memory, not the ACM stored in the SIM. The difference is that the internal memory ACM is reset at power up, while the SIM ACM is reset only on user request. Advice of Charge values stored in the SIM (ACM, ACMmax, PUCT) can be accessed with commands +CACM, +CAMM and +CPUC.
Read command **AT+CAOC?**	Reports the value of ACM in the format: +CAOC: xxxxxx.
Write command	
Test command **AT+CAOC=?**	Reports the supported values for <mode> parameter.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.13 +CLCC - list current calls

+CLCC – list current calls	
Execute command **AT+CLCC**	Reports the list of current calls active and their characteristics by sending the report +CLCC:<id>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>] for each active call, where: <id> - call identification number <dir> - call direction 0 - mobile originated call 1 - mobile terminated call <stat> - state of the call 0 - active 1 - held 2 - dialing (MO call) 3 - alerting (MO call) 4 - incoming (MT call) 5 - waiting (MT call) <mode> - call type 0 – voice 1 – data 2 – fax 9 - unknown <mpty> - multiparty call flag 0 - call is not one of multiparty (conference) call parties 1 - NOT SUPPORTED <number>: phone number in format specified by <type> <type>: type of phone number byte in integer format 145 - international numbering scheme (contains the character "+") 129 - national numbering scheme Note: If no call is active then only OK message is sent. This command is useful in conjunction with command +CHLD to know the various call status for call holding.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.3.14 +CSSN – SS Notification

+CSSN – SS notification	
Execute command	
Read command	
Write command **AT+CSSN = <n>, <m>**	Enable/disable the supplementary service related network initiated notifications, during the origin of outgoing calls (+CSSI) and incoming calls (+CSSU) Parameters: <n>: sets the +CSSI result code presentation status 0 disable 1 enable <m>: sets the +CSSU result code presentation status 0 disable 1 enable
Test command	
Example	
Reference	GSM 07.07
SW release	Version B

5.4.3.15 +CCUG – Closed User Group supplementary service control

+CCUG – Closed User Group supplementary service control	
Execute command	
Read command **AT+CCUG?**	Reports the current value of the parameters in the format: +CCUG: <n>,<index>,<info>
Write command **AT+CCUG=<n>[,<index>[,<info>]]**	Enable/disable the CUG supplementary service Parameters: <n> 0 - disables the temporary CUG settings for all the successive calls 1 - enables the temporary CUG settings for all the successive calls <index> 0...9 - CUG index 10 - no index (preferential CUG taken from subscriber data) <info> 0 - no information 1 - suppress Outgoing Access (OA) 2 - suppress preferential CUG 3 - suppress OA and preferential CUG
Test command **AT+CCUG=?**	Reports the supported range of values for the parameters <n>,<index>, <info>
Example	
Reference	GSM 07.07
SW release	Version B

6.4.4 Mobile Equipment control

6.4.4.1 +CPAS - phone activity status

+CPAS – phone activity status	
Execute command **AT+CPAS**	reports the device status in the form +CPAS: <pas> where <pas> - phone activity status 0 - ready (Device allows commands from TA/TE) 1 - unavailable (Device does not allow commands from TA/TE) 2 - unknown (Device is not guaranteed to respond to instructions) 3 - ringing (Device is ready for commands from TA/TE, but the ringer is active) 4 - call in progress (Device is ready for commands from TA/TE, but a call is in progress)
Read command **AT+CPAS?**	same as Execute command.
Write command	
Test command **AT+CPAS=?**	Reports the supported range of values of <pas>.
Example	ATD03282131321; OK AT+CPAS? +CPAS: 3 (the called phone is ringing) OK AT+CPAS? +CPAS: 3 OK AT+CPAS? +CPAS: 4 (the called phone has answered to your call) OK ATH OK
Reference	GSM 07.07
SW release	Version A

6.4.4.2 +CFUN Set phone functionality (Power Saving Management)

+CFUN – power saving management	
Execute command	
Read command **AT+CFUN?**	reports the power saving status in the form: +CFUN: <fun> where <fun> - power saving status 1 - power saving disabled 5 - power saving enabled **Note**: The phone functionality remains always FULL.
Write command **AT+CFUN=<fun>**	Enables/disables the power saving function. If enabled it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity. Parameters: <fun>: is the power saving function mode 1 - Mobile full functionality with power saving disabled (default) 5 - Mobile full functionality with power saving enabled **Note**: To place the telephone in power saving mode, other than to set the <fun> parameter at value = 5, the line DTR (RS232) must be set to OFF. Once in power saving, the CTS line switch to the OFF status to signal that the telephone is really in power saving condition. During the power saving condition, before sending any AT command on the serial line, the DTR must be enabled and it must be waited for the CTS (RS232) line to go in ON status. Until the DTR line is ON, the telephone will not return back in the power saving condition. **Note2**: The power saving function does not affect the network behavior of the GM862, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call incomes during the power save, then the module will wake up and proceed normally with the unsolicited incoming call code
Test command	
Example	
Reference	GSM 07.07
SW release	Version B

6.4.4.3 +CPIN - enter PIN

+CPIN – enter PIN	
Execute command	
Read command **AT+CPIN?**	Reports the PIN/PUK/PUK2 request status of the device in the form: +CPIN:<code> where <code> is the PIN/PUK/PUK2 request status code: READY - device is not pending for any password SIM PIN - device is waiting SIM PIN to be given SIM PUK - device is waiting SIM PUK to be given SIM PIN2 - device is waiting SIM PIN2 to be given; this <code> is returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17) SIM PUK2 - device is waiting SIM PUK2 to be given; this <code> is returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18) PH-NET PIN - device is waiting network personalization password to be given PH-NETSUB PIN - device is waiting network subset personalization password to be given Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use the AT+CLCK=SC,<mode>, <pin> command.
Write command **AT+CPIN = <pin>[,<newpin>]**	Sends to the device a password (SIM PIN, SIM PUK, PH-SIM PIN, etc.) which may be required to further operate the device. If the PIN required is SIM PUK or SIM PUK2, the <newpin> is required. This second pin, <newpin>,will replace the old pin in the SIM. The command may be used to change the SIM PIN by sending it with both parameters <pin> and <newpin> when if PIN request is pending; if no PIN request is pending the command will return an error code and to change the PIN the command +CPWD must be used instead. Parameters: <pin>, <newpin> Note: the only commands which are accepted when device is pending SIM PIN, SIM PUK, or PH-SIM are: +CGMI, +CGMM, +CGMR, +CGSN, D112; (emergency call), +CPAS, +CPIN. To check the status of the PIN request use the command AT+CPIN?
Test command	

+CPIN – enter PIN	
Example	AT+CMEE=1 OK AT+CPIN? +CME ERROR: 10 (error because you have to insert the SIM) AT+CPIN? +CPIN: READY (this response is after you have inserted the SIM) OK
Reference	GSM 07.07
SW release	Version A

6.4.4.4 +CSQ- signal quality

+CSQ – signal quality	
Execute command **AT+CSQ**	Reports received signal quality indicators in the form +CSQ:<rssi>,<ber> where <rssi> - received signal strength indication 0 - 113 dBm or less 1 - 111 dBm 2...30 - 109dBm ... -53 dBm / 2 dBm per step 31 - 51 dBm or greater 99 - not known or not detectable <ber> - bit error rate % 0 - less than 0.2 % 1 - 0.2% a 0.4% 2 - 0.4% a 0.8% 3 - 0.8% a 1.6% 4 - 1.6% a 3.2% 5 - 3.2% a 6.4% 6 - 6.4% a 12.8% 7 - more than 12.8% 99 - not known or not detectable Note: this command should be used instead of the AT%Q and AT%L commands, since GSM relevant parameters are the radio link ones and no line is present, hence %Q %L and have no meaning.
Read command	
Write command	
Test command **AT+CSQ=?**	Returns the supported range of values of the parameters <rssi>and <ber>.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.5 +CPBS - select phonebook memory storage

+CPBS – select phonebook memory storage	
Execute command	
Read command	
Write command **AT+CPBS = <storage>**	Selects phonebook memory storage <storage>, which will be used by other phonebook commands. Parameter: <storage> "SM" - SIM phonebook "FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM) "LD" - SIM last-dialling-phonebook (+CPBW and +CPBF are not applicable for this storage) "MC" - device missed (unanswered received) calls list (+CPBW and +CPBF are not applicable for this storage) "RC" - ME received calls list (+CPBW and +CPBF are not applicable for this storage)
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.6 +CPBR - read phonebook entries

