

MC45

AT Interface

Changes and Extensions

01.10.2002

- **AT interface characteristics**
- **New V.25ter commands**
- **Error handling**
- **Power saving**
- **Audio configuration**
- **New GPRS commands**
- **New SMS related commands**
- **New SAT feature**

New AT Interface Characteristics

- **AT command Interfaces:**
 - first / second serial interface (hardware)
 - multiplex mode only on first serial HW interface (disables second interface)
- **Possibly different error codes on different interfaces**
- **Phonebook extensions**
 - 250 entries in ME phonebook (MC35: 50)
 - 250+ entries supported in SIM phonebook (as in MC35)

V.25ter Commands

- **Dependencies: Interface – AT-Commands**
 - AT\Q (flow control)
 - AT&C (DCD)
 - AT&D (DTR)
 - AT&S (DSR)
 - Response of AT&V

- **ATS0, ATS3, ATS4 and ATS5 available on all interfaces**

- **Individual settings per interface**
 - AT&W
 - ATZ
 - AT&F store/restore/reset

■ Feature:

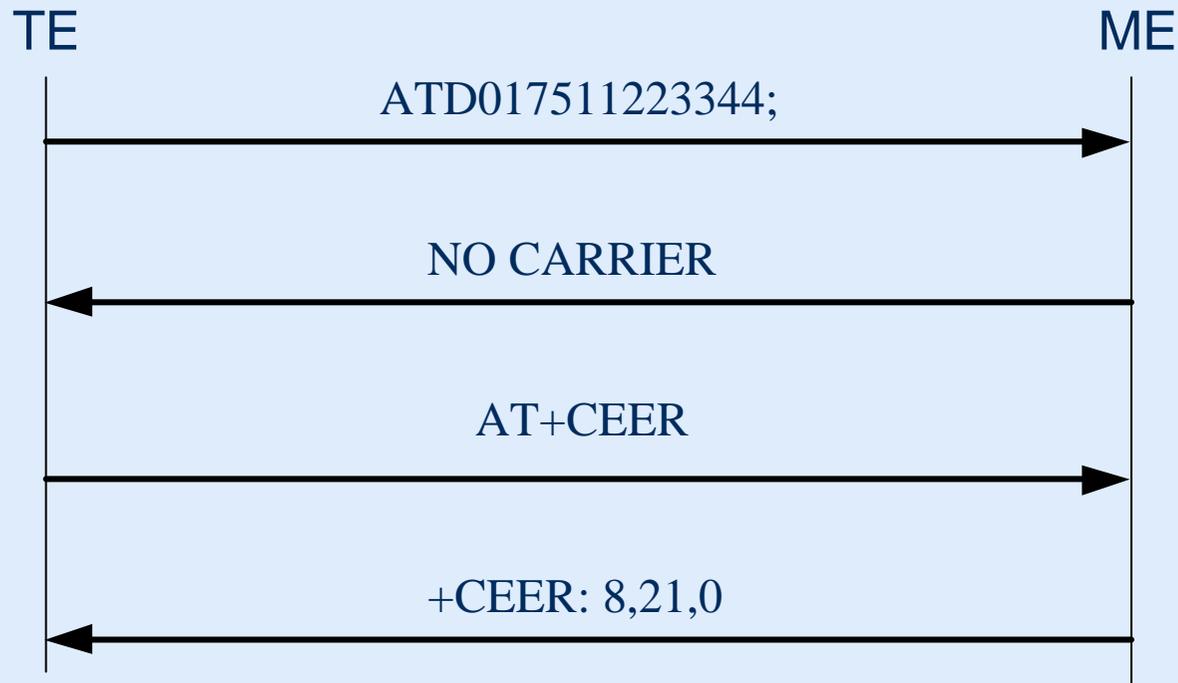
- AT+CEER now offers support for call related supplementary services (call hold, multiparty) during an active call.
- A wider range of location IDs and error codes is supported compared to MC35

■ Command:

- AT+CEER
- +CEER: <location ID>, <reason > , <ss_release>

Example

- Mobile originated call is rejected by the called party



- 8 = GSM call for L3 Call Control
- 21 = Call rejected
- 0 = parameter `<ss_release>` is not applicable

