

# TD1202 REFERENCE MANUAL



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## 1 Overview

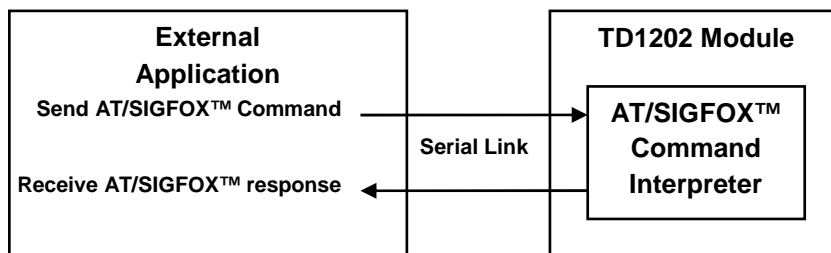
Thank you for choosing the TD1202 SIGFOX™ gateway module from Telecom Design!

This document provides a reference manual for the Telecom Design TD1202 module.

As an overview, this chapter gives the scope of this document. The document's organization is then detailed, followed by a list of relevant documents.

### 1.1 Scope

The TD1202 module provides an integrated dual AT/SIGFOX™ command interpreter for interfacing with an external application over a serial link.



**Figure 1- AT/SIGFOX™ Command Interpreter**

This guide focuses on the description of the commands and responses provided by the TD1202 module used in the communication with the external application.

Note: The “AT” command interpreter is only available since firmware revision SOFT1104.

### 1.2 Organization

Each section in this document covers a separate topic, organized as follow:

- Section 1 is this overview
- Section 2 is a Hayes-compatible AT command set reference
- Section 3 provides a SIGFOX™-compatible command set reference

### 1.3 Relevant Documents

This document provides a reference manual for the TD1202 SIGFOX™ Gateway module. Additional information on this module and on its dedicated evaluation board can be found in:

- *TD1202 Datasheet*
- *TD1202 EVB User's Guide*

The following standards are also referenced:

- *ITU-T Rec. T.50 (09/92) International Reference Alphabet (IRA)*
- *ISO/IEC 646:1991, Information technology — ISO 7-bit coded character set for information interchange*

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## 2 TD1202 Hayes-Compatible AT Command Set Reference

This section provides a reference for the Hayes-compatible “AT” commands implemented by the TD1202 Module.

Note: The “AT” command interpreter is only available since firmware revision SOFT1104. In older revisions, including SOFT1093, the “AT” command interpreter is not functional.

### 2.1 TD1202 Factory Settings

A serial link handler is set with the following default values (factory settings):

- LVTTL electrical level
- Speed 9600 bps
- 8 data bits
- 1 stop bit
- No parity
- No hardware/software flow control

The following AT command interpreter settings are set up as factory defaults:

- Character echo is activated (“**ATE1**”)
- Format control is set to verbose (“**ATV1**”)
- Result codes are activated (“**ATQ0**”)
- Extended result codes are activated (“**ATX1**”)

### 2.2 AT Commands Presentation Rules

The AT commands are presented in the present documentation as follows:

- A ‘Description’ section provides general information on the AT command (or response) behavior
- A ‘Syntax’ section describes the command and response syntaxes and all parameters description
- A ‘Parameters and Defined Storage’ section describes all parameters and values
- A ‘Parameter Storage’ presents the command used to store the parameter value and/or the command to restore the parameter value
- An ‘Examples’ section presents the real use of the described command
- A ‘Notes’ section can also be included indicating some remarks about the command use

Figures are provided where necessary.

The commands will be listed alphabetically.

## 2.3 Information Responses and Result Codes

If format control is set to verbose ("ATV1") and result codes are activated ("ATQ0"), the TD1202 module returns the "<CR><LF>^SYSSTART<CR><LF>" string upon device reset.

If command syntax is incorrect or the command contains wrong parameters, or the command cannot be executed successfully, the "ERROR" string is returned if format control is set to verbose ("ATV1"), or a "4" string is returned otherwise.

If the command line has been executed successfully, an "OK" string is returned if format control is set to verbose ("ATV1"), or a "0" string is returned otherwise.

## 2.4 AT Command Syntax Format

Command lines always start with "AT" and finish with a "<CR>" character, except for the "A/" command, and contain one or more commands.

Responses start and end with "<CR><LF>", except for the "ATV0" TD1202 module response format and the "ATQ1" (result code suppression) commands.

In the following examples "<CR>" and "<CR><LF>" characters are intentionally omitted.

### 2.4.1 Basic AT Command Syntax Format

The syntax of basic commands is:

```
<command>[<number>]
```

Where "<command>" is either a single character, a "?" character (IA5 3/15), or the "&" character (IA5 2/6) followed by a single character. Characters used in "<command>" shall be taken from the set of alphabetic characters.

"<number>" may be a string of one or more characters from "0" through "9" representing a decimal integer value. Commands that expect a "<number>" are noted in the description of the command. If a command expects "<number>" and it is missing ("<command>" is immediately followed in the command line by another "<command>" or the termination character), the value "0" is assumed. If a command does not expect a "<number>" and a number is present, an "ERROR" is generated. All leading "0"s in "<number>" are ignored by the TD1202 AT command interpreter.

### 2.4.2 S-parameters

Commands that begin with the letter "S" constitute a special group of parameters known as "S-parameters". These differ from other commands in important respects.

The number following the "S" indicates the "parameter number" being referenced. If the number is not recognized as a valid parameter number, an "ERROR" result code is issued.

Immediately following this number, either a "?" or "=" character (IA5 3/15 or 3/13, respectively) shall appear. "?" is used to read the current value of the indicated S-parameter; "=" is used to set the S-parameter to a new value.

```
S<parameter_number>?
S<parameter_number>=[<value>]
S<parameter_number>=?
```

If the "?" is used, the TD1202 module transmits a single line of information text to the external application. The ranges of returned values are given in the description of each S-parameter.

# TD1202 RM

If the “=” is used, the new value to be stored in the S-parameter is specified in decimal following the “=”. If no value is given (i.e., the end of the command line occurs or the next command follows immediately), the S-parameter specified may be set to 0, or an “**ERROR**” result code issued and the stored value left unchanged. The ranges of acceptable values are given in the description of each S-parameter.