+CPBR – read phonebook entries	
Execute command	
Read command	
Write command **AT+CPBR = <index>[,<index2>]**	returns phonebook entries in locations number from <index1> to <index2> from the current phonebook memory storage selected with +CPBS. If<index2> is omitted, only location <index1> is returned. Parameters: <index>, <index2> The response format is: +CPBR: <index>,<number>,<type>,<name> where <index> - the current position number of the PB index (to see the range of values use +CPBR=?) <number> - the phone number stored in the format <type> <type> - type of phone number byte in integer format 145 - international numbering scheme (contains the character "+") 129 - national numbering scheme <name> - the alphanumeric text associated to the number (e.g. name of address) Note: If all queried locations are empty (but available), no information text lines will be returned, while if listing fails in an ME error, +CME ERROR: <err> is returned.
Test command **AT+CPBR=?**	Returns the supported range of values of the parameters in the form +CPBR: (<minIndex> - <maxIndex>),<nlength>,<tlength> where <minIndex> - the minimum *index* number <maxIndex>- the maximum *index* number <nlength> - maximum *number* field length <tlength> - maximum *name* field length Note: remember to select the PB storage with +CPBS command before issuing PB commands.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.7 +CPBF - find phonebook entries

+CPBF – find phonebook entries	
Execute command	
Read command	
Write command **AT+CPBF = <text>**	Issues a search for the phonebook records that have the *tex*t sub-string at the start of the *name* field and returns a report in the form +CPBF: <index>,<number>,<type>,<name> where index, number, type and name have the same meaning than in the command +CPBR report. If no PB records satisfy the search criteria then an ERROR message is reported. Parameter: <text> Note: text is NOT case sensitive and may or not be included in double brackets.
Test command **AT+CPBF=?**	Reports the maximum lengths of fields <number> and <name> in the PB entry in the form: +CPBF: <max_number_length>,<max_name_length>
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.8 +CPBW - write phonebook entry

+CPBW – write phonebook entry	
Execute command	
Read command	
Write command **AT+CPBW = [<index>][,<number>[, <type>[,<name>]]]**	Stores at the position <index> a Phonebook record defined by <number>,<type> and <name> parameters Parameters: <index>, <number>, <type>, <name> <number> - the phone number in the format <type> <type> - the type of number 145 - international numbering scheme (contains the character "+") 129 - national numbering scheme <name> - the text associated to the number. Note: If record number <index> already exists, it will be overwritten. If only <index> is given, the record number <index> is deleted. If <index> is omitted, the number <number> is stored in the first free phonebook location. Text in the <name> field and number in the <number> field may or may not be included in double brackets.
Test command **AT+CPBW=?**	Reports the maximum lengths of fields <number> and <name> in the PB entry in the form: +CPBW: <max_number_length>,<max_name_length>
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.9 +CALM - alert sound mode

+CALM – alert sound mode	
Execute command	
Read command	
Write command **AT+CALM = <mode>**	It is used to select the general alert sound mode of the device. Parameter: <mode> = 0 - normal mode <mode> = 1 - silent mode (no sound will be generated by the device) Note: if silent mode (1) is selected then incoming calls will not produce alerting sounds but only the message RING or +CRING.
Test command **AT+CALM=?**	Returns the supported values for the parameter <mode>.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.10 +CRSL - ringer sound level

+CRSL – ringer sound level	
Execute command	
Read command **AT+CRSL?**	Reports the current <level> setting of the call ringer in the format: +CRSL: <level>
Write command **AT+CRSL = <level>**	It used to select the incoming call ringer sound level of the device. Parameter: <level> - ringer sound level <level> = 0 - Off <level> = 1 - low <level> = 2 - middle <level> = 3 - high <level> = 4 – progressive
Test command **AT+CRSL=?**	Reports <level> supported values range in the format: +CRSL: (0-4)
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.11 +CLVL - loudspeaker volume level

+CLVL – loudspeaker volume level	
Execute command	
Read command **AT+CLVL?**	Reports the current <level> setting of the loudspeaker volume in the format: +CLVL: <level>
Write command **AT+CLVL = <level>**	It used to select the volume of the internal loudspeaker audio output of the device. Parameter: <level> - loudspeaker volume varies between 0 (min) and 10 (max).
Test command **AT+CLVL=?**	Reports <level> supported values range in the format: +CLVL: (0-10)
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.12 +CMUT - microphone mute control

+CMUT – microphone mute control	
Execute command	
Read command **AT+CMUT?**	Reports the selected microphone (internal/external) mute status in the format: +CMUT: <n>
Write command **AT+CMUT = <n>**	Enables/disables the muting of the microphone audio line depending on n parameter value Parameter: <n > = 0 - microphone active <n > = 1 - microphone muted Note: this command mutes/activates both microphone audio paths, internal mic and external mic.
Test command **AT+CMUT=?**	Reports the supported values for <n> parameter.
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.13 +CACM - accumulated call meter

+CACM – accumulated call meter	
Execute command	
Read command **AT+CACM?**	Reports the current value of the SIM ACM in the format +CACM: <n> Note: the value <n> is in units whose price and currency is defined with command +CPUC
Write command **AT+CACM = <pwd>**	Resets the SIM Accumulated Call Meter (ACM). Internal memory CCM remains unchanged. Parameter: <pwd> - PIN2 password Note: to access this command PIN2 password is required
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.14 +CAMM - accumulated call meter maximum

+CAMM – accumulated call meter maximum	
Execute command	
Read command **AT+CAMM?**	Reports the maximum value of ACM stored in SIM in the format: +CAMM : <acmmax>
Write command **AT+CAMM = <acmmax>, <pwd>**	Sets the Advice of Charge related Accumulated Call Meter ACM maximum value in SIM (see also +CACM command). This value represents the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches <acmmax> value further calls are prohibited. SIM PIN2 is required to set the value. Parameter: <acmmax>- maximum number of units allowed to be consumed <pwd>- PIN2 password Note: The <acmmax> = 0 value disables the feature.
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.4.15 +CPUC - price per unit and currency table

+CPUC – price per unit and currency table	
Execute command	
Read command **AT+CPUC?**	Reports the current values of <currency> and <ppu> parameters in the format: +CACM : <currency>,<ppu>
Write command **AT+CPUC = <currency>, <ppu>,<pwd>**	Sets the values of Advice of Charge related price per unit and currency table in SIM. The price per Unit currency table information can be used to convert the home units (as used in commands +CAOC, +CACM and +CAMM) into currency units. Parameters: <currency> - three-character currency code string (e.g. LIT, USD, DEM etc..) <ppu> - price per unit string (dot is used as decimal separator) e.g. 1989.27 <pwd> - SIM PIN2 Note: SIM PIN2 is required to set the values.
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.5 Mobile equipment errors

6.4.5.1 +CMEE - report mobile equipment error

+CMEE – report mobile equipment error	
Execute command	
Read command	
Write command **AT+CMEE = <n>**	Enables/disables the report of result code. +CME ERROR: <err> as an indication of an error relating to the +Cxxx commands issued. When enabled, device related errors cause the +CME ERROR: <err> final result code instead of the default ERROR final result code. ERROR is anyway returned normally when the error message is related to syntax, invalid parameters, or DTE functionality. Parameter: <n> - enable flag <n> = 0 - disable +CME ERROR:<err> reports, use only ERROR report. <n> = 1 - enable +CME ERROR:<err> reports, with <err> in numeric format <n> = 2 - disable +CME ERROR: <err> reports, with <err> in verbose format
Test command	
Example	
Reference	GSM 07.07
SW release	Version A

6.4.5.2 +CME ERROR: - ME error result code

This is NOT a command, it is the error response to +Cxxx GSM 07.07 commands.

Syntax: AT+CME ERROR:<err>

Parameter: <err> - error code can be either numeric or verbose.

<err> values:

Numeric Format	*Verbose Format*
0	phone failure
1	no connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
6	NOT SUPPORTED
7	NOT SUPPORTED
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network timeout
32	network not allowed - emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
100	unknown

6.4.6 Voice Control (TIA IS-101)

6.4.6.1 +VTS: - DTMF tones transmission

+VTS – DTMF tones transmission	
Execute command	
Read command	
Write command **AT+VTS = <DTMF>**	Allows the transmission of DTMF tones Parameter: <DTMF> - a single ASCII character in the set 0-9, #,*,A-D Note: this commands operates in voice mode only
Test command **AT+VTS=?**	Returns +VTS(),(),()
Example	
Reference	GSM 07.07 / TIA IS-101
SW release	Version B

6.5 ETSI GSM 07.05 AT Commands for SMS and CB services

6.5.1 General configuration

6.5.1.1 +CSMS - select message service

+CSMS – select message service	
Execute command	
Read command **AT+CSMS?**	Reports the value of the current parameters in the format: +CSMS: <service>,<mt>,<mo>,<cb> where: <service> - message syntax 0 - SMS syntax as defined in GSM-03.40 and GSM-03.41. AT commands are compatible with GSM 07.05 Phase 2. 1 - SMS syntax as defined in GSM-03.40 and GSM-03.41. AT commands are compatible with GSM 07.05 Phase 2+ *(only in SW release Version B)* <mt> - Mobile Terminated Messages <mo> - Mobile Originated Messages <cb> - Cell Broadcast Messages 0 - not supported 1 - supported
Write command **AT+CSMS = <service>**	Selects the SMS & CB services command syntax. Parameter: <service> = 0 - SMS syntax as defined in GSM-03.40 and GSM-03.41. AT commands are compatible with GSM 07.05 Phase 2. <service> = 1 - SMS syntax as defined in GSM-03.40 and GSM-03.41. AT commands are compatible with GSM 07.05 Phase 2+ *(only in SW release Version B)*
Test command **AT+CSMS=?**	Reports the supported value of the parameter <service> = 0.
Example	
Reference	GSM 07.05
SW release	Version B