Extended Power Saving

■ Feature:

- GPRS power saving capabilities extended. New values 7 and 8 for parameter <fun>
- If value is set to **7** the serial interface is shortly enabled during paging. If characters are recognized on the serial interface, the ME stays active for **2 seconds** after the last character was sent or received
- If value is set to **8** the serial interface is shortly enabled during paging. If characters are recognized on the serial interface, the ME stays active for **10 minutes** after the last character was sent or received

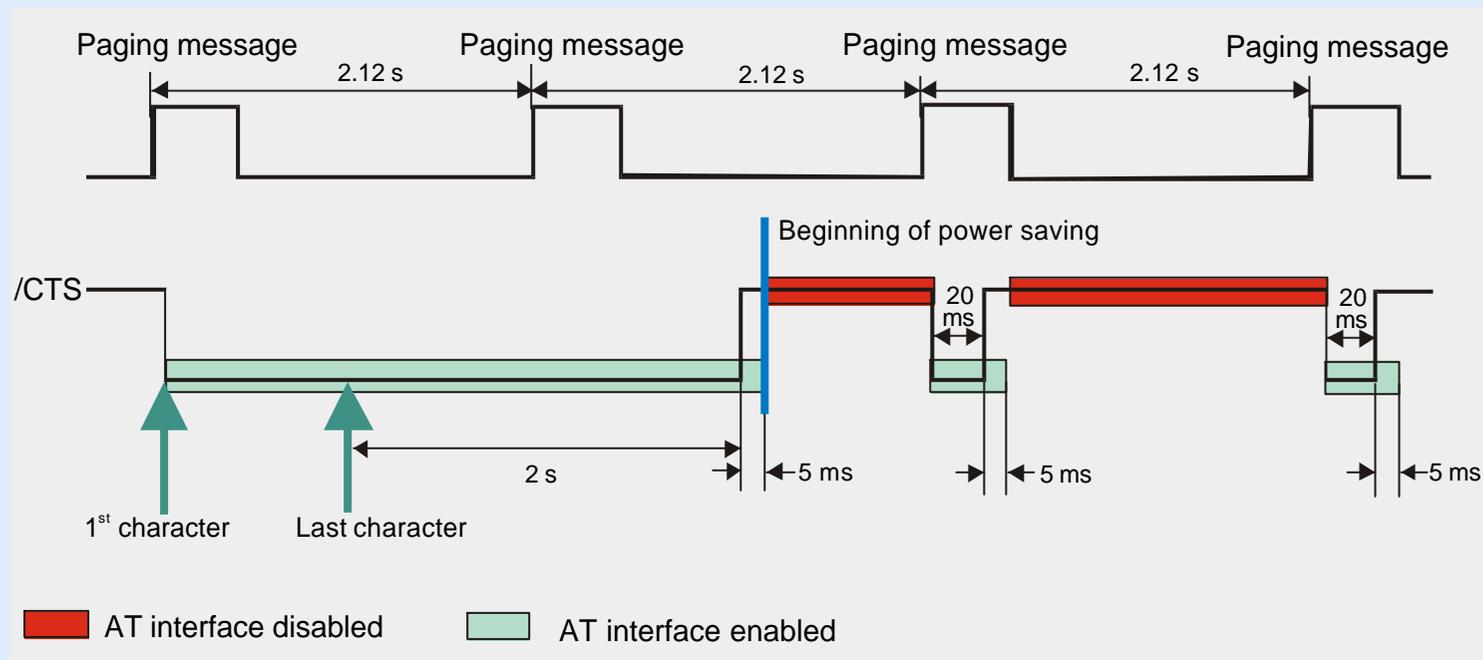
■ Command:

- AT+CFUN=<fun>

Extended Power Saving

■ At+CFUN=7

- RS232 response time depends on the GSM network DRX value (maximum 2.12s) - hardware flow control (RTS/CTS) is mandatory
- ME exits SLEEP mode only if AT+CFUN=1 is set



Audio Interface Configuration

■ Feature:

- AT^SAIC: configurable audio interface parameters for audio modes 2 through 6. The changed profiles can be saved with AT^SNFW.