If the “=?” is used, the TD1202 module transmits a single line of information text to the external application, giving the ranges of accepted values as given in the description of each S-parameter.

## 2.4.3 Extended AT Command Syntax Format

The syntax of extended commands is:

```
$<command>=[<value1>[,<value2>]...]  
$<command>?
```

Where “\$” is an ISO/IEC 646 (US) code 24 character, and “<command>” is made up of multiple characters taken from the set of alphabetic characters.

The first form is used as an “action” command. In this form, the “<command>” is followed by an “=” character (IA5 3/13) and zero or more “<valuex>”, separated by “,” characters (IA5 2/12). If no value is given (i.e., the end of the command line occurs or the next command follows immediately), the extended command parameter specified may be set to 0, or an “**ERROR**” result code issued and the stored value is left unchanged.

“<valuex>” may be a string of one or more alphanumeric characters from “0” through “9”, “a” to “z” or “A” to “Z”. The range of acceptable values is given in the description of each extended command.

The second form is used as a “read” command. In this form, the “<command>” is followed by an “?” character (IA5 3/15). In this form, the TD1202 AT command interpreter transmits a single line of information text to the external application. For extended commands defined in this specification, the text portion of this information consists of one or more alphanumeric characters from “0” through “9”, “a” to “z” or “A” to “Z”. The range of possible values is given in the description of each extended command.

## 2.4.4 AT Command Concatenation

Concatenation of multiple AT commands on the same line is not supported in the current firmware version.



## 2.5 Attention Command

### 2.5.1 Description

This command always returns OK.

### 2.5.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.5.3 Syntax

*Action Command*

**AT**

OK

*Read Command*

None

*Test Command*

None

### 2.5.4 Parameters and Defined Values

None

### 2.5.5 Parameter Storage

None

### 2.5.6 Examples

Command	Responses
AT	OK

## 2.6 Repeat Last Command A/

### 2.6.1 Description

This command repeats the last command of the open session. Only the A/ command itself cannot be repeated.

### 2.6.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.6.3 Syntax

*Action Command*

**A/**

*Note: the response depends on the previous command*

*Read Command*

None

*Test Command*

None

### 2.6.4 Parameters and Defined Values

None

### 2.6.5 Parameter Storage

None

### 2.6.6 Examples

Command	Responses
ATI	Telecom Design TD1202 OK
A/ <i>Note: Repeat last command</i>	Telecom Design TD1202 OK

### 2.6.7 Notes

Unlike all other AT commands, this command is executed immediately after the last “/” character is received, without waiting for a finish “<CR>” character.

## 2.7 Help ?

### 2.7.1 Description

This command displays a summary of the available AT commands.

Note: This command is a Telecom Design extension to the basic AT command set.

### 2.7.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.7.3 Syntax

*Action Command*

**AT?**

*Note: The response depends on the list of available commands*

*Read Command*

None

*Test Command*

None

### 2.7.4 Parameters and Defined Values

None

### 2.7.5 Parameter Storage

None

### 2.7.6 Examples

Command	Responses
<b>AT?</b> <i>Note: display a summary of available AT commands</i>	<list of commands> OK <i>Note: The response depends on the list of available commands</i>

## 2.8 Echo Activation E

### 2.8.1 Description

This command is used to determine whether the TD1202 module echoes characters received by an external application (DTE) or not.

### 2.8.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.8.3 Syntax

*Action Command*

**ATE[<n>]**

OK

*Read Command*

None

*Test Command*

None

### 2.8.4 Parameters and Defined Values

Parameter	Value	Description
<n>		<b>Echo Activation Parameter</b>
	0	Characters are not echoed
	1	Characters are echoed (default value)

### 2.8.5 Parameter Storage

The <n> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 2.8.6 Examples

Command	Responses
<b>ATE0</b> <i>Note: characters are not echoed</i>	OK <i>Note: Done</i>
<b>ATE1</b> <i>Note: characters are echoed</i>	OK <i>Note: Done</i>

## 2.9 Information Display Control I

### 2.9.1 Description

This command causes the product to transmit one or more lines of specific information text.

### 2.9.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.9.3 Syntax

*Action Command*

**ATI[<n>]**

Depending on <n>

OK

*Read Command*

None

*Test Command*

None

### 2.9.4 Parameters and Defined Values

Parameter	Value	Description
<n>	<b>Information Display Control Parameter</b>	
	0	Display manufacturer followed by model identification (default value). Always returns the string "Telecom Design TD1202".
	5	Display firmware release date. Returns a string "Mmm+yyyy", where "mm" is a 2-digit month number and "yyyy" is a 4-digit year.
	7	Display RF serial number (SIGFOX™ ID) as an 8-digit hexadecimal number.
	10	Display baseband unique ID as a 16-digit hexadecimal number.
	11	Display hardware revision number as a 2-digit hexadecimal number.
	13	Display firmware revision number as a string "SOFTxxx", where "xxx" is a 4-digit number.
	21	Display RF chip part number as a string.
	25	Display RF chip ROM ID as a decimal number: <div> <div></div> 2: Revision 0B <div></div> 3: Revision 1B </div>
	26	Display module temperature in °C as a decimal number.
	27	Display module idle power supply voltage as a decimal number with 2 decimal places separated by a dot character.
	28	Display module RF active power supply voltage as a decimal number with 2 decimal places separated by a dot character. <b>Note:</b> the value is acquired during every SIGFOX™ RF transmission. If no value is available, the "0.00" value is returned. This value is the recommended value to monitor a battery supply, as it provides the supply voltage with the maximum load.