6.5.1.2 +CPMS - preferred message storage

+CPMS – preferred message storage	
Execute command	
Read command **AT+CPMS?**	Reports the message storage status in the format: +CPMS:<memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>,<mems>,<useds>,<totals> where <memr> , <memw> and <mems> are the selected storage memories for reading, writing and storing respectively.
Write command **AT+CPMS = <memr>,<memw>,<mems>**	Selects memory storages <memr>, <memw> and <mems> to be used for reading, writing, sending and storing received SMS. Parameter: <memr> - memory storage for read and delete SMS commands "SM" - SIM SMS memory storage "ME" - Mobile Equipment internal storage (read only, no delete) <memw> - memory storage for write and send SMS commands "SM" - SIM SMS memory storage <mems> - memory storage for received SMS storing "SM" - SIM SMS memory storage The command returns the memory storage status in the format: +CPMS:<usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals> <usedr> - number of SMS stored into <memr> <totalr> - max number of SMS that <memr> can contain <usedw> - number of SMS stored into <memw> <totalw> max number of SMS that <memw> can contain <useds> - number of SMS stored into <mems> <totals> max number of SMS that <mems> can contain Note: The only memory storage for writing and sending supported is the SIM internal memory "SM", so <memw> = <mems> = "SM". Note: the received class 0 SMS are stored in the "ME" memory regardless the <mems> setting and they are automatically deleted at power off.
Test command **AT+CPMS=?**	Reports the supported values of the SMS storage memories in the format: +CPMS: ("ME","SM"), ("SM")
Example	AT+CPMS? +CPMS: "SM",5,10,"SM",5,10,"SM",5,10 OK (you have 5 SMS SIM positions occupied of 10)
Reference	GSM 07.05
SW release	Version A

6.5.1.3 +CMGF - message format

+CMGF –message format	
Execute command	
Read command **AT+CMGF?**	Reports the current value of the parameter <mode> = 0.
Write command **AT+CMGF = <mode>**	Selects the SMS format to be used in reading and writing messages. Parameter: <mode> = 0 - PDU as defined in GSM 3.40 and GSM 3.41 <mode> = 1 - text *(from SW release Version B)*
Test command **AT+CMGF=?**	Reports the supported value of <mode> parameter.
Example	
Reference	GSM 07.05
SW release	Version B

6.5.1.4 +CSMP – Set parameters in text mode

+CSMP –set parameters in text mode	
Execute command	
Read command **AT+CSMP?**	Reports the current setting in the format: +CSMP: < fo>,<vp>,<pid>,<dcs>
Write command **AT+CSMP = <fo>,<vp>,<pid>, <dcs>**	Set the additional parameters for storing and sending SMS when the text mode is used (+CMGF=1) Parameter: <fo>: message format, like defined for the first octet of message according to GSM 3.40 <vp>: Message validity period - numerical if in relative format or string if in absolute format according to GMS 3.40 <pid>: Protocol Identifier – defined by GSM 3.40 – in numerical format <dcs>: Data coding Scheme - defined by GSM 3.40 – in numerical format
Test command **AT+CSMP=?**	Reports the supported range of values for <fo>,<vp>,<pid>,<dcs> parameters.
Example	Set the parameters for an outgoing message with 24 hours of validity period and default properties: AT+CSMP=17,167,0,0 OK
Reference	GSM 07.05
SW release	Version B

6.5.1.5 +CSDH – Show parameters in text mode

+CSDH –show parameters in text mode	
Execute command	
Read command **AT+CSDH?**	Report the current setting in the format: +CSDH: <show>
Write command **AT+CSDH= <show>**	Show the additional parameters of received or stored SMS when the text mode is used (+CMFG=1). Parameter: <show> = 0 - no additional parameters are shown <show> = 1 - parameters set by the +CSCA and + CSMP commands are shown and the length, sender/addressee address of SMS when +CMT, +CMGL, +CMGR commands are utilised
Test command **AT+CSDH=?**	Reports the supported range of values for the parameter <show>
Example	
Reference	GSM 07.05
SW release	Version B

6.5.1.6 +CSAS – Save setting text mode

+CSAS –set saving text mode	
Execute command	
Read command	
Write command **AT+CSAS=<profile>**	Save setting which have been made by the +CSCA and +CSMP commands in local volatile memory (or in the SIM if it has a dedicated storage for this purpose). Parameter: <profile>: 0…3 - number of profile in which to save the setting. The number 0 corresponds to the non volatile memory, the others correspond to the SIM storage (if available).
Test command **AT+CSAS=?**	Return the possible range of values for the parameter <profile>.
Example	
Reference	GSM 07.05
SW release	Version B

6.5.1.7 +CRES – Restore text mode settings

+CRES –restore text mode settings	
Execute command	
Read command	
Write command **AT+CRES = <profile>**	Restore any setting saved by +CSAS command for +CSCA and +CSMP commands in local non volatile memory (or in the SIM if it has a dedicated store for this purpose). Parameter: <profile>: 0…3 – number of profile from which to recall the setting. The number 0 corresponds to the non volatile memory, the others correspond to the SIM storage (if available).
Test command **AT+CRES=?**	Return the possible range of values for the parameter <profile>.
Example	
Reference	GSM 07.05
SW release	Version B

6.5.1.8 +CSCB – Select Cell Broadcast Message types

+CSCB –select Cell Broadcast Message types	
Execute command	
Read command **AT+CSCB?**	Reports the current value of the parameters <mode>,<misd> and <dcss> in the format: +CSCB: <mode>,<mids>,<dcss>
Write command **AT+CSCB=<mode>[,<mids>[,<dcss>]]**	Selects the Cell Broadcast message types to be received by the device. Parameter: <mode> 0 - don't receive the message types defined by <mids> and <dcss> 1 - receive only the message types defined by <mids> and <dcss> <mids> : all the possible combinations of the CBM identifiers <dcss> : all the possible combinations of CBM data coding schemes.
Test command **AT+CSCB=?**	Return the possible range of values for the parameter <mode>.
Example	AT+CSCB? +CSCB: 0,"",""" OK AT+CSCB=1,"0,1,300-315,450","0-5" OK
Reference	GSM 07.05
SW release	Version B

6.5.1.9 +CMS ERROR - message service failure result code

This is NOT a command, it is the error response to +Cxxx GSM 07.05 commands

Syntax: AT+CMS ERROR:<err>

Parameter: <err> - error code can be either numeric or verbose.

<err> values:

Numeric Format	*Verbose Format*
0...127	GSM 04.11 Annex E-2 values
128...255	GSM 03.40 sub clause 9.2.3.22 values
300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode parameter
305	invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network timeout
340	no +CNMA acknowledgement expected
500	unknown error

6.5.2 Message configuration

6.5.2.1 +CSCA - service center address

+CSCA –service center address	
Execute command	
Read command **AT+CSCA?**	Reports the current value of the default SCA in the format: +CSCA: <number>,<type> Note: if SCA is not present the device reports an error message.
Write command **AT+CSCA=<number>, <type>**	Sets the Service center Address to be used for mobile originated SMS transmissions. Parameter: <number> - SC phone number in the format defined by <type> <type> - the type of number <type> = 145 - international numbering scheme (contains the character "+") <type> = 129 - national numbering scheme Note: to use the SMS service, is mandatory to set a Service Center Address at which service requests will be directed. SCA depends on the operator, hence contact your operator to set the right SCA. When this address is input, it is stored on the SIM if possible, else will be stored on the device internal memory so, once set, the input of this parameter is not anymore needed. In PDU mode, this setting is used, but only when the length of the SMSC address coded into the <pdu> parameter equals zero; else SCA defined in the PDU will be used instead.
Test command	
Example	
Reference	GSM 07.05
SW release	Version A

6.5.3 Message receiving and reading

6.5.3.1 +CNMI - new message indications to Terminal Equipment

+CNMI – new message indications to terminal equipment	
Execute command	
Read command **AT+CNMI?**	Returns the current parameter settings for +CNMI command in the form: `AT+CNMI:<mode>,<mt>,<bm>,<ds>,<bfr>`
Write command **AT+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]**	Selects the behavior of the device on how the receiving of new messages from the network is indicated to the DTE. Parameter: <mode>- unsolicited result codes buffering option 0 - buffer unsolicited result codes in the TA in case the DTE is busy, e.g. a data call is active meanwhile. 1 - buffer unsolicited result codes in the TA in case the DTE is busy, else report them immediately. *(Version B)* <mt> result code indication reporting for SMS-DELIVER 0 - no SMS-DELIVER indications are reported to the TE. 1 - indication of the memory location is reported to the TE using unsolicited result code: +CMTI: <memr>,<index> where <memr> - memory storage where the new message is stored ("SM" or "ME") <index> - location on the memory where SMS is stored <bm> - broadcast reporting option 0 - Cell Broadcast Messages are not sent to the DTE 1 - Cell Broadcast Messages are sent to the DTE with the unsolicited result code: *(Version B)* +CBM: <length><CR><LF><PDU> (in PDU mode) or +CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><text> (in text mode) where: <length> - PDU length <PDU> - message PDU <sn> - message serial number <mid> - message ID

