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WIRELESS COMMUNICATIONS GMBH

- **MC55 /MC56**

- Siemens Cellular Engines

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- ***Release Notes***

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Version history:

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1 PREAMBLE

This Release Note describes the **MC55 / MC56 Release 04.00**. The document briefly summarizes all new features and major changes which have been added since Release 03.03.

The focus of this release is a greatly enhanced design concept of the Internet Service AT commands. The new design involves a number of new AT commands and feature enhancements of existing AT commands. This will improve the overall performance and offer more convenience for integrating the TCP/IP functionality into the host application, but also implies that the new design is not compatible with recent releases as far as TCP/IP is concerned, meaning that changes in TCP/IP applications could be necessary.

One of the major benefits is having the choice between URC mode or polling mode, i.e. to better fit the preferences of your host application design, the progress of an Internet session may either be driven by URCs or by polling the service for status information.

The MC55/56 firmware is not downgradable, i.e. it is not possible to reinstall an older version. However, it is possible to upgrade MC55/56 Release 03.03 to Release 4.00.

1.1 Important Upgrade Note

Please note that the non-volatile memory block reserved for storing currently set parameters to a user defined profile has been adjusted. During an upgrade from Release 03.03 to Release 04.00 this memory block is newly created. Previous profile settings are lost and will have to be re-written with AT&W (see [1]).

1.2 Related documents

Updated documents:

- [1] MC55 AT Command Set, Version 04.00 and MC56 AT Command Set, Version 04.00

1.3 New and Improved Features

AT command / feature	Brief description
URC mode/ polling mode (controlled with AT^SCFG)	<p>URC mode (delivery default):</p> <ul style="list-style-type: none"> The progress of an Internet session is URC driven. The URCs notify the host whether data can be sent or received, whether data transfer has been completed, whether the service can be closed or whether an error has occurred. This mechanism eliminates the need to poll the service until the necessary progress information is received. <p>Polling mode:</p> <ul style="list-style-type: none"> In polling mode, the presentation of URCs related to the Internet Services is disabled. The host is responsible for retrieving all the status information needed for controlling the Internet session. This is done by polling, where the host application keeps sending the commands AT^SISR, AT^SISW, AT^SISI. The following URCs are disabled: ""^SISR" URC, ""^SISW URC and ""^SIS" URC for parameter <urcCause>=0 (Internet service events), but not for <urcCause>=1 or 2 (needed for the Socket listener and always enabled). <p>To enable the URC mode select: AT^SCFG="Tcp/WithURCs",on. To enable the polling mode select: AT^SCFG="Tcp/WithURCs", off.</p>
AT^SISI (Status report)	<p>New AT command used to monitor the progress of an Internet session. The command reports the service state of the used service profile and indicates the number of bytes received, the number of bytes sent and, in the case of sending, the number of bytes acknowledged or unacknowledged at the TCP layer.</p> <p>Response of the read command:</p> <pre>[^SISI: <srvProfileId>, <srvState>, <rxCount>, <txCount>, <ackData>, <unackData>] [^SISI: ...]</pre>
AT^SISE (Error report)	<p>New AT command used to detect errors. If an error occurs during a session you can enter the AT^SISE command and the <srvProfileId> to identify the reason. This is especially important in polling mode.</p> <p>The information received with AT^SISE is identical to the ""^SIS" URC which is disabled in polling mode.</p>
AT^SICI (Bearer status)	<p>New AT command used to query the current status of a specific connection profile.</p>