# TD1202 RM

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## 2.9.5 Parameter Storage

None

## 2.9.6 Examples

Command	Responses
<b>ATI0</b> <i>Note: Manufacturer and model identification</i>	Telecom Design TD1202 OK <i>Note: Command valid</i>
<b>ATI5</b> <i>Note: result firmware release date</i>	M08+2012 OK <i>Note: August 2012</i>
<b>ATI7</b> <i>Note: serial number (SIGFOX™ ID)</i>	00001058 OK <i>Note: Serial number 1058</i>
<b>ATI10</b> <i>Note: baseband unique ID</i>	209531004F62DFF9 OK <i>Note: baseband unique ID 209531004F62DFF9</i>
<b>ATI11</b> <i>Note: hardware revision number</i>	0F OK <i>Note: hardware 0F</i>
<b>ATI13</b> <i>Note: firmware revision number</i>	SOFT1100 OK <i>Note: firmware SOFT1100</i>
<b>ATI21</b> <i>Note: RF chip part number</i>	Si4461 OK <i>Note: RF chip is Si4461</i>
<b>ATI25</b> <i>Note: RF chip revision number</i>	2 OK <i>Note: RF chip revision is 0B</i>
<b>ATI26</b> <i>Note: module temperature</i>	21 OK <i>Note: module temperature is 21°C</i>
<b>ATI27</b> <i>Note: module idle power supply voltage</i>	3.25 OK <i>Note: module idle power supply voltage is 3.25 V</i>
<b>ATI28</b> <i>Note: module RF active power supply voltage</i>	3.22 OK <i>Note: module RF active power supply voltage is 3.22 V</i>

## 2.10 Result Code Suppression Q

### 2.10.1 Description

This command determines whether the TD1202 module sends result codes or not.

### 2.10.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.10.3 Syntax

*Action Command*

**ATQ[<n>]**

[OK]

*Read Command*

None

*Test Command*

None

### 2.10.4 Parameters and Defined Values

Parameter	Value	Description
<n>		<b>Result Code Suppression Parameter</b>
	0	The TD1202 module transmits result codes (default value)
	1	Result codes suppressed and not transmitted

### 2.10.5 Parameter Storage

The <n> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 2.10.6 Examples

Command	Responses
<b>ATQ0</b> <i>Note: the TD1202 transmits result codes</i>	<b>OK</b> <i>Note: Command valid</i>
<b>ATQ1</b> <i>Note: result codes are suppressed and not transmitted</i>	<i>Note: No response</i>

## 2.11 Restart Banner Display S200

### 2.11.1 Description

This command configures, queries or disables the restart banner display.

### 2.11.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.11.3 Syntax

*Action Command*

**ATS200=[<display>]**

OK

*Read Command*

**ATS200?**

<display>

OK

*Test Command*

**ATS200=?**

0..1

OK

### 2.11.4 Parameters and Defined Values

Parameter	Value	Description
<display>		<b>SIGFOX™ Keepalive Period Parameter</b>
	0	Disable restart banner display (default value)
	1	Disable restart banner display

### 2.11.5 Parameter Storage

The <display> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 2.11.6 Examples

Command	Responses
<b>ATS200?</b>	0 OK <i>Note: restart banner display is disabled</i>
<b>ATS200=1</b> <i>Note: enable the restart banner display</i>	OK <i>Note: Command valid</i>
<b>AT&amp;W</b> <i>Note: save parameter value in Flash memory</i>	OK <i>Note: Command valid</i>
<b>ATZ</b> <i>Note: restart the TD1202 module</i>	OK ^SYSSTART <i>Note: Command valid and restart banner is displayed</i>



## 2.11.7 Notes

The restart banner is only displayed if this parameter is enabled (“**ATS200=1**”), format control verbosity is enabled (“**ATV1**”) and result code suppression is disabled (“**ATQ0**”) in Flash memory during restart.

## 2.12 SIGFOX™ Keepalive S300

### 2.12.1 Description

This command configures, queries or disables the SIGFOX™ keepalive RF messages period.

### 2.12.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.12.3 Syntax

*Action Command*

**ATS300=[<period>]**

OK

*Read Command*

**ATS300?**

<period>

OK

*Test Command*

**ATS300=?**

0..127

OK

### 2.12.4 Parameters and Defined Values

Parameter	Value	Description
<period>		<b>SIGFOX™ Keepalive Period Parameter</b>
	0	Disable SIGFOX™ keepalive RF messages
	1..127	Period between 2 SIGFOX™ keepalive RF messages in hours (default value is 24)

### 2.12.5 Parameter Storage

The <period> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 2.12.6 Examples

Command	Responses
<b>ATS300?</b>	<b>24</b> <b>OK</b> <i>Note: SIGFOX™ keepalive messages are sent every 24 hours</i>
<b>ATS300=48</b> <i>Note: enable the SIGFOX™ keepalive messages every 48 hours</i>	<b>OK</b> <i>Note: Command valid</i>
<b>ATS300=0</b> <i>Note: disable the SIGFOX™ keepalive messages</i>	<b>OK</b> <i>Note: Command valid</i>

## 2.13 SIGFOX™ Keepalive S301

### 2.13.1 Description

This command configures, queries or disables the SIGFOX™ keepalive RF messages number of repeats.

### 2.13.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.13.3 Syntax

*Action Command*

**ATS301=[<repeat>]**

OK

*Read Command*

**ATS301?**

<repeat>

OK

*Test Command*

**ATS301=?**

0..2

OK

### 2.13.4 Parameters and Defined Values

Parameter	Value	Description
<repeat>		<b>SIGFOX™ Keepalive Repeat Parameter</b>
	0	Disable SIGFOX™ keepalive RF message retries
	1..2	Number of repeats of SIGFOX™ keepalive RF message (default value is 2)

### 2.13.5 Parameter Storage

The <repeat> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 2.13.6 Examples

Command	Responses
<b>ATS301?</b>	2 OK <i>Note: SIGFOX™ keepalive messages are with 2 repeats</i>
<b>ATS301=1</b> <i>Note: enable the SIGFOX™ keepalive messages with 1 repeat</i>	OK <i>Note: Command valid</i>
<b>ATS301=0</b> <i>Note: disable the SIGFOX™ keepalive message retries</i>	OK <i>Note: Command valid</i>

## 2.14 SIGFOX™ Power S302

### 2.14.1 Description

This command configures or queries the SIGFOX™ RF power level in dBm.

### 2.14.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.14.3 Syntax

*Action Command*

**ATS302=[<dbm\_level>]**

OK

*Read Command*

**ATS302?**

<dbm\_level>

OK

*Test Command*

**ATS302=?**

0..14

OK

### 2.14.4 Parameters and Defined Values

Parameter	Value	Description
<dbm_level>		<b>SIGFOX™ Power Parameter</b>
	0..14	SIGFOX™ RF power level in dBm (default value is 14)

### 2.14.5 Parameter Storage

The <dbm\_level> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 2.14.6 Examples

Command	Responses
<b>ATS302?</b>	14 OK <i>Note: SIGFOX™ power is 14 dBm</i>
<b>ATS302=10</b> <i>Note: set the SIGFOX™ RF power to 10 dBm</i>	OK <i>Note: Command valid</i>

## 2.15 SIGFOX™ RF Pin Configuration S303

### 2.15.1 Description

This command configures or queries the SIGFOX™ RF pin configuration.