+CNMI – new message indications to terminal equipment	
	<dcs> - Data Coding Scheme <pag> - page number <pags> - total number of pages of the message <text> - message text <ds> - SMS-STATUS-REPORTs reporting option 0 - status report receiving is not reported to the DTE 1 - the status report is sent to the DTE with the unsolicited result code: *(Version B)* +CDS: <length><CR><LF><PDU> (PDU mode) or +CDS: <fo>,<mr>,,,<scts>,<dt>,<st> (text mode) 2 - if a status report is stored, then unsolicited result code is sent: +CDSI: <memr>,<index> where <memr> - memory storage where the new message is stored ("SM") <index> - location on the memory where SMS is stored <length> - PDU length <PDU> - message PDU <fo> - first octet of the message PDU <mr> - message reference number <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU <bfr> - buffered result codes handling method (NOT SUPPORTED) 0 - buffer flushed. (NOT SUPPORTED) Note: DTR signal is ignored, hence the indication is sent even if the DTE is inactive (DTR signal is Low). In this case the unsolicited result code may be lost so if GM862 remains active while DTE is not, at DTE startup is suggested to check whether new messages have reached the device meanwhile with command AT+CMGL=0 that lists the new messages received.
Test command **AT+CNMI=?**	Reports the supported range of values for the +CNMI command parameters.
Example	
Reference	GSM 07.05
SW release	Version B

6.5.3.2 +CMGL - list messages

+CMGL – list messages	
Execute command	
Read command	
Write command **AT+CMGL = <stat>**	Reports the list of all the messages stored into <memr> (see command +CPMS) memory storage having the status equal to <stat> parameter. Parameter **(PDU Mode)**: <stat> 0 - new message 1 - read message 2 - stored message not yet sent 3 - store message already sent 4 - all messages (applies only to +CMGL command) A report is sent for each message that has to be listed in the format: +CMGL: <index>,<stat>,<length><CR><LF><pdu> where <index> - message position in the memory storage list. <stat> - status of the message <length> - length of the PDU in bytes <pdu> - message in PDU format according to GSM 3.40 Note: OK message is sent only at the end of the listing. Parameter **(Text Mode)**: *(Version B)* <stat> "REC UNREAD" - new message "REC READ" - read message "STO UNSENT" - stored message not yet sent "STO SENT" - store message already sent "ALL" - all messages (applies only to +CMGL command) A report is sent for each message that has to be listed in the format: +CMGL: <index>,<stat>,<oa/da>[,,,<tooa/toda>,<length>]<CR><LF><text> where <index> - message position in the storage <stat> - message status <oa/da> - originator/destination number < tooa/toda > - type of number <oa/da> 145 - number in international format (contains the "+")

+CMGL – list messages	
	129 - number in national format <length> - text length <text> - message text For each message delivery confirm a result code is reported in the format: +CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st> Where <index> - message position in the storage <stat> - message status <fo> - first octet of the message PDU <mr> - message reference number <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU
Test command	
Example	
Reference	GSM 07.05
SW release	Version B

6.5.3.3 +CMGR - read message

+CMGR – read message	
Execute command **AT+CMGR = <index>**	Reports the message with location value <index> from preferred message storage <memr> (see +CPMS) in the format: **(PDU Mode)** +CMGR: <stat>,<length><CR><LF><pdu> where <stat> - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - store message already sent <length> - length of the PDU in bytes. <pdu> - message in PDU format according to GSM 3.40. **(Text Mode)** *(Version B)* For the sent messages: +CMGR: <stat>,<oa>,,<scts> [,<tooa>,<fo>,<pid>,<dcs>,<sca>, <tosca>,<length>]<CR><LF><text> For the received messages: +CMGR: <stat>,<da>[,,<toda>,<fo>,<pid>,<dcs>,, <sca>,<tosca>,<length>]<CR><LF><testo> For the message delivery confirm: +CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st> Where: <stat> - status of the message "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent "STO SENT" - message stored already sent <fo> - first octet of the message PDU <mr> - message reference number <scts> - arrival time of the message to the SC

	<dt> - sending time of the message <st> - message status as coded in the PDU <pid> - Protocol Identifier <dcs> - Data Coding Scheme <oa> - Originator address number <da> - Destination address number <sca> - Service Centre number < tooa>,<toda >,<tosca> - type of number <oa>,<da>,<sca> 145 - number in international format (contains the "+") 129 - number in national format <length> - text length <text> - message text The status of the message and entire message data unit <pdu> is returned. If status of the message is 'received unread', status in the storage changes to 'received read'. Parameter: <index> Note: if record number <index> on message storage memory is empty, then an error message will be returned.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.05
SW release	Version B

6.5.4 Message sending and writing

6.5.4.1 +CMGS - send message

+CMGS – send message	
Execute command *(PDU Mode)* **AT+CMGS = <length>**	**(PDU Mode)** Sends to the network a SMS message input as a PDU. Parameter: <length> = 8…176 - represents the length of the PDU to be sent in bytes. The device responds to the command with the prompt '>' and awaits for the number of bytes of PDU specified. To complete the operation send Ctrl-Z char (0x1A hexadecimal) , to exit without sending the message send ESC char (0x1B hexadecimal). If message is successfully sent to the network, then the result is sent in the format: +CMGS: <mr> where <mr> is the message reference number. If message sending fails for some reason, an error code is reported.
(Text Mode) **AT+CMGS=<da>**	**(Text Mode)** *(Version B)* Sends to the network a SMS message input as a text message. Parameter: <da> = destination address number The device responds to the command with the prompt '>' and awaits for message text (max 160 characters). To complete the operation send Ctrl-Z char (0x1A hexadecimal) , to exit without sending the message send ESC char (0x1B hexadecimal). If message is successfully sent to the network, then the result is sent in the format: +CMGS: <mr> where <mr> is the message reference number. If message sending fails for some reason, an error code is reported. Note: Care must be taken to ensure that during the command execution, which might take several seconds, no other SIM interacting commands are issued. To avoid malfunctions is suggested to wait for the +CMGS:<mr> or +CMS ERROR:<err> response before issuing further commands.

+CMGS – send message	
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.05
SW release	Version B

6.5.4.2 +CMSS - send message from storage

+CMSS – send message from storage	
Execute command **AT+CMSS = <index>**	Sends to the network, the message which is already stored in the <memw> storage (see +CPMS) at the location <index>. Parameter: <index> If message is successfully sent to the network, Sends to the network, then the result is sent in the format: +CMSS: <mr> where <mr> is the message reference number. If message sending fails for some reason, an error code is reported: +CMS ERROR:<err> Note: to store a message in the <memw> storage see command +CMGW. Care must be taken to ensure that during the command execution, which might take several seconds, no other SIM interacting commands are issued. To avoid malfunctions is suggested to wait for the +CMGS:<mr> or +CMS ERROR:<err> response before issuing further commands.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.05
SW release	Version A

6.5.4.3 +CMGW - write message to memory

+CMGW – write message to memory	
Execute command *(PDU Mode)* **AT+CMGW = <length>**	**(PDU Mode)** Writes in the <memw> memory storage a new SMS message input as a PDU. Parameter: <length> - represents the length of the PDU to be written in bytes. The device responds to the command with the prompt '>' and awaits for the number of bytes of PDU specified. To complete the operation send Ctrl-Z char (0x1A hexadecimal) , to exit without writing the message send ESC char (0x1B hexadecimal). If message is successfully written in the memory, then the result is sent in the format: +CMGW: <index> where <index> is the message location index in the memory <memw>("SM"). If message storing fails for some reason, an error code is reported
(Text Mode) **AT+CMGW [= <da>]**	**(Text Mode)** *(Version B)* Writes in the <memw> memory storage a new SMS message input as Text. Parameter: <da> - destination address number The device responds to the command with the prompt '>' and awaits for the message text (max 160 characters). To complete the operation send Ctrl-Z char (0x1A hexadecimal) , to exit without writing the message send ESC char (0x1B hexadecimal). If message is successfully written in the memory, then the result is sent in the format: +CMGW: <index> where <index> is the message location index in the memory <memw>("SM"). If message storing fails for some reason, an error code is reported Note: Care must be taken to ensure that during the command execution, no other SIM interacting commands are issued. To avoid malfunctions is suggested to wait for the +CMGS:<mr> or +CMS ERROR:<err> response before issuing further commands.