AT command / feature	Brief description
AT^SISO (Opening Service) Internet	The functionality of AT^SISO has been refined: <ul style="list-style-type: none"> • The new service state "Down" has been introduced. • The parameters <code><srvState></code>, <code><rxCount></code>, <code><txCount></code> are identical in a response to AT^SISO and AT^SISL.
AT^SISR (Peek operator, Indicating end of data transfer)	The AT^SISR command has been enhanced to provide two new features: <p>Peek operator:</p> <ul style="list-style-type: none"> • The parameter <code><reqReadLength></code> (requested read length) now includes the additional value 0, referred to as the peek operator. The peek operator queries the number of received bytes in internal buffers. <p>Indicating end of data transfer:</p> <ul style="list-style-type: none"> • The parameter <code><cnfReadLength></code> has been enhanced. The value -2 indicates that the download job is finished (all data have been read) and the service can be closed with AT^SISC.
AT^SISW (End of data flag, Binary mode, Interactive text mode)	The AT^SISW command has been enhanced to provide two new features: <p>End-of-data flag <code><eodFlag></code>:</p> <ul style="list-style-type: none"> • New parameter to be set in the last AT^SISW command of an upload job. Indicates to the service that the upload data stream is finished. • The end-of-data flag applies only to the services Socket, FTP and SMTP. <p>Binary mode <code><mode>=0</code></p> <ul style="list-style-type: none"> • This mode allows sending a number of bytes defined with parameter <code><reqWriteLength></code>. <p>Interactive text mode <code><mode> = 1:</code></p> <ul style="list-style-type: none"> • This mode allows the user to type and send 8-bit ASCII characters while the service is open. Ctrl-Z terminates data input and causes the data to be transferred.

AT command / feature	Brief description
Retransmission of TCP/IP packets	<p>With Release MC55/56 04.00 the following parameters have been introduced to control the retransmission of TCP/IP packets. The implementation follows the rules of the RFC 1122 specification.</p> <p>Initial retransmission timeout (<tcpIrt>):</p> <ul style="list-style-type: none"> Controls the time (in seconds) the TCP/IP stack will wait before starting the first retransmission of packets during the initial connection setup phase. Parameter is set with <code>AT^SCFG="TCP/IRT",<tcpIrt></code> (where <tcpIrt> = 1 to 60 seconds). <p>Maximum number of retransmissions (<tcpMr>):</p> <ul style="list-style-type: none"> Specifies the maximum number of times to retransmit TCP packets. Parameter is set with <code>AT^SCFG</code> and <code>AT^SISS</code>. The setting made with <code>AT^SCFG</code> is a global value and assumed as default when creating a new service profile with <code>AT^SISS</code>, but may be overwritten in each service profile. The value set in a specific service profile has precedence over the setting of <code>AT^SCFG</code>. <p>Overall timer for outstanding connections <tcpOT>:</p> <ul style="list-style-type: none"> Specifies the number of seconds to wait before closing a connection if TCP/IP packets are not acknowledged. Parameter is set with <code>AT^SCFG</code> and <code>AT^SISS</code>. The setting made with <code>AT^SCFG</code> is a global value and assumed as default when creating a new service profile with <code>AT^SISS</code>, but may be overwritten in each service profile. The value set in a specific service profile has precedence over the setting of <code>AT^SCFG</code>.
AT&C	<p>The AT&C command has been enhanced. Now, you can configure the DCD line of the used serial interface to indicate whether an Internet service is active. For Socket, HTTP, SMTP and POP3 the service states "Up" or "Connecting" are indicated, for FTP only the state "Up".</p>

AT command / feature	Brief description
"^^SIS"URC/AT^SISE	<p>New information elements delivered with the parameters <code><urclnfold></code> and <code><urclInfoText></code> have been introduced. Furthermore, the <code><urclnfold></code> number now clearly identifies the type of information element:</p> <ul style="list-style-type: none"> 0 <i>Service is working properly</i> 1 - 2000 <i>Error, service is aborted and has entered service state "Down"</i> 4001 - 6000 <i>Warning, but no service abort</i> 6001 - 8000 <i>Notes</i> <p>New information elements: <code><urclnfold></code> 80, 84 - 87, 50, 2100, 4300, 4400</p> <p>All information elements are delivered within the "^^SIS" URC and the responses of the new AT^SISE command.</p> <p>The value 3 of the "^^SIS" URC parameter <code><urcCause></code> known from earlier MC55/56 releases has been removed.</p>

1.4 Internet Service AT Commands not Compatible with Earlier Releases

Due to the revision of the Internet Service AT commands several functions have been enhanced or changed and are no longer compatible with recent releases. Below please find a summary of the features you are required to change in an existing host application after upgrading to MC55/56 04.00.