■ Command:

- AT^SAIC= <io>[,mic>[,<ep>]]

■ Description

- <io> = 1 the digital I/O is selected
- <io> = 2 the analog I/O is selected
- <mic> = 1 selects microphone 1
- <mic> = 2 selects microphone 2
- <ep> selects between 2 different earpieces amplifier

Select Ring Tones Parameter

■ Feature:

- selecting one of 7 different tones and melodies

■ Command:

- AT^SRTC= [<type>][,<vol>]

■ Description

- <typ> = type of ring tone (1-7)
- <vol> = volume of ring tone from mute (0) to high (7)

- **the execute command AT^SRTC starts to play a melody from the audio output for testing**

Call progress tones

■ Feature:

- The command controls the call progress tones generated at the beginning of a mobile originated call setup

■ Command:

- AT^SNFPT= <pt>

■ Description

- if <pt> is set to 0 call progress tones are off
- if <pt> is set to 1 call progress tones are on

■ After restart or reset the default value 1 will be restored

New general GPRS options

- **GPRS support 6n all interfaces**
 - (no GPRS restrictions in Multiplexer mode)
 - Support of 2 online (data transfer) GPRS connections
 - Maximum 4 activated contexts per module
 - Maximum 2 activated contexts per Interface

GPRS network registration status

■ Feature:

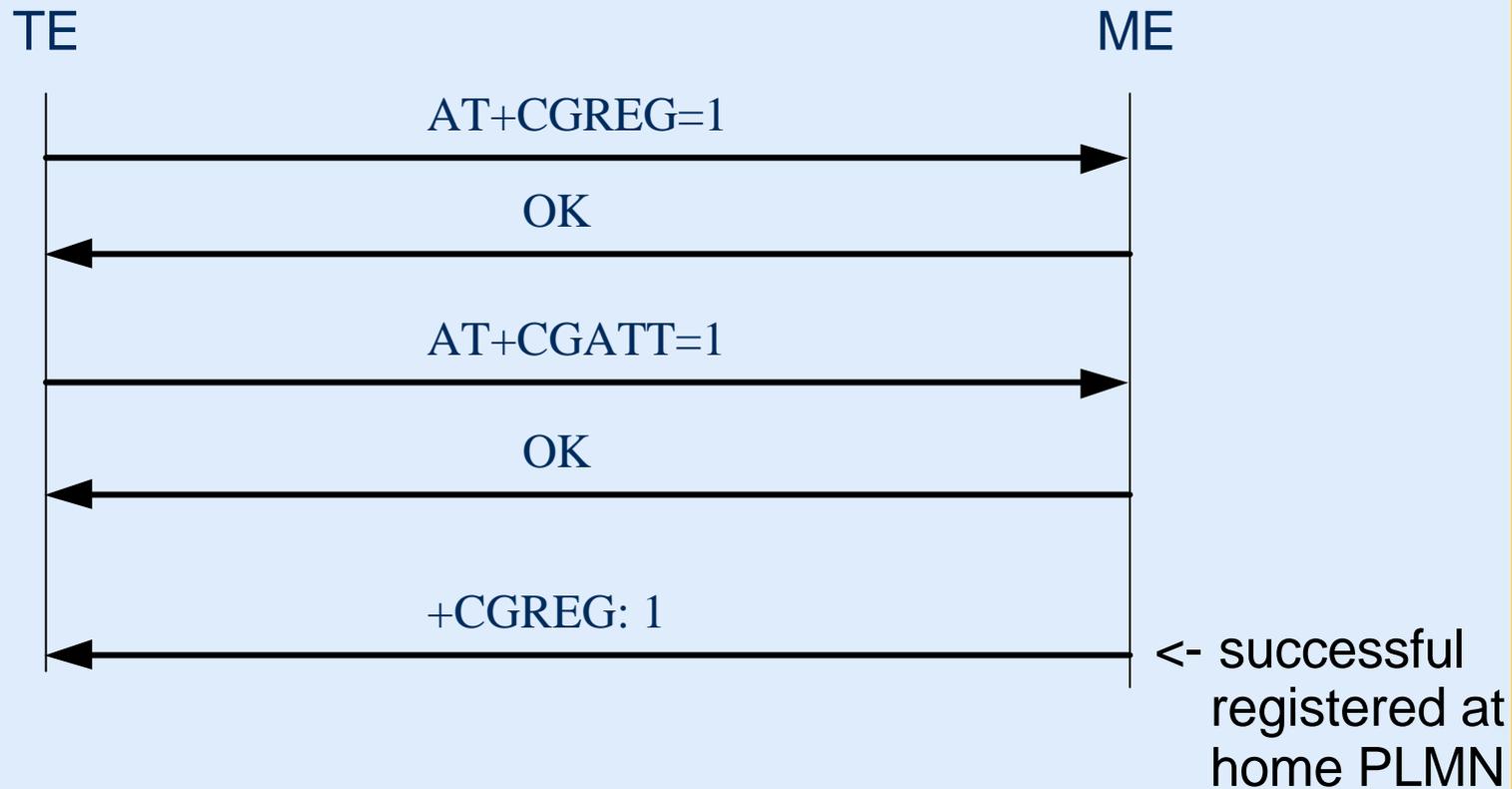
- GPRS network registration status
Read command returns the current GPRS network registration state.
The write command controls the presentation of an URC
+CGREG: <stat>.