+CMGW – write message to memory	
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.05
SW release	Version B

6.5.4.4 +CMGD - delete message

+CMGD – delete message	
Execute command **AT+CMGD = <index>[,<delflag>]**	Deletes from memory the message/messages Note: if the location to be deleted is empty, an error message is reported. Parameter: <index> - message position index in the selected storage <memr> <delflag> - delete mode selection flag *(Version B)* 0 (or not present) - delete message at position <index> 1 - delete all received read messages 2 - delete all received read and all sent messages 3 - delete all received read and all written sent/unsent messages 4 - delete all messages.
Read command	
Write command	
Test command	
Example	
Reference	GSM 07.05
SW release	Version B

6.6 Custom AT Commands

6.6.1 General configuration

6.6.1.1 #CAP - Change Audio Path

#CAP – change audio path	
Execute command **AT#CAP = <n>**	Switches the active audio path depending on parameter <n> Parameter: <n> audio path 0 - audio path follows the Axe input (default at start up): Axe = low - handsfree enabled Axe = high - internal path enabled 1 - enables handsfree external mic/ear audio path 2 - enables internal mic/ear audio path Note: The audio path are mutually exclusive, enabling one disables the other. When changing the audio path, the volume level is set at the previously stored value for that audio path. (see AT+CLVL).
Read command **AT#CAP?**	Reports the active audio path in the format: #CAP: <n>.
Write command	
Test command **AT#CAP=?**	Reports the supported values for the parameter <n>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version A

6.6.1.2 #SRS - Select ringer sound

#SRS – select ringer sound	
Execute command **AT#SRS = <n>,[<timeout>]**	Set the ringer sound. The parameters are: <n> - ringing tone 0 - current ringing tone 1 .. 12 - ringing tone number <timeout> ringing tone playing timeout in seconds. 0 - no ringing tone playing, only tone setting 1 .. 60 - <n> tone playing for <timeout> seconds and successive tone setting. Note: When the command is issued with <timeout> >0, the <n> ringing tone is played for <timeout> seconds and then stored as current tone. If command is issued with <timeout> = 0, the playing of the ringing is stopped (if present) and <n> ringing tone is set as default. If command is issued with <n> = 0 and <timeout> >0 then the default ringing tone is played. If both <n> and <timeout> are 0 then currently playing tone is set as default and ringing is stopped.
Read command **AT#SRS?**	Reports current selected ringing and its status in the form: #SRS: <n>,<status> where <n> ringing tone number 1 .. 12 <status> ringing status 0 - selected but not playing 1 - currently playing
Write command	
Test command **AT#SRS=?**	Reports the supported values for the parameters <n> and <timeout>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version A

6.6.1.3 #SRP –Select Ringer Path

#SRP – select ringer path	
Execute command **AT#SRP = <n>**	Selects the audio path towards whom sending ringer sounds and all signaling tones. Parameter: <n> - Ringer path number 0 - ringer sound output towards handsfree 1 - ringer sound output towards headset 2 - ringer sound output towards current selected audio path (see command #CAP) Note: No buzzer output is available. In order to use it an external circuitry must be developed to drive it from one (or both) of the two audio outputs (headset and handsfree).
Read command **AT#SRP?**	Reports the current ringer path setting in the format: #SRP:<n>.
Write command	
Test command **AT#SRP=?**	Reports the supported values for the parameter <n>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version A

6.6.1.4 #STM - Signalling Tones Mode

#STM – signalling tones mode	
Execute command	
Read command **AT#STM?**	Reports the current signaling tones status in the format:#STM: <mode>
Write command **AT#STM = <mode>**	Enables/disables the signaling tones output on the audio path selected with #SRP command Parameter : <mode> - signaling tones status <mode> = 0 - signaling tones disabled <mode> = 1 - signaling tones enabled
Test command **AT#STM=?**	Reports supported range of values for <mode> parameter.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version A

6.6.1.5 #PCT – display PIN Counter

#PCT – display PIN counter	
Execute command	
Read command **AT#PCT?**	Reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on +CPIN requested password in the format: `#PCT:<n>` Note: If +CPIN requires the PIN then max 3 attempts are allowed, after that the PUK code is requested; if even PUK is input wrong for other three time then #PCT:0 and SIM remains blocked.
Write command	
Test command	
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version A

6.6.1.6 #SHDN – Software Shut Down

#SHDN – software shutdown	
Execute command **AT#SHDN**	After the issuing of this command device detaches from the network and shuts down. Before definitive shut down an OK response is returned. Note: after the issuing of this command the device will not respond to any command. To turn it on again Hardware pin ON/OFF must be tied low.
Read command	
Write command	
Test command	
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version A

6.6.1.7 #QTEMP –Query Temperature overflow

#QTEMP – query temperature overflow	
Execute command	
Read command **AT#QTEMP?**	Queries the internal temperature sensor of the device for over temperature. The result is reported in the format: #QTEMP:<temp> where <temp> - over temperature indicator <temp> = 0 - device temperature is in the working range <temp> = 1- device temperature is out of the working range, may be too high or too low. Note: The device should not be operated out of its working temperature range; if temperature is out of range proper functioning of the device is not ensured.
Write command **AT#QTEMP = <mode>**	Sets the type of indication. Parameter: <mode> - type of indication 0 - result reported only when querying with #QTEMP? 1 - reserved for future use 2 – reserved for future use
Test command **#QTEMP=?**	Reports supported range of values for <mode> parameter.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version A

6.6.1.8 #SGPO –Set General Purpose Output

#SGPO – set general purpose output	
Execute command	
Read command **AT#SGPO?**	Reports the #SGPO command setting, hence the opposite status of the open collector pin in the format: #SGPO: <mode>.
Write command **AT#SGPO = <mode>**	Sets the value of the general purpose output pin GPIO2 according to <mode> parameter Parameter: <mode> = 0 - output pin cleared to 0 <mode> = 1 - output pin set to 1 Note: The GPIO2 is an OPEN COLLECTOR output, the command sets the transistor base level, hence the open collector output is negated: AT#SGPO= 0 sets the open collector output HIGH AT#SGPO= 1 sets the open collector output LOW A pull up resistor is required on pin GPIO2.
Test command **AT#SGPO=?**	Reports the supported range of values of the command parameter <mode>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version A

6.6.1.9 #GGPI – Read General Purpose Input

#GGPI – read general purpose input	
Execute command	
Read command **AT#GGPI?**	Reports the read value for the input pin GPIO1in the format: #GGPI: <mode>,<stat> where <mode> mode setting (see #GGPI=<mode>) <stat> - logic value read from pin GPIO1 Note: Since the reading is done after the insulating transistor, the reported value is the opposite of the logic status of the GPIO1 input pin.
Write command **AT#GGPI = <mode>**	Set the General purpose input pin behavior depending on parameter <mode>. Parameter: <mode> - auxiliary input GPIO1 setting <mode> = 0 - the read command reports the logic input level read from GPIO1 pin. <mode> = 1…255 - reserved for future use Note: The device has an insulated input pin (the input goes the base of an internal decoupling transistor) which can be used as a logic general purpose input. This command sets the read behaviour for this pin, since only direct read report is supported, the issue of this command is not needed. In future uses the behaviour of the read input may be more complex.
Test command	
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version A

6.6.1.10 #MONI – Monitor Cells

#MONI – monitor cell	
Execute command **AT#MONI**	Reports the available data for cell and dedicated channel (if exists) in the format: #MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm or in the case the network name is not known: #MONI: Cc:<cc> Nc:<nc> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm or in the case in which the data of the adjacent cell are under observation (number>0): #MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn> PWR:<dBm> dBm where: netname = name of network operator cc = country code nc = network operator code n = progressive number of adjacent cell bsic = base station identification code qual = quality of reception (0-7) lac = localization area code id = cell identifier arfcn = assigned radio channel dBm = received signal strength in dBm
Read command	
Write command **AT#MONI =<number>**	Set the neighbor cell to extract data of the cell number <number> Parameter: <number>
Test command **AT#MONI=?**	Reports the available neighbour cells and current cell preset in the format: #MONI: <CellNo, CellSet> where: <CellNo> - neighbour cells number <CellSet> - cell preset = 0, …, n where 0 is the serving cell
Example	
Note	The refresh time of the measures is preset to 3 sec
Reference	Telit GM862 AT Command Specification
SW release	Version B

6.6.1.11 #QSS – Query SIM Status

#QSS – query SIM status	
Execute command	
Read command	Reports the query SIM status in the format: #QSS: <mode>,<status> where <mode>: type of enabled notification <mode> = 0 - query only <mode> = 1 - send unsolicited indication (#USS) every change of state <status>: current SIM status <status> = 0 - SIM NOT INSERTED <status> =1 - SIM INSERTED
Write command **AT#QSS = <mode>**	Set the type of notification. If enabled (mode = 1) at any status change is send: #USS: <status> Parameter: <mode>
Test command **AT#QSS=?**	Returns the supported range of values of the parameter <mode>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version C

6.6.1.12 #ACAL – Set Automatic Call

#ACAL – set automatic call	
Execute command	
Read command **AT#ACAL?**	Returns the current status in the format: #ACAL: <mode>
Write command **AT#ACAL = <mode>**	Enable the automatic call. Parameter: <mode> = 0 – disable <mode> = 1 – enable If enabled, the transition OFF/ON of DTR causes an automatic data call to the number stored in position number 1 of the phone book. The &D command must be set to 2.
Test command **AT#ACAL=?**	Returns the supported range of values of the parameter <mode>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version C