### 2.15.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.15.3 Syntax

*Action Command*

**ATS303=[<config>]**

OK

*Read Command*

**ATS303?**

<config>

OK

*Test Command*

**ATS303=?**

1..39

OK

### 2.15.4 Parameters and Defined Values

Parameter	Value	Description
<config>		<b>SIGFOX™ RF Pin Configuration Parameter</b>
	1..39	SIGFOX™ RF pin configuration (default value is 1)

### 2.15.5 Parameter Storage

The <config> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 2.15.6 Examples

Command	Responses
<b>ATS303?</b>	1 OK <i>Note: SIGFOX™ RF pin configuration is 1</i>
<b>ATS303=33</b> <i>Note: set the SIGFOX™ RF pin configuration to 33</i>	OK <i>Note: Command valid</i>

## 2.16 Format Control V

### 2.16.1 Description

This command determines whether the TD1202 module response format uses or not the header characters <CR><LF>, and whether the result codes are provided as numeric or verbose.

### 2.16.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.16.3 Syntax

*Action Command*

**ATV<n>**

OK

*Read Command*

None

*Test Command*

None

### 2.16.4 Parameters and Defined Values

Parameter	Value	Description	
<n>	0	Format Control Parameter	
		Information Responses	Result Code
		<text><CR><LF>	<numeric code><CR>
	1 (default value)	(default value)	
		Information Responses	Result Code
		<CR><LF> <text><CR><LF>	<CR><LF> <verbose code><CR><LF>

### 2.16.5 Parameter Storage

The <n> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 2.16.6 Examples

Command	Responses
<b>ATV0</b> <i>Note: the TD1202 transmits limited headers and trailers and numeric result codes</i>	0 <i>Note: Command is valid (0 means OK)</i>
<b>ATV1</b> <i>Note: result the TD1202 transmits full headers and trailers and verbose response text</i>	OK <i>Note: Command valid</i>

## 2.17 Extended Result Code X

### 2.17.1 Description

This command determines whether the TD1202 module sends extended result codes or not.

Note: this command is only included for compatibility reason, as the TD1202 module does not feature any result code requiring an extension.

### 2.17.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.17.3 Syntax

*Action Command*

**ATX[<n>]**

OK

*Read Command*

None

*Test Command*

None

### 2.17.4 Parameters and Defined Values

Parameter	Value	Description
<n>		<b>Extended Result Code Parameter</b>
	0	The TD1202 module transmits normal result codes
	1	The TD1202 module transmits extended result codes (default value)

### 2.17.5 Parameter Storage

The <n> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 2.17.6 Examples

Command	Responses
<b>ATX0</b> <i>Note: the TD1202 transmits normal result codes</i>	OK <i>Note: Command valid</i>
<b>ATX1</b> <i>Note: the TD1202 transmits extended result codes</i>	OK <i>Note: Command valid</i>

## 2.18 Default Configuration Z

### 2.18.1 Description

This command restores the configuration profile from non-volatile memory (Flash).

Note: As a Telecom Design extension, this command also resets the TD1202 module to its power-on state.

### 2.18.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.18.3 Syntax

*Action Command*

**ATZ**

OK

*Read Command*

None

*Test Command*

None

### 2.18.4 Parameters and Defined Values

None

### 2.18.5 Parameter Storage

None

### 2.18.6 Examples

Command	Responses
ATS302?	14 OK <i>Note: Default value is in Flash memory</i>
ATS302=10 <i>Note: change transmission in volatile memory only</i>	OK <i>Note: Command valid</i>
ATZ	OK <i>Note: Command valid, will restart immediately</i>
ATS302?	14 OK <i>Note: Default value set back from Flash memory</i>



## 2.19 Restore Factory Settings &F

### 2.19.1 Description

This command is used to restore factory settings from Flash memory.

### 2.19.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.19.3 Syntax

*Action Command*

**AT&F**

OK

*Read Command*

None

*Test Command*

None

### 2.19.4 Parameters and Defined Values

None

### 2.19.5 Parameter Storage

None

### 2.19.6 Examples

Command	Responses
<b>AT&amp;F</b> <i>Note: Asks for restoring the factory settings</i>	<b>OK</b> <i>Note: Done</i>

### 2.19.7 Notes

For each parameter, the section "Parameter Storage" specifies which default values can be restored using **AT&F**. The parameters are restored in RAM and in Flash memory, overwriting the profile set with **AT&W**.

## 2.20 Display Configuration &V

### 2.20.1 Description

This command is used to display the TD1202 module configuration.

### 2.20.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.20.3 Syntax

#### Action Command

##### AT&V

Telecom Design TD1202

Hardware Version: <hardware\_revision>

Software Version: <firmware\_revision>

S/N: <serial\_number>

ACTIVE PROFILE

E<val1> V<va2> Q<val3> X<val4> S200:<val5> S300:<val6> S301:<val7> S302:<val8>

S303:<val9>

OK

*Note: For each <valx> parameter value, please refer to the corresponding command.*

#### Read Command

None

#### Test Command

None

### 2.20.4 Parameters and Defined Values

Parameter	Value	Description
<hardware_revision>		<b>Hardware Revision Number Parameter</b>
	2 ASCII hex digits	The TD1202 module hardware revision number
<firmware_revision>		<b>Firmware Revision Number Parameter</b>
	"SOFTxxxx"	The TD1202 module firmware revision number, with "x" being an ASCII-coded digit
<serial_number>		<b>Serial Number Parameter</b>
	8 ASCII hex digits	The TD1202 module serial number
<valx>		<b>Active Profile Parameters</b>
		For each "<valx>" parameter value, please refer to the corresponding command

### 2.20.5 Parameter Storage

None

## 2.20.6 Examples

Command	Responses
<b>AT&amp;V</b> <i>Note: Display active parameters in RAM</i>	Telecom Design TD1202 Hardware Version: 0F Software Version: SOFT1100 S/N: 00001058 ACTIVE PROFILE E1 V1 Q0 X1 S200:0 S300:24 S301:2 S302:14 S303:1 OK <i>Note: Done for echo.</i>

## 2.21 Save Configuration &W

### 2.21.1 Description

This command writes the active configuration into a non volatile memory (Flash).