■ Command:

- AT+CGREG = <n>
- <n> is set to 0 disables network registration unsolicited result code
- <n> is set to 1 enables network registration unsolicited result code

Example

- **+CGREG shows successful GPRS registration automatically**



Show PDP Address

■ Feature:

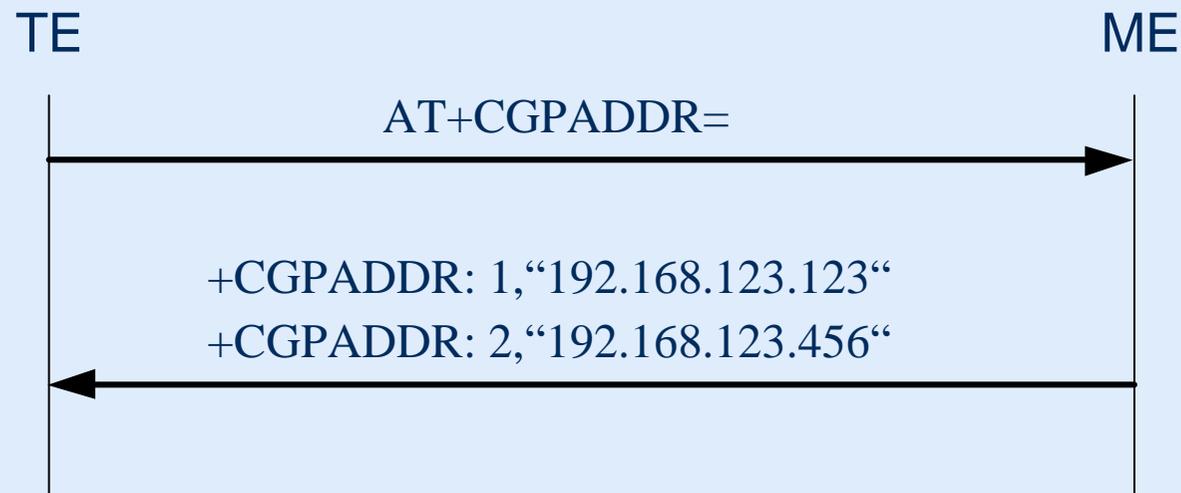
- Show PDP address
Write command returns a list of PDP addresses for the specified context identifiers.
- If <cid> is given, the command will return the address of the specified context

■ Command:

- AT+CGPADDR= <cid>
- +CGPADDR: <cid>, <PDP_address>

Example

■ PDP context 1 and 2 are established



- Address of context 1 = 192.168.123.123
- Address of context 2 = 192.168.123.456

SMS: List Memory Storage

■ Feature:

- Command lists the used and total storages for short messages (SM, ME, MT)

■ Command:

- AT^SLMS
- ^SLMS: "SM",<total>,<used>
- ^SLMS: "ME",<total>,<used>
- ^SLMS: "MT",<total>,<used>

SMS: Set Short Message Storage Sequence

■ Feature:

- Command allows to select the sequence of addressing the SMS storages „ME“ (Mobile Equipment) and „SM“ (SIM Memory) (ME then SM, SM then ME)

■ Command:

- `AT^SSMSS=<seq>`

■ Description:

- if `<seq> = 0` MT stores SMS first in ME than in SM
- if `<seq> = 1` MT stores SMS first in SM than in ME

Access to the SIM based storage is faster

SMS: Set Display Availability

■ Feature:

- TA reports ME about its capability to display short messages via its own display immediately (SMS class 0, e.g. phones, PDAs)
- the setting is reset to 0 after restart or reset the system
- there is no way to store the setting to the user defined profile

■ Command:

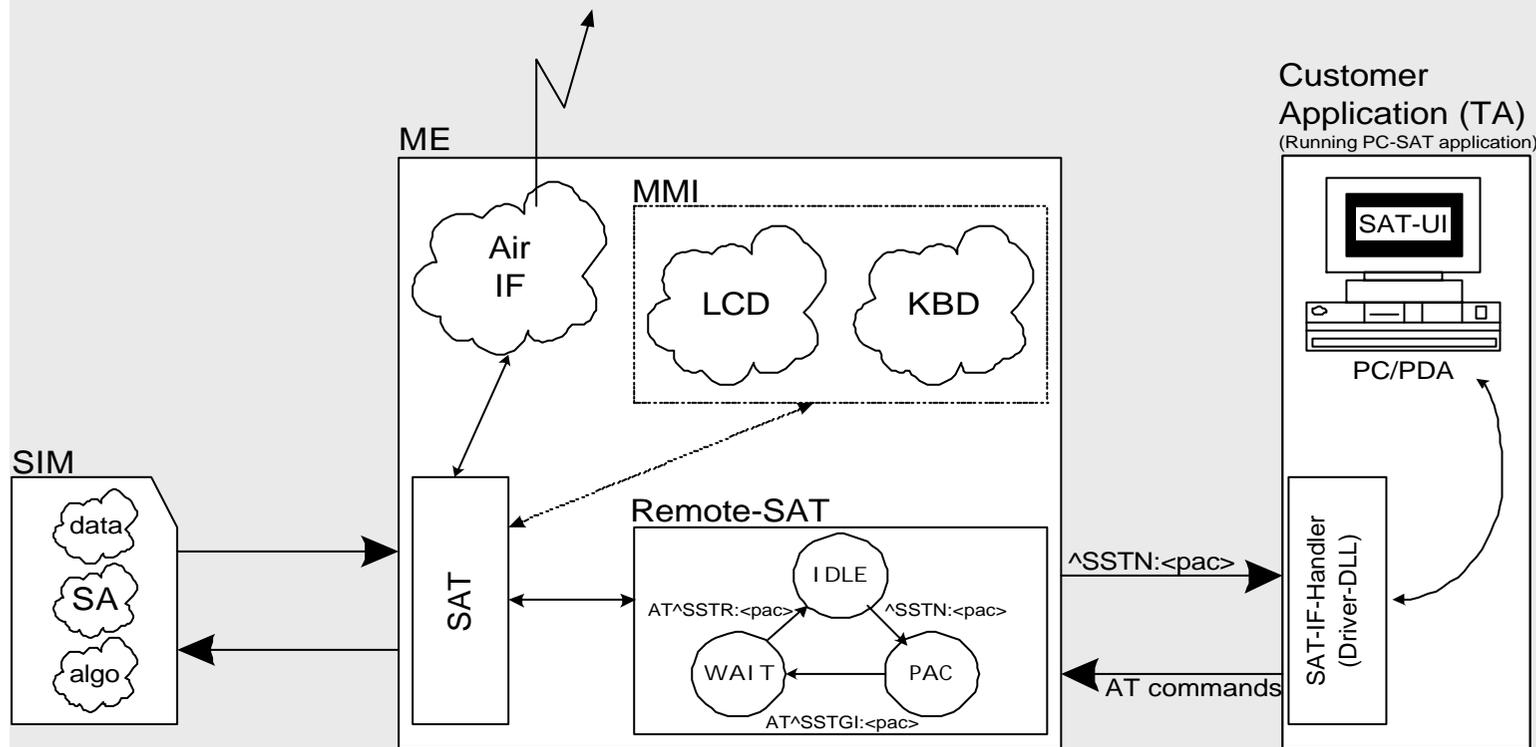
- AT^SSDA=<da>

■ Description:

- if <da> = 0 the mobile station is not capable of displaying short messages
- if <da> = 1 the mobile station is capable of displaying short messages

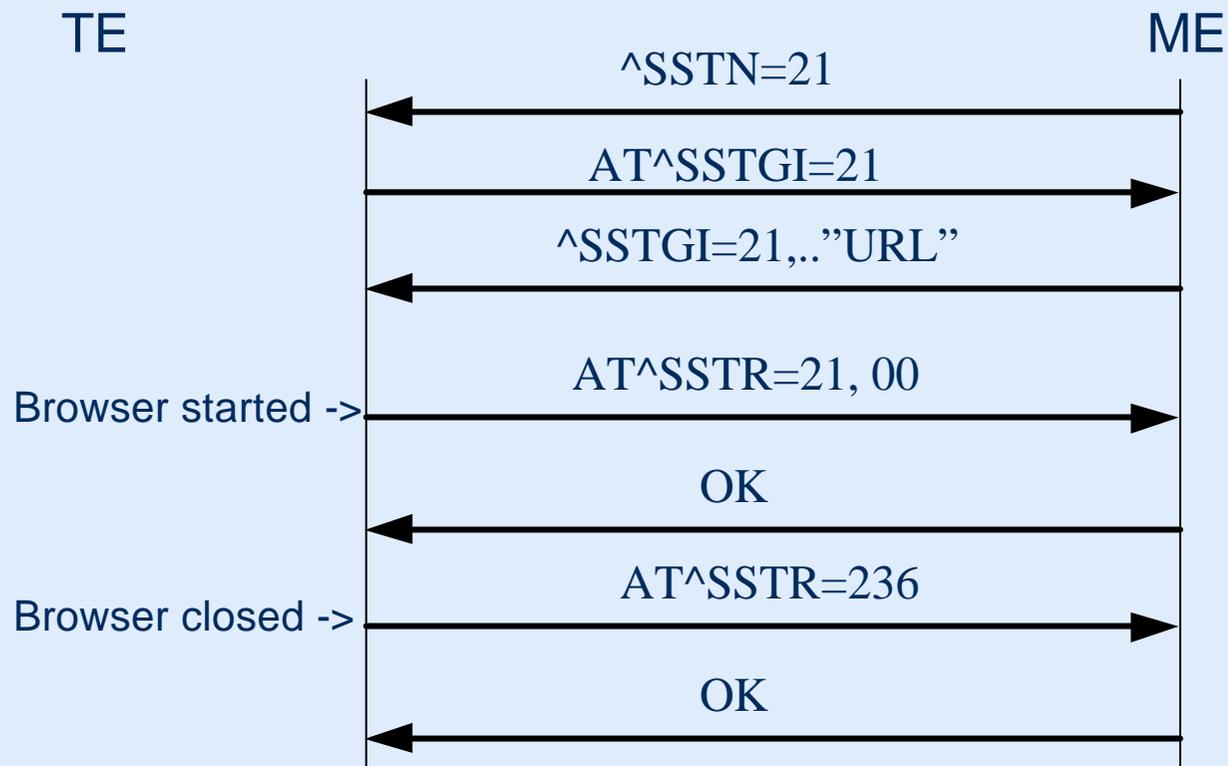
New SAT feature: LAUNCH BROWSER

- SIM can instruct external application (PDA, Phone) to start its browser (e.g Internet explorer) with transferred URL (address)



New SAT feature: LAUNCH BROWSER

- With AT^SSTR the application have to select the given URL



Thank you
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