6.6.1.13 #SMOV – SMS Overflow

#SMOV – SMS overflow	
Execute command	
Read command **AT#SMOV?**	Return the current status in the format: #SMOV: <mode>.
Write command **AT#SMOV= <mode>**	Enable the signalling of SMS overflow Parameter: <mode> = 0 - disable <mode> = 1 - enable If enable, when the maximum storage capacity has came, the #USMO:<memo> network initiated notification is send.
Test command **AT#SMOV=?**	Returns the supported range of values of the parameter <mode>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version C

6.6.1.14 #SHFEC – Set Handsfree echo canceller

#SHFEC – set handsfree echo canceller	
Execute command	
Read command **AT#SHFEC?**	Return the current status in the format: #SHFEC: <mode>.
Write command **AT#SHFEC= <mode>**	Set echo canceller on audio handsfree output. Parameter <mode>: 0 - disable echo canceller for headset mode (default) 1 - enable, setting for handsfree mode 2…255 reserved **Note**: This setting returns to default after power off.
Test command **AT#SHFEC=?**	Returns the supported range of values of the parameter <mode>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version C

6.6.1.15 #HFMICG – Handsfree Microphone Gain

#HFMICG – handsfree microphone gain	
Execute command	
Read command **AT#HFMICG?**	Return the current status of handsfree input gain in the format: #HFMICG: <level>
Write command **AT#HFMICG = <level>**	Set the microphone input gain Parameter: <level>: handsfree microphone input gain 0 - 7 handsfree microphone gain (+6dB/step) 8…255 reserved
Test command **AT#HFMICG=?**	Returns the supported range of values of the parameter <level>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version C

6.6.1.16 #HSMICG – Handset Microphone Gain

#HSMICG – handset microphone gain	
Execute command	
Read command **AT#HSMICG?**	Return the current status of handset input gain in the format: #HSMICG: <level>
Write command **AT#HSMICG = <level>**	Set the microphone input gain Parameter: <level>: handset microphone input gain 0 - 7 handset microphone gain (+6dB/step) 8…255 reserved
Test command **AT#HSMICG=?**	Returns the supported range of values of the parameter <level>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version C

6.6.1.17 #SHFSD – Set Handsfree side tone

#SHFSD – set handsfree side tone	
Execute command	
Read command **AT#SHFSD?**	Return the current status in the format: #SHFSD: <mode>
Write command **AT#SHFSD = <mode>**	Set the sidetone on handsfree audio output. Parameter <mode>: 0 - disabled - headset mode (default) 1 - enabled - handsfree mode 2…255 reserved **Note**: This setting returns to default after power off.
Test command **AT#SHFSD=?**	Returns the supported range of values of the parameter <mode>.
Example	
Reference	Telit GM862 AT Command Specification
SW release	Version C

6.7 FAX Class 1 Commands

6.7.1 General configuration

6.7.1.1 +FCLASS - select active service class

+FCLASS - select active service class	
Execute command	
Read command **AT+FCLASS?**	Returns the current configuration value of the parameter <n>.
Write command **AT+FCLASS= <n>**	Set the GM862 in specified connection mode (data, fax, voice), hence all the calls done after, will be data or voice. Parameter: <n>: 0 = data <n>: 1 = fax class 1 <n>: 8 = voice
Test command **AT+FCLASS=?**	Returns all supported values of the parameters <n>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications / GSM 07.07
SW release	Version A

6.7.1.2 +FMI – Report manufacturer ID

+FMI – Report manufacturer ID	
Execute command	
Read command **AT+FMI?**	Reports the manufacturer ID
Write command	
Test command	
Example	AT+FMI? Telit Mobile Terminals OK
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.1.3 +FMM? – Report model ID

+FMM – Report model ID	
Execute command	
Read command **AT+FMM?**	Reports the model ID
Write command	
Test command	
Example	AT+FMM? GM862 - GSM900/1800 voice/data/fax module OK
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.1.4 +FMR – Report revision ID

+FMR – Report revision ID	
Execute command	
Read command **AT+FMR?**	Reports the software revision ID
Write command	
Test command	
Example	AT+FMR? 8.56.004 GM862 OK
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.2 Transmission/Reception control

6.7.2.1 +FTS – Stop Transmission and pause

+FTS – Stop transmission and pause	
Execute command	
Read command	
Write command **AT+FTS=<time>**	This command causes the modem to terminate a transmission and wait for <time> 10 ms intervals before responding with the OK result code. Parameter <time> 0-255 : length of time in 10ms intervals of the pause
Test command **AT+FTS=?**	Returns all supported values of the parameters <time>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.2.2 +FRS – Wait for receive silence

+FRS – Wait for receive silence	
Execute command	
Read command	
Write command **AT+FRS=<time>**	this command causes the modem to listen and report an OK result code when silence has been detected for the specified period of time. This command when the required silence period is detected or when the DTE sends another character other than XON or XOFF. Parameter <time> 0-255 : length of time in 10ms intervals of the pause
Test command **AT+FTS=?**	Returns all supported values of the parameters <time>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.2.3 +FTM – Transmit data modulation

+FTM – Transmit data	
Execute command	
Read command	
Write command **AT+FTM=<mod>**	this command causes the module to transmit facsimile data using the modulation defined by the parameter <mod>. parameter <mod> : carrier modulation 24 - V27ter/2400 bps 48 - V27ter/4800 bps 72 - V29/7200 bps 96 - V29/9600 bps
Test command **AT+FTM=?**	Returns all supported values of the parameters <mod>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.2.4 +FRM – Receive data modulation

+FRM – Receive data modulation	
Execute command	
Read command	
Write command **AT+FRM=<mod>**	this command causes the module to receive facsimile data using the modulation defined by the parameter <mod>. parameter <mod> : carrier modulation 24 - V27ter/2400 bps 48 - V27ter/4800 bps 72 - V29/7200 bps 96 - V29/9600 bps
Test command **AT+FRM=?**	Returns all supported values of the parameters <mod>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.2.5 +FTH – Transmit data with HDLC framing

+FTH – Transmit data with HDLC framing	
Execute command	
Read command	
Write command **AT+FTH=<mod>**	this command causes the module to transmit facsimile data using HDLC protocol and the modulation defined by the parameter <mod>. parameter <mod> : carrier modulation 3 - V21/300 bps
Test command **AT+FTH=?**	Returns all supported values of the parameters <mod>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.2.6 +FRH – Receive data with HDLC framing

+FRH – Receive data data with HDLC framing	
Execute command	
Read command	
Write command **AT+FRH=<mod>**	this command causes the module to receive facsimile data using HDLC protocol and the modulation defined by the parameter <mod>. parameter <mod> : carrier modulation 3 - V21/300 bps
Test command **AT+FRH=?**	Returns all supported values of the parameters <mod>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.3 Serial port control

6.7.3.1 +FLO – Select flow control specified by type

+FLO – Select flow control specified by type	
Execute command	
Read command	
Write command **AT+FLO=<type>**	Selects the flow control behavior of the serial port in both directions: from DTE to DTA and from DTA to DTE Parameter: <type> - flow control option for the data on the serial port 0 - flow control None 1 - flow control Software (XON-XOFF) 2 - flow control Hardware (CTS-RTS) **Note**: This command is a shortcut of the +IFC command.
Test command **AT+FLO=?**	Returns all supported values of the parameters <type>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.3.2 +FPR – Select serial port rate

+FPR – Select serial port rate	
Execute command	
Read command	
Write command **AT+FPR=<rate>**	Selects the the serial port speed in both directions: from DTE to DTA and from DTA to DTE. When autobauding is selected, then the speed is detected automatically. Parameter: <rate> - serial port speed selection 0 - autobauding
Test command **AT+FPR=?**	Returns all supported values of the parameters <rate>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

6.7.3.3 +FDD – Double escape character replacement control

+FDD – Double escape character replacement control	
Execute command	
Read command	
Write command **AT+FDD=<mode>**	This command sets the double escape character replacement behavior of the module depending on the parameter <mode>. Parameter <mode>= 0 DCE decode of <DLE><SUB>: <DLE><DLE> or discard DCE encode of <1/0><1/0>: <DLE><DLE><DLE><DLE>
Test command **AT+FDD=?**	Returns all supported values of the parameters <mode>.
Example	
Reference	ITU T.31 and TIA/EIA-578-A specifications
SW release	Version C

7 Type Approval Issues

The present EU directive includes the certification of a defined complete product; it is not possible to certify single parts of products.

EU directive does not include the possibility to certify parts of a GSM phone or modem.

The **Telit GM862 module** is approved in both the S configuration (see **Telit GM862 Developer Kit**, par.4 Developer Kit: GM862-S) and the S1 configuration (see **Telit GM862 Application Module**, par. 3 Application Board: GM862-S1).

So, if you use the **Telit GM862-S1 Application Module** it will not be required any further certification effort.

If in your development you are using the **GM862 module**, depending on configuration, some little additional certification effort may be required.

In this latter case, Telit could support you with a **Full Quality Certification Laboratory**. Our wide experience in European and International certification for mobile and fixed wireless telecommunications will help you to quickly obtain any certification you may need to succeed in your business by dramatically compressing your time-to market.