AT command / feature	MC55/56 04.00	Earlier releases
Closing an upload service with AT^SISC	The new end-of-data flag set within AT^SISW eliminates the need for the former <closeMode> parameter of AT^SISC. With release 04.00 <closeMode> has been removed. The end-of-data flag mechanism notifies the service that no further upstream data follow. As a result, the running protocol is completed and the service enters the service state "Closing", then "Down". AT^SISC now always stops the service immediately. This means, if entered while an upload is ongoing AT^SISC will cut off the transfer. IMPORTANT: The improved close mechanism requires that existing host applications be adapted.	The AT^SISC parameter <closeMode> determines the close mechanism, either graceful or immediate.
Service state "Down"	After finishing the protocol each service remains in state "Down" until AT^SISC is called.	After finishing the protocol the service switches automatically to state "Allocated". AT^SISC must be called, too.
AT^SISR=x,0	Peek operator Queries number of received bytes in internal buffers	Returns ERROR
AT^SISW=x,0	Queries number of unacknowledged bytes at the TCP/IP layer.	Returns ERROR
Read / write errors	AT^SISR/AT^SISW write commands may return an error indicating a major error event that switches the service off.	AT^SISR/AT^SISW do not return any errors while the service is running.
AT^SISW? read command	Returns a 3 rd parameter: <unackData>	Returns two parameters

AT command / feature	MC55/56 04.00	Earlier releases
Upload services	The complete AT^SISW command cycle may take a little more time because the socket operation is now included to the command flow.	
FTP service	Size parameter no longer supported in URL string as end-of-data flag is sufficient.	Size parameter in URL string supported.
AT+CEER, AT^SISE	AT+CEER no longer contains error codes specific to the Internet service commands. This function is now covered by the AT^SISE command introduced with release 04.00.	AT+CEER provides a list of error codes specific to the Internet service commands.
"^SIS" URC	<p><urcCause> has 2 values. <urcCause> = 3 has been removed.</p> <p><urcInfold> 107 related to FTP size has been removed.</p> <p><urcInfold> 48, 49 has been changed</p>	<p><urcCause> has 3 values. <urcInfold> 107 related to FTP size is supported.</p>

1.5 Known Issues

AT command / feature	Brief description
AT^SCFG, "TCP/IRT" parameter <tcplrt>	Initial Retransmission Timeout <tcplrt> After changing the <tcplrt> parameter the new value shall take effect the next time you start an Internet Service with AT^SISO. With MC55/56 04.00, however, the new setting applies only to service profiles afterwards created with AT^SISS, existing service profiles continue to use the previous setting even after opening a new session with AT^SISO.
Max. number of TCP/IP transmissions set with AT^SISS, AT^SCFG	As specified in [1], the maximum number of retransmissions of TCP/IP packets is 30, normally selectable with AT^SCFG and AT^SISS. However, the service profile created with AT^SISS currently accepts only the maximum value 15. Because of this AT^SISS limitation, you should use the AT^SCFG command to configure values between 16 and 30.