### 2.21.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.21.3 Syntax

*Action Command*

**AT&W**

OK

*Read Command*

None

*Test Command*

None

### 2.21.4 Parameters and Defined Values

None

### 2.21.5 Parameter Storage

None

### 2.21.6 Examples

Command	Responses
<b>ATS302=10</b> <i>Note: change transmission power in volatile memory only</i>	OK
<b>AT&amp;W</b>	OK
<b>ATZ</b> <i>Note: reset the TD1202 module</i>	OK
<b>ATS302?</b>	10 OK <i>Note: Default value set back from Flash memory</i>

## 2.22 SIGFOX™ Send RF Message \$SS

### 2.22.1 Description

This command sends a SIGFOX™ RF message.

### 2.22.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.22.3 Syntax

*Action Command*

**AT\$SS=[<hex\_byte1>[[ ]..**<hex\_byte2>**]]..]**

OK

*Note: There can be from 1 to 12 **<hex\_byte>** parameter values, optionally separated by single or multiple space or tabulation characters.*

*Read Command*

None

*Test Command*

None

### 2.22.4 Parameters and Defined Values

Parameter	Value	Description
<b>&lt;hex_byte&gt;</b>		<b>SIGFOX™ Message Byte Value Parameter</b>
	00..FF	2-digit hexadecimal byte value ('0' to '9', 'a' to 'f' and 'A' to 'F' characters are valid) There can be from 1 to 12 <b>&lt;hex_byte&gt;</b> parameter values, optionally separated by single or multiple space (IA5 2/0) or tabulation (IA5 0/9) characters

### 2.22.5 Parameter Storage

None

### 2.22.6 Examples

Command	Responses
<b>AT\$SS=0D 0A</b>	OK <i>Note: Transmission of 2 hexadecimal bytes "0D 0A" completed</i>

### 2.22.7 Notes

If the message length is greater than 1 and is odd, a null padding byte is appended at the end of the message.

## 2.23 SIGFOX™ Send RF Test Message \$ST

### 2.23.1 Description

This command sends a SIGFOX™ test RF message.

### 2.23.2 Compatibility

This command is available in all firmware revisions since SOFT1104.

### 2.23.3 Syntax

*Action Command*

**AT\$ST=[<count>[,<period>[,<channel>]]]**

OK

*Read Command*

None

*Test Command*

None

### 2.23.4 Parameters and Defined Values

Parameter	Value	Description
<count>		<b>SIGFOX™ Test Message Count Parameter</b>
	0..65535	Count of SIGFOX™ test RF messages (default value is 10).
<period>		<b>SIGFOX™ Test Message Period Parameter</b>
	1..255	Period in seconds between SIGFOX™ test RF messages (default value is 10 seconds).
<channel>		<b>SIGFOX™ Test Message Channel Parameter</b>
	-1	Use automatic channel selection (default value).
	0..180 or 220..400	Channel number to use for SIGFOX™ test RF messages. Channels have a fixed 100 Hz bandwidth, starting at 868.180 MHz for channel 0, ending at 868.198 Mhz for channel 180, restarting at 868.202 MHz for channel 220 and ending at 868.220 MHz for channel 400.

### 2.23.5 Parameter Storage

None

### 2.23.6 Examples

Command	Responses
<b>AT\$ST=10,30,-1</b> <i>Note: send a SIGFOX™ test message 10 times every 30 s, each message is sent once, using automatic channel selection</i>	<b>OK</b> <i>Note: Test done</i>

## 3 TD1202 SIGFOX™-Compatible Command Set Reference

This section provides a reference for the SIGFOX™-compatible commands implemented by the TD1202 Module.

### 3.1 TD1202 Factory Settings

A serial link handler is set with the following default values (factory settings):

- LVTTL electrical level
- Speed 9600 bps
- 8 data bits
- 1 stop bit
- No parity
- No hardware/software flow control

For compatibility with the SIGFOX™ command set, the character echo and AT result codes are suppressed temporarily (i.e. "ATE0" and "ATQ1") while a SIGFOX™ command is interpreted.

### 3.2 SIGFOX™ Commands Presentation Rules

The SIGFOX™ commands are presented in the present documentation as follows:

- A 'Description' section provides general information on the SIGFOX™ command (or response) behavior
- A 'Syntax' section describes the command and response syntaxes and all parameters description
- A 'Parameters' section describes all parameters and values
- An 'Examples' section presents the real use of the described command
- A 'Notes' section can also be included indicating some remarks about the command use

Figures are provided where necessary.

The commands will be listed alphabetically.

### 3.3 Information Responses and Result Codes

If command syntax is incorrect or the command contains wrong parameters, or the command cannot be executed successfully, the "KO;" string is returned.

If the command line has been executed successfully, an "OK;" string is returned. Unlike AT responses, they do not contain any "<CR>" or "<LF>" characters.

### 3.4 SIGFOX™ Command Syntax Format

SIGFOX™ Commands always start with "SF" and finish with a ";" character, and unlike AT commands, they do not contain any "<CR>" or "<LF>" characters.

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A “<NUL>” character (ASCII code 0) can be used to resynchronize the interpreter to the beginning of a SIGFOX™ command.



## 3.5 SIGFOX™ ID

### 3.5.1 Description

This command returns the TD1202 module SIGFOX™ ID.

### 3.5.2 Compatibility

This command is available in all firmware revisions.