By developing your application based on the **Telit GM862 module** and then certifying your product with our **Full Quality Certification Laboratory**, you can also require your dedicated IMEI Range.

The **Telit GM862 module** (in the S and S1 configurations) is compliant with the following European Union Directives:

- R&TTE Directive 1999/5/EG (Radio Equipment & Telecommunications Terminal Equipments)
- Low Voltage Directive 73/23/EEC and product safety
- Directive 89/336/EEC for conformity for EMC

The **Telit GM862 module** (in the S configuration) is compliant with the *Taiwan Directives* and is therefore certified for the *Taiwan country*.

Furthermore the **Telit GM862 module** has obtained the *TIM certification*.

7.1 GM862-S: Declaration of Conformity

Telit
Mobile Terminals SpA

DECLARATION OF CONFORMITY

We,
Telit Mobile Terminals SpA

Of:
V.le Stazione di Prosecco 5/b
34010 Sgonico TS
Italy

declare under our sole responsibility that the product

GSM 900/DCS 1800 Phone type GM862S

to which this declaration relates is in conformity with all the essential requirements of Directive 1999/05/EC

We hereby also declare that all essential [radio] test suites have been carried out and that the above named product is in conformity to all the essential requirements of Directive 1999/5/EC.

The conformity assessment procedure referred to in Article 10 and detailed in Annex V of Directive 1999/5/EC has been followed with the involvement of the following Notified Body:

BABT, Claremont House, 34 Molesey Road, Walton-on-Thames, KT12 4RQ, UK

Identification mark: **0168**

The technical documentation relevant to the above equipment will be held at:

Telit Mobile Terminals SpA
V.le Stazione di Prosecco 5/b
34010 Sgonico TS
Italy

Trieste, *15/01/01*

Andrea Antonel
Quality System Manager

Accredited by the Council for Accreditation

BABT

Confirmation of Conformity Assessment

The manufacturer has carried out the assessment of the conformity of the product specified below under the Full Quality Assurance Approval issued to them under Directive 1999/5/EC and has issued a Declaration of Conformity with the essential requirements of the Directive.

Manufacturer: Telit Mobile Terminals S.p.A
Viale Stazione di Prosecco 5/b
34010 Sgonico (TS)
Italy

Description: GSM 900 / DCS 1800 cellular telephone
Type: GM862S

Declaration of Conformity dated 15th January 2001

Signed: T. J Twyman

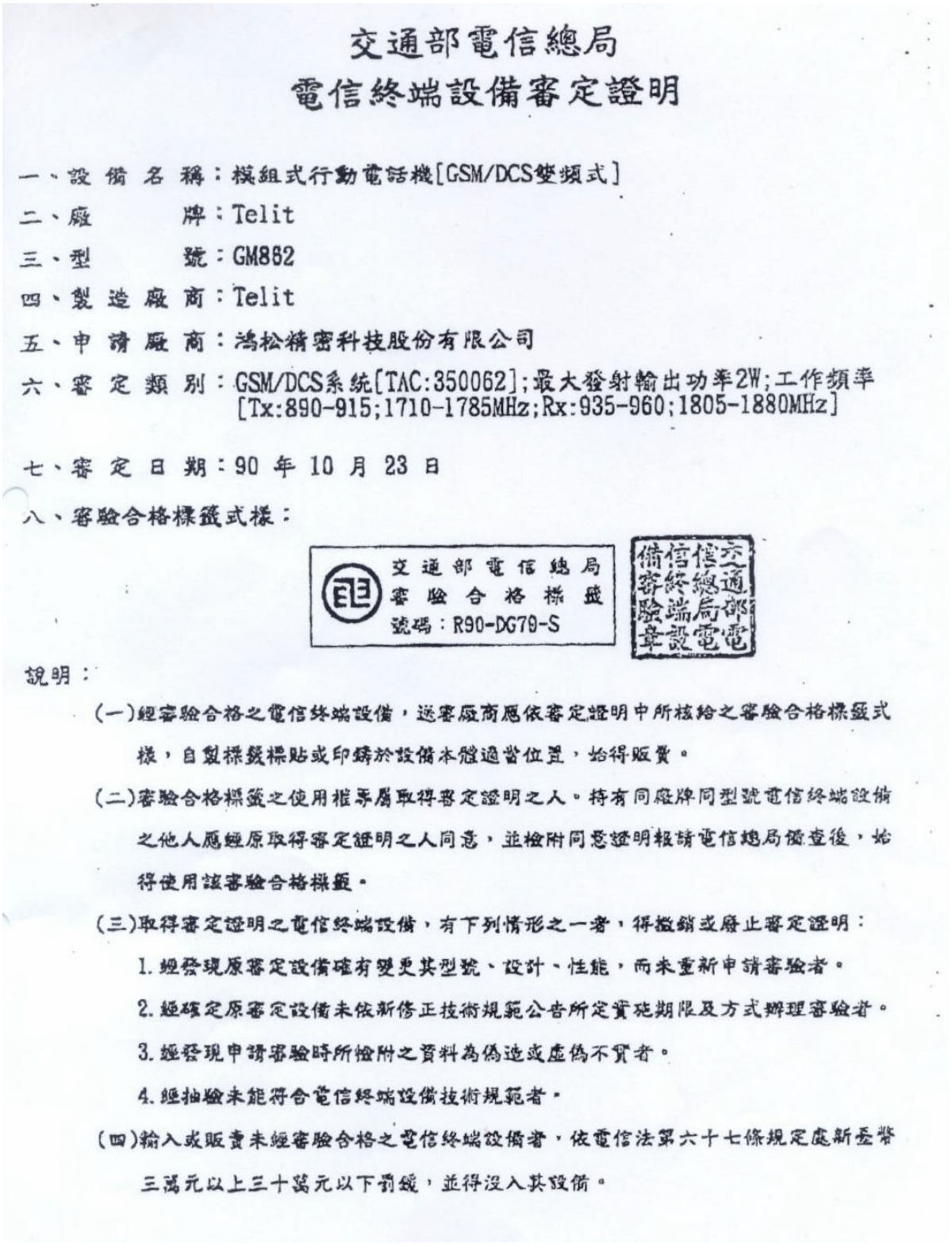
Date: 19/01/2001

on behalf of BABT

Confirmation Number: 0022/032

Claremont House, 34 Molesey Road, Walton On Thames, Surrey, KT12 4RQ, UK. Tel: +44 (0)1932 251251 Fax: +44 (0)1932 251252 Web address: http://www.babt.com

British Approvals Board for Telecommunications, Registered Office: Claremont House, 34 Molesey Road, Walton-On-Thames, Surrey KT12 4RQ, UK. Registered in England No. 1633883. A company limited by guarantee.



交通部電信總局
電信終端設備審定證明

一、設備名稱：模組式行動電話機[GSM/DCS雙頻式]
二、廠　　牌：Telit
三、型　　號：GM862
四、製造廠商：Telit
五、申請廠商：鴻松精密科技股份有限公司
六、審定類別：GSM/DCS系統[TAC:350062];最大發射輸出功率2W;工作頻率[Tx:890-915;1710-1785MHz;Rx:935-960;1805-1880MHz]

七、審定日期：90 年 10 月 23 日

八、審驗合格標籤式樣：

交通部電信總局
審驗合格標籤
號碼：R90-DG79-S

交通部電信總局電信終端設備審驗章

說明：

(一)經審驗合格之電信終端設備，送審廠商應依審定證明中所核給之審驗合格標籤式樣，自製標籤標貼或印鑄於設備本體適當位置，始得販賣。

(二)審驗合格標籤之使用權原屬取得審定證明之人。持有同廠牌同型號電信終端設備之他人應經原取得審定證明之人同意，並檢附同意證明報請電信總局備查後，始得使用該審驗合格標籤。

(三)取得審定證明之電信終端設備，有下列情形之一者，得撤銷或廢止審定證明：

1. 經發現原審定設備確有變更其型號、設計、性能，而未重新申請審驗者。
2. 經確定原審定設備未依新修正技術規範公告所定實施期限及方式辦理審驗者。
3. 經發現申請審驗時所檢附之資料為偽造或虛偽不實者。
4. 經抽驗未能符合電信終端設備技術規範者。

(四)輸入或販賣未經審驗合格之電信終端設備者，依電信法第六十七條規定處新臺幣三萬元以上三十萬元以下罰鍰，並得沒入其設備。

7.2 GM862-S1: Declaration of Conformity

Telit
Mobile Terminals SpA

DECLARATION OF CONFORMITY

We,
Telit Mobile Terminals SpA

Of:
V.le Stazione di Prosecco 5/b
34010 Sgonico TS
Italy

declare under our sole responsibility that the product

GSM 900/DCS 1800 Data Terminal System type GM862S1

to which this declaration relates is in conformity with all the essential requirements of Directive 1999/05/EC

We hereby also declare that all essential [radio] test suites have been carried out and that the above named product is in conformity to all the essential requirements of Directive 1999/5/EC.