AT command / feature	Brief description
Defining dynamic DNS address with AT^SICS	<p>As described in [1], dynamic DNS address assignment will be assumed by default when no specific DNS address is stated in a connection profile.</p> <p>Unlike earlier releases the MC55/56 04.00 does not accept a DNS address explicitly entered in the format "0.0.0.0". So, if you wish to revert from fixed to dynamic DNS address settings do not overwrite the existing connection profile but create a new one without the values "dns1" or "dns2".</p>
URCforAT^SISW	<p>During repeated calls of AT^SISW it is possible that the corresponding URC for the last write request is received before the AT response. This could lead to misinterpretation.</p> <p>To avoid the problem an application should always wait for the appropriate ^SISW URC indicating that data can be written. Alternatively it is possible to switch to polling mode, thereby deactivating URCs for all TCP/IP AT commands (AT^SCFG; parameter "Tcp/WithURCs").</p>
URCforAT^SISR	<p>During repeated calls of AT^SISR it is possible that the corresponding URC of the last read request is received before the AT response. This could lead to misinterpretation.</p> <p>To avoid the problem an application should always wait for the appropriate ^SISR URC indicating that data can be read. Alternatively it is possible to switch to polling mode, thereby deactivating URCs for all TCP/IP AT commands (AT^SCFG; parameter "Tcp/WithURCs").</p>
Read URC for AT^SISR	<p>As a rule the read "^SISR: x,1" URC is issued, if less data was confirmed than requested during the last "Read Data" operation with AT^SISR and new data is available. However, after requesting and receiving data over an HTTP connection the read "^SISR: x,1" URC is always issued, regardless of the amount of data confirmed.</p>
AT^SISW and end-of-data flag for socket Internet service	<p>If the IP socket service is configured for TCP it is sometimes possible that because of a delayed data transmission not all data sent with AT^SISW is written and acknowledged before the transmission is closed with the end-of-data flag. The remaining data is lost.</p> <p>To prevent this data loss the application should monitor the number of unacknowledged bytes during transmission (AT^SISI; AT^SISW). Only if there are no more unacknowledged bytes, i.e., if the buffer is empty, the transmission can be closed.</p>

AT command / feature	Brief description
AT+CGEREP	If GPRS event reporting is enabled by AT+CGEREP and the network initiates a context deactivation, then the "+CGEV: NW DEACT" URC currently never contains <PDP_addr> and <cid>. If an application needs this information to maintain its GPRS context states, it should update its state information as soon as the "+CGEV: NW DEACT" URC is received by using the read commands AT+CGACT? or AT^SGACT?
AT+CPBR,AT^SPBC, AT^SPBG, AT^SPBS	If supported by the used SIM card the MC55/56 module shall be capable of handling a maximum <length> of 30 characters. So the write command AT+CPBW allows writing 30 characters, but the read commands AT+CPBR, AT^SPBC, AT^SPBG and AT^SPBS return only 29 characters.
ATS3atMUX2	The command ATS3 defining the character recognized by the TA to terminate an incoming command line does not work correctly on multiplexer channel 2. Defined characters (e.g. backspace) may not be interpreted correctly.
Issues related to Internet services with CSD bearer	
Indication of "NO CARRIER" result code after releasing CSD bearer for Internet service	<p>When a CSD call, associated to the Internet Services, is released, either by the local peer with AT^SISC or from the network side (in particular after loss of net coverage), a running write or read operation (AT^SISW or AT^SISR) will be properly completed on AT command level. However, the AT command line becomes idle and the "NO CARRIER" string will be printed out, causing any other running AT command to be aborted without prior warning and without any further response related to this AT command. The problem occurs in particular, when the inactivity timeout <inactIO> of the CSD bearer expires and, at the same time, another AT command is executed (e.g. reading the phonebook).</p> <p>Workaround: As the user may not be aware that the CSD connection was released the host application should be designed to parse for the "NO CARRIER" result code and react accordingly, for example by repeating the aborted AT command.</p>
User profile stored with AT&W	When a CSD call, associated to the Internet Services, is released, MC55/56 04.00 automatically reverts to the user profile. Therefore, avoid opening a CSD connection with AT^SISO or AT^SICO unless you have stored all your preferences with AT&W. This is necessary because otherwise, if AT&W was never used before, the user profile is identical with the factory defaults.
Local echo to AT^SISO	If local echo is enabled (ATE1) and the user opens a CSD connection it may occur that the AT^SISO command string is not fully echoed. Please note that this is nothing to worry about as the execution of AT^SISO is not affected.

AT command / feature	Brief description
Closing CSD bearer IP service resets IP service parameters	On closing a CSD bearer IP service ("No Carrier") a number of non-volatile IP service parameters, i.e., tcpIrt, tcpMr, tcpOt and tcpWithUrc may be reset to their default values. After closing a CSD based IP connection, i.e., after receiving a "No Carrier", these parameters will have to be specified again using AT^SCFG.
FTP download via CSD	The finishing URC may be sporadically missing using the FTP download Internet service via CSD bearer.