### 3.5.3 Syntax

*Action Command*

**SFID;**<id>OK;

### 3.5.4 Parameters and Defined Values

Parameter	Value	Description
<id>		<b>SIGFOX™ ID Parameter</b>
	2 binary bytes <b>ab</b>	If the SIGFOX™ ID is <= 0xFFFF, the TD1202 module transmits the SIGFOX™ ID as 2 binary characters, with most significant byte “ <b>a</b> ” in the first position, and least significant byte “ <b>b</b> ” in the second position
	4 binary bytes <b>abcd</b>	If the SIGFOX™ ID is > 0xFFFF, the TD1202 module transmits the SIGFOX™ ID as 4 binary characters, with most significant byte “ <b>a</b> ” first, and least significant byte “ <b>d</b> ” last, with intermediate bytes “ <b>b</b> ” and “ <b>c</b> ” ordered from most significant to least significant

### 3.5.5 Examples

Command	Responses
<b>SFID;</b>	<b>1AOK;</b> <i>Note: SIGFOX™ ID is 0x3141</i>
<b>SFID;</b>	<b>1A2BOK;</b> <i>Note: SIGFOX™ ID is 0x31413242</i>

### 3.5.6 Notes

The example SIGFOX™ IDs above have been chosen specifically, so that their binary value corresponds to ASCII printable characters. However, this is not generally the case.

## 3.6 SIGFOX™ Keepalive K

### 3.6.1 Description

This command toggles the TD1202 module SIGFOX™ keepalive feature on or off.

### 3.6.2 Compatibility

This command is available in all firmware revisions.

### 3.6.3 Syntax

*Action Command*

**SFK<state>;OK;**

### 3.6.4 Parameters and Defined Values

Parameter	Value	Description
<state>		<b>SIGFOX™ ID Parameter</b>
	'0'	The ASCII digit value '0' turns the TD1202 SIGFOX™ keepalive feature off
	'1'	The ASCII digit value '1' turns the TD1202 SIGFOX™ keepalive feature on

### 3.6.5 Examples

Command	Responses
<b>SFK0;</b>	<b>OK;</b> <i>Note: turns off the SIGFOX™ keepalive feature</i>
<b>SFK1;</b>	<b>OK;</b> <i>Note: turns on the SIGFOX™ keepalive feature</i>

## 3.7 SIGFOX™ Send Single Byte m

### 3.7.1 Description

This command sends a single-byte SIGFOX™ RF message.

### 3.7.2 Compatibility

This command is available in all firmware revisions.

### 3.7.3 Syntax

Action Command

**SFm**<byte>;OK;SENT;

### 3.7.4 Parameters and Defined Values

Parameter	Value	Description
<byte>		<b>SIGFOX™ Single Data Byte Parameter</b>
	Single binary byte a	The single binary byte “a” to send in a SIGFOX™ RF message

### 3.7.5 Examples

Command	Responses
<b>SFmA;</b>	<b>OK;SENT;</b> <i>Note: the binary byte 0x41 ('A') is sent into a SIGFOX™ RF message</i> <i>The “OK;” response is obtained when the command is accepted, the “SENT;” response is only obtained once the transmission has been performed (this may take a few seconds).</i>

### 3.7.6 Notes

The example <byte> value above has been chosen specifically, so that its binary value corresponds to an ASCII printable character. However, this is not generally the case.

## 3.8 SIGFOX™ Send Multiple Bytes M

### 3.8.1 Description

This command sends a multiple-byte SIGFOX™ RF message.

### 3.8.2 Compatibility

This command is available in all firmware revisions.

### 3.8.3 Syntax

Action Command

```
SFM<length><byte1>..<bytex>
```

### 3.8.4 Parameters and Defined Values

Parameter	Value	Description
<length>		<b>SIGFOX™ Multiple Byte Length Parameter</b>
	Single binary byte <b>a</b> 0..12	The single binary byte “ <b>a</b> ” specifies the length of SIGFOX™ RF message payload, and must be in the range 0 to 12 inclusive
<bytex>		<b>SIGFOX™ Multiple Byte Value Parameter</b>
	From 0 to 12 binary bytes	From 0 to 12 binary bytes that provide the SIGFOX™ RF message payload

### 3.8.5 Examples

Command	Responses
SFM<FF>Hello, world;	OK;SENT; <i>Note: the 12 binary bytes “0x48 0x65 0x6c 0x6c 0x6f 0x2c 0x20 0x77 0x6f 0x72 0x6c 0x64” corresponding to the ASCII code for the characters in the “Hello, world” string are sent into a SIGFOX™ RF message. The “&lt;FF&gt;” character has an ASCII code value of 12. The “OK;” response is obtained when the command is accepted, the “SENT;” response is only obtained once the transmission has been performed (this may take a few seconds).</i>

### 3.8.6 Notes

The example <bytex> values above have been chosen specifically, so that their binary value corresponds to ASCII printable characters. However, this is not generally the case.

If the message length is greater than 1 and is odd, a null padding byte is appended at the end of the message.

## 3.9 SIGFOX™ Present P

### 3.9.1 Description

This command always returns OK.

### 3.9.2 Compatibility

This command is available in all firmware revisions.

### 3.9.3 Syntax

*Action Command*

**SFP;**OK;

### 3.9.4 Parameters and Defined Values

None

### 3.9.5 Examples

Command	Responses
<b>SFP;</b>	OK; <i>Note: TD1202 is ready</i>

## 3.10 SIGFOX™ Version v

### 3.10.1 Description

This command always returns the SIGFOX™ protocol version number.

### 3.10.2 Compatibility

This command is available in all firmware revisions.

### 3.10.3 Syntax

*Action Command*

**SFv;**<version>OK;

### 3.10.4 Parameters and Defined Values

Parameter	Value	Description
<version>		<b>SIGFOX™ Single Data Byte Parameter</b>
	2 ASCII digits ab	The SIGFOX™ protocol version number as a fixed-length 2 ASCII digit number 'ab'

### 3.10.5 Examples

Command	Responses
SFv;	01OK; <i>Note: SIGFOX™ protocol version 1</i>

## 4 TD1202 Hayes-Compatible AT LAN Command Set Reference

This section provides a reference for the Hayes-compatible “AT” LAN commands implemented by the TD1202 Module.

### 4.1 Introduction to the TD LAN

The TD LAN is an energy-efficient local network that enables devices to communicate low-bandwidth data (up to 17 bytes per second) over the air.

In order to save power, the TD LAN operates as a time division duplexing (TDD) network where the device alternately transmits and receives data packets over the same radio channel. And although not fixed by the firmware and that these roles may be swapped at any time, it is assumed that one single device is in permanent receive mode, while the other devices are in transmit upon request mode, resulting in a non symmetric, star-topology network.