The conformity assessment procedure referred to in Article 10 and detailed in Annex V of Directive 1999/5/EC has been followed with the involvement of the following Notified Body:

BABT, Claremont House, 34 Molesey Road, Walton-on-Thames, KT12 4RQ, UK

Identification mark: **0168**

The technical documentation relevant to the above equipment will be held at:

Telit Mobile Terminals SpA
V.le Stazione di Prosecco 5/b
34010 Sgonico TS
Italy

Trieste, *07/09/01*

Andrea Antonel
Quality System Manager

Accredited by the Council for Accreditation

B A B T

Confirmation of Conformity Assessment

The manufacturer has carried out the assessment of the conformity of the product specified below under the Full Quality Assurance Approval issued to them under Annex V of Directive 1999/5/EC and has issued a Declaration of Conformity with the essential requirements of Article 3.2 of the Directive.

Manufacturer:	Telit Mobile Terminals S.p.A Viale Stazione di Prosecco 5/b 34010 Sgonico (TS) Italy
Description	GSM 900 / 1800 dual band data terminal system
Type	GM862S1

Declaration of Conformity dated

Signed: T. J. Twyman Date: 10th September 2001

On behalf of BABT

Confirmation Number: 0022/39

7.3 Telit Full Quality Assurance Approval

Accredited by the Council for Accreditation

B A B T

Full Quality Assurance Approval

This certificate is issued to

Telit Mobile Terminals SpA

of

Viale Stazione di Prosecco
34010 Sgonico
Trieste
Italy

Whose quality system for the design, manufacture and final product inspection and testing of telecommunications terminal equipment has been assessed and found to meet the provisions of Annex V of EC Council Directive 1999/5/EC.

This approval is valid for the product categories, technical scope and locations identified in the following sections of the attached annex and subject to the conditions specified therein.

Section 1 - Product Categories
Section 2 - Technical Scope
Section 3 - Manufacturing Locations
Section 4 - Design/Development Locations
Section 5 - Test Laboratories
Section 6 - Conditions

Signed p.p. Managing Director

Approval Number 1022

Date 10 April 2000

Conditions for the validity of this certificate, if any, are listed in the 6 page Annex. This approval authorises the use of BABT's Notified Body identification number (168). This approval document is not transferable and remains the property of BABT.

BABTs Churchill House, 3 Mole Business Park, Walton-On-Thames, Surrey KT12 4RQ, U.K.
National Tel: 01932 251251 Fax: 01932 251252
International Tel: +44 1932 251251 Fax: +44 1932 251252

8 GM862 Technical Support

Telit technical support to **Telit GM862 module** customer is included into the dedicated Website (www.GM862.com) which contains also all available technical documentation download, application examples, Telit engineering support accessible via selective E-Mail (ts-gm862@telital.com) service with 24 hr replies assured.

9 List of acronyms

ACM	Accumulated Call Meter
ASCII	American Standard Code for Information Interchange
AT	Attention commands
CB	Cell Broadcast
CBS	Cell Broadcasting Service
CCM	Call Control Meter
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CMOS	Complementary Metal-Oxide Semiconductor
CR	Carriage Return
CSD	Circuit Switched Data
CTS	Clear To Send
DAI	Digital Audio Interface
DCD	Data Carrier Detected
DCE	Data Communications Equipment
DRX	Data Receive
DSR	Data Set Ready
DTA	Data Terminal Adaptor
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
EMC	Electromagnetic Compatibility
ETSI	European Telecommunications Equipment Institute
HF	Hands Free
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IRA	Internationale Reference Alphabet
ITU	International Telecommunications Union
IWF	Inter-Working Function
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LF	Linefeed

ME	Mobile Equipment
MMI	Man Machine Interface
MO	Mobile Originated
MS	Mobile Station
MT	Mobile Terminated
PB	Phone Book
PDU	Protocol Data Unit
PH	Packet Handler
PIN	Personal Identity Number
PLMN	Public Land Mobile Network
PUCT	Price per Unit Currency Table
PUK	PIN Unblocking Code
RACH	Random Access CHannel
RLP	Radio Link Protocol
RMS	Root Mean Square
RTS	Ready To Send
SCA	Service Center Address
SIM	Subscriber Identity Module
SMD	Surface Mounted Device
SMS	Short Message Service
SMSC	Short Message Service Center
SS	Supplementary Service
TIA	Telecommunications Industry Association
UDUB	User Determined User Busy
USSD	Unstructured Supplementary Service Data

10 Document Change Log

Revision	Date	Changes
ISSUE #1	04/05/01	
ISSUE #2	05/10/01	Par. 1 Overview – Telit Certification Lab services to support GM862 customer added Par. 2.2 Weight updated Par. 2.3.1 Temperature range updated Par. 2.7.1 Antenna connector updated Par 2.9 Power Consumption: Power Saving function updated Par. 2.10.1 Speech coding modified Par.2.12.1 Reset signal table corrected Par.2.13 Interface connectors on GM862 connector pin-out & I/O. Par. 2.10.14 added CUG SS Par. 3.1 Application Board Description: Application Board Lay-Out modified Par. 3.1.1.1 Connector to customer Board/Application I/O modified Par. 4.1 Developer Kit layout Switch button indication added Par. 4.1.1 Switch button operating procedure added Par. 4.1.1.1 Handset connector modified Par. 4.1.1.2 Hands-free connector modified Par. 4.1.1.4 External SIM carrier connector modified Par. 4.1.1.6 Power supply connector modified Par. 4.1.2 Service and Firmware update changed Par. 5.2.3 Command response timeout added Par. 5.3.1.6 Command &Z modified Par. 5.3.1.10 Command +GMR modified Par. 5.3.2.4 Command W modified Par. 5.3.2.6 Command I modified Par. 5.3.3.1 Command D modified Par. 5.3.7.4 Command S3 modified Par. 5.3.7.5 Command S4 modified Par. 5.3.7.6 Command S5 modified Par. 5.3.7.7 Command S7 modified Par. 5.3.7.8 Command S10 modified Par. 5.3.7.9 Command S12 modified Par. 5.3.7.10 Command S25 modified Par. 5.3.7.11 Command S30 modified Par. 5.4.2.5 Command +CRC modified Par. 5.4.3.7 Command +CLIR modified Par. 5.4.3.2 Command +CREG modified Par. 5.4.3.8 Command +CCFC modified Par. 5.4.3.9 Command +CCWA modified Par. 5.4.3.15 Command +CCUG added Par. 5.4.4.1 Command +CPAS modified Par. 5.4.4.2 Command +CFUN added Par. 5.4.4.3 Command +CPIN modified Par. 5.5.1.1 Command +CSMS modified Par. 5.5.1.2 Command +CPMS modified Par. 5.5.1.3 Command +CMGF modified Par. 5.5.1.8 Command +CSCB added Par. 5.5.3.1 Command +CNMI modified Par. 5.5.3.2 Command +CMGL modified Par. 5.5.3.3 Command +CMGR modified

		Par. 5.5.4.1 Command +CMGS modified Par. 5.5.4.3 Command +CMGW modified Par. 5.5.4.4 Command +CMGD modified Par. 5.6.1.10 Command AT#MONI modified Par. 6 Type Approval Issues – certification support to Telit customer added Par 6.2 GM862-S1 Declaration of Conformity and confirmation added
ISSUE #3	14/11/01	Par. 2.13 GM862 connector pinout modified Par. 2.9 Power consumption modified Par. 3.1.1.1 GM862-S1 PL101 Connector PIN-OUT modified Par. 4.1.1.1 Handset connector modified Par. 4.1.2.1 Step-by-Step upgrade procedure modified Par. 4.1.3.1 Handset modified Par. 5.3.1.3 +FCLASS - added Fax support Par. 5.3.1.13 &V - display current configuration & profile modified Par. 5.3.2.4 W command deleted Par. 5.3.2.4 X - extended result codes modified (ex Par. 5.3.2.5) Par. 5.3.3.6 H - disconnect modified Par. 5.3.4.1 +MS - modulation control modified Par. 5.4.2.1 +CBST - select bearer service type modified Par. 5.4.2.5 +CRC - cellular result codes modified Par. 5.4.3.2 +CREG - network registration report modified Par. 5.4.4.2 +CFUN power saving modified Par. 5.5.1.4 +CSMP – Set parameters in text mode modified Par. 5.5.1.6 +CSAS – Save setting text mode modified Par. 5.5.1.7 +CRES – Recall setting text mode modified Par. 5.6.1.1 #CAP - Change Audio Path modified Par. 5.6.1.14 #SHFEC – Set Handsfree echo canceller modified Par. 5.6.1.15 #HFMICG – Handsfree Microphone Gain modified Par. 5.6.1.16 #HSMICG – Handset Microphone Gain added Par. 5.6.1.17 #SHFSD – Set Handsfree side tone modified Par 5.7 FAX Class 1 Commands added
ISSUE#4	03/01/02	Par. 2.10.15.1 DTMF tones modified Par. 2.14.1 Antenna Coaxial cable fixing added Par. 2.14.2 Precautions added Par. 7 Type Approval Issues modified
ISSUE#5	05/02/02	Par. 3.1.1.1 Connector to Customer board/application (PL101) - conn. bug fixed