#### 4.1.1 RF Parameters

The TD LAN network operates over the license-free ISM 869 MHz radio band (868.0 to 869.7 MHz). The devices use a single 25 kHz narrow-band channel to transmit data @ 9600bps using a GFSK modulation.

The operating frequency can be set using an AT command for a particular application.

The transmit power can also be adjusted using an AT command, in order to reduce the transmit power consumption or increase the radio range when required.

#### 4.1.2 Network Addressing

Each device is assigned a logic 24-bit logic address and a corresponding 24-bit address mask. The logic address is transmitted into the RF frames that are sent and matched by the receiver after applying the address mask to it. The default null address and full address mask (all bits set to 1) ensure that receiving is enabled by default.

However, the recommended setup is to have a full address mask (all bits set to 1) for the transmitter and a partial address mask (not all bits are set to 1) for the receiver, both devices having a common address field (i.e. same “subnet”) over the partial address mask bits. This addressing scheme provides a way for transmitters to access the receiver when they are using the same “subnet”, and for the receiver a way to acknowledge a particular frame has been received to the original transmitter only.

Here is an example for a 4-bit subnet mask:

- Receiver: Address 0x5ED709, Mask 0xF00000

Address	0	1	0	1	1	1	0	1	1	0	1	0	1	1	1	0	0	0	0	1	0	0	1
Mask	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- Transmitter: Address 0x55C344, Mask 0xFFFFF

Address	0	1	0	1	0	1	0	1	1	1	0	0	0	0	1	1	0	1	0	0	0	1	0	0
Mask	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

#### 4.1.3 Time Windowing

Having a device in permanent receive mode would put a heavy constraint on its average power consumption. Thus, a time windowing method is used where a device in receive mode is only listening to incoming RF traffic the

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time required to capture a frame, then the radio is turned off for a fixed 1 second period, achieving a power reduction that is proportional to this duty cycle.

On the other hand, when in transmit mode, a device has to send radio frames for a duration that is at least equal to the receiver's time window plus 2 frame receive time in order to be seen by the receiver.

### 4.1.4 Data Transmission

From 1 to 17 data bytes may be transmitted into a single message frame, which is acknowledged by the receiver. If this acknowledgement is not received within 2 seconds, the message frame is resent up to 2 times before giving up.

The data bytes to transmit must be given using 2 hexadecimal digits per byte; each byte may be separated by space or tab characters for clarity.

Upon reception, the data bytes are provided using the same 2 hexadecimal digit per byte format. By default, no space character is inserted between data bytes, but an AT command allows to specify if space separators must be inserted between every byte, word or long word.



## 4.2 TD LAN Address S400

### 4.2.1 Description

This command configures or queries the TD LAN address.

### 4.2.2 Compatibility

This command is available in all firmware revisions since SOFT1134.

### 4.2.3 Syntax

*Action Command*

**ATS400=[<address>]**

OK

*Read Command*

**ATS400?**

<address>

OK

*Test Command*

**ATS400=?**

0..16777215 or 0x000000..0xFFFFFF

OK

### 4.2.4 Parameters and Defined Values

Parameter	Value	Description
<address>		<b>TD LAN Address Parameter</b>
	0..16777215 or 0x000000..0xFFFFFF	TD LAN 24-bit address (default value is 0)

### 4.2.5 Parameter Storage

The <address> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 4.2.6 Examples

Command	Responses
<b>ATS400?</b>	000000 OK <i>Note: TD LAN address is 0</i>
<b>ATS400=1</b> <i>Note: set the TD LAN address to 1</i>	OK <i>Note: Command valid</i>

## 4.3 TD LAN Mask S401

### 4.3.1 Description

This command configures or queries the TD LAN address mask.

### 4.3.2 Compatibility

This command is available in all firmware revisions since SOFT1134.

### 4.3.3 Syntax

*Action Command*

**ATS401=[<mask>]**

OK

*Read Command*

**ATS401?**

<mask>

OK

*Test Command*

**ATS401=?**

0..16777215 or 0x000000..0xFFFFFFFF

OK

### 4.3.4 Parameters and Defined Values

Parameter	Value	Description
<mask>		<b>TD LAN Address Mask Parameter</b>
	0..16777215 or 0x000000..0xFFFFFFFF	TD LAN 24-bit address mask (default value is 0xFFFFFFFF)

### 4.3.5 Parameter Storage

The <mask> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 4.3.6 Examples

Command	Responses
<b>ATS401?</b>	<b>FFFFFF</b> OK <i>Note: TD LAN address mask is 0xFFFFFFFF</i>
<b>ATS401=0x7FFFFFFF</b> <i>Note: set the TD LAN address mask to 0x7FFFFFFF</i>	OK <i>Note: Command valid</i>

## 4.4 TD LAN Separator S402

### 4.4.1 Description

This command configures or queries the TD LAN separator value.

### 4.4.2 Compatibility

This command is available in all firmware revisions since SOFT1134.

### 4.4.3 Syntax

*Action Command*

**ATS402=[<separator\_count>]**

OK

*Read Command*

**ATS402?**

<separator\_count>

OK

*Test Command*

**ATS402=?**

0,1,2,4

OK

### 4.4.4 Parameters and Defined Values

Parameter	Value	Description
<separator_count>		<b>TD LAN Separator Count Parameter</b>
	0	No space separator between received TD LAN data bytes (default value)
	1	A space separator is inserted between each received TD LAN data bytes
	2	A space separator is inserted between each received TD LAN data words
	4	A space separator is inserted between each received TD LAN data long words

### 4.4.5 Parameter Storage

The <separator\_count> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

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## 4.4.6 Examples

Command	Responses
ATS402?	0 OK <i>Note: no space separator between TD LAN data bytes</i>
ATS402=1 <i>Note: add a space character between every TD LAN data bytes</i>	OK <i>Note: Command valid</i>

## 4.5 TD LAN Frequency S403

### 4.5.1 Description

This command configures or queries the TD LAN frequency value.

### 4.5.2 Compatibility

This command is available in all firmware revisions since SOFT1134.

### 4.5.3 Syntax

*Action Command*

**ATS403=[<frequency>]**

OK

*Read Command*

**ATS403?**

<frequency>

OK

*Test Command*

**ATS403=?**

868000000..869700000 or 868.000000..869.700000

OK

### 4.5.4 Parameters and Defined Values

Parameter	Value	Description
<frequency>		<b>TD LAN Separator Count Parameter</b>
	868000000..869700000 or 868.000000..869.700000	Frequency in Hz or MHz (default value 869312500)

### 4.5.5 Parameter Storage

The <frequency> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 4.5.6 Examples

Command	Responses
<b>ATS403?</b>	869312500 OK <i>Note: the TD LAN frequency is 869.3125 MHz</i>
<b>ATS403=869.3625</b> <i>Note: the TD LAN frequency is set to 869.3625 MHz</i>	OK <i>Note: Command valid</i>

## 4.6 TD LAN Power S404

### 4.6.1 Description

This command configures or queries the TD LAN RF power level in dBm.

### 4.6.2 Compatibility

This command is available in all firmware revisions since SOFT1134.

### 4.6.3 Syntax

*Action Command*

**ATS404=[<dbm\_level>]**

OK

*Read Command*

**ATS404?**

<dbm\_level>

OK

*Test Command*

**ATS404=?**

-35..14

OK

### 4.6.4 Parameters and Defined Values

Parameter	Value	Description
<dbm_level>		<b>TD LAN Power Parameter</b>
	-35..14	TD LAN RF power level in dBm (default value is 14)

### 4.6.5 Parameter Storage

The <dbm\_level> parameter value is stored in Flash memory using the **AT&W** command. The default value can be restored using the **AT&F** command.

### 4.6.6 Examples

Command	Responses
<b>ATS404?</b>	14 OK <i>Note: TD LAN power is 14 dBm</i>
<b>ATS404=10</b> <i>Note: set the TD LAN RF power to 10 dBm</i>	OK <i>Note: Command valid</i>

## 4.7 TD LAN Receive RF Message \$RL

### 4.7.1 Description

This command receives a TD LAN RF message or sets the TD LAN receive mode.

### 4.7.2 Compatibility

This command is available in all firmware revisions since SOFT1134.

### 4.7.3 Syntax

*Action Command*

**AT\$RL=<mode>[,<timeout>]**

OK

*Read Command*

None

*Test Command*

None

### 4.7.4 Parameters and Defined Values

Parameter	Value	Description
<mode>		<b>TD LAN Receive RF Message Mode Parameter</b>
	0	Disable TD LAN RF receive mode (default value)
	1	Enable TD LAN RF synchronous single-frame receive mode, either infinite or until a timeout value is reached
	2	Enable TD LAN RF asynchronous multi-frame receive mode
<timeout>	0..	Only valid when <mode> is equal to 1: provides the timeout value in seconds to wait before aborting receive mode
	4294967295	

### 4.7.5 Parameter Storage

None

### 4.7.6 Examples

Command	Responses
<b>AT\$RL=0</b> <i>Note: disable TD LAN RF receive mode</i>	OK <i>Note: Command valid</i>
<b>AT\$RL=1</b> <i>Note: enable TD LAN RF synchronous receive mode</i>	0102030405060708090a0b0c0d0e0f1011 OK <i>Note: Response is only obtained after receiving a valid TD LAN frame</i>
<b>AT\$RL=1,5</b> <i>Note: enable TD LAN RF synchronous receive mode for 5s maximum</i>	0102030405060708090a0b0c0d0e0f1011 OK <i>Note: Response is only obtained after receiving a valid TD LAN frame</i>
<b>AT\$RL=1,5</b> <i>Note: enable TD LAN RF synchronous receive mode for 5 seconds maximum</i>	ERROR <i>Note: No valid TD LAN frame received within 5 seconds</i>
<b>AT\$RL=2</b>	OK

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<i>Note: enable TD LAN RF asynchronous receive mode</i>	<i>Note: Command valid</i>
	<b>+RX_LAN=0102030405060708090a0b0c0d0e0f1011</b> <i>Note: Unsolicited response is obtained after receiving a valid TD LAN frame</i>
	<b>+RX_LAN=f1f2f3f4f5f6f7f8f9fafbfcfdfefff0001</b> <i>Note: Unsolicited response is obtained after receiving a valid TD LAN frame</i>

### 4.7.7 Notes

The message length is always 17 byte long.



## 4.8 TD LAN Send RF Message \$SL

### 4.8.1 Description

This command sends a TD LAN RF message.

### 4.8.2 Compatibility

This command is available in all firmware revisions since SOFT1134.

### 4.8.3 Syntax

*Action Command*

**AT\$SL=[<hex\_byte1>[[ ]..**<hex\_byte2>**]]..]**

OK

*Note: There can be from 1 to 17 **<hex\_byte>** parameter values, optionally separated by single or multiple space or tabulation characters.*

*Read Command*

None

*Test Command*

None

### 4.8.4 Parameters and Defined Values

Parameter	Value	Description
<b>&lt;hex_byte&gt;</b>		<b>TD LAN Send RF Message Parameter</b>
	00..FF	2-digit hexadecimal byte value ('0' to '9', 'a' to 'f' and 'A' to 'F' characters are valid) There can be from 1 to 12 <b>&lt;hex_byte&gt;</b> parameter values, optionally separated by single or multiple space (IA5 2/0) or tabulation (IA5 0/9) characters

### 4.8.5 Parameter Storage

None

### 4.8.6 Examples

Command	Responses
<b>AT\$SL=01</b> <i>Note: send a single-byte TD LAN RF frame</i>	OK <i>Note: Frame sent and receive acknowledgment received</i>
<b>AT\$SL=0102030405060708090A0B0C0D0E0F1011</b> <i>Note: send a 17-byte long TD LAN RF frame</i>	OK <i>Note: Frame sent and receive acknowledgment received</i>
<b>AT\$SL=0102030405060708090A0B0C0D0E0F1011</b> <i>Note: send a TD LAN RF frame</i>	ERROR <i>Note: No frame sent or no receive acknowledgment received</i>

### 4.8.7 Notes

The actual length of the sent message is always 17 byte long.

## DOCUMENT CHANGE LIST

### Revision 1.0

- First Release

### Revision 1.1

- Removed obsolete parameter in \$ST command

### Revision 2.0

- Added the TD LAN AT commands
- Added a “compatibility” sub-section for each command

### Revision 2.1

- Added a separate section for the TD LAN AT commands
- Added an introduction sub-section for the TD LAN AT commands

**NOTES:**

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