SRM 3000 Remote Control Documentation

Date of issue: 19.02.07
Latest firmware release at date of issue: V 1.5.6

News on basis of Remote Document 1.4.x marked yellow.

Command not supported any more

1. Introduction

The SRM 3000 can be controlled via RS-232.
The communication parameters are:

Baud rate	115 200 baud
Start bit	1
Data bits	8
Stop bit	1
Parity	None
Handshake	None

can also be set to 230 400 baud by a remote command

The remote commands are ASCII strings.
The following syntax rules are valid:

A command consists of the command string and a finite number of parameters.
The command string interpreter does not distinguish between upper and lower case.
If there is at least one parameter, one or more white space must follow the command string.
Parameters are and must be separated by a comma or a /CR.
The /CR is normally used to organize groups of paramters for better readability.
A /LF can be used as an optional separator for parameters.
A command must be be terminated with a semicolon.
A command string for a get command ends with a question mark.
A command string for a set command does not contain a question mark.
The reponse to a query has the same syntax like commands but the command string is missing.
Query responses may have a /CR at the beginning.
Lines of parmeters terminated with a /CR may be defined for some commands.
The /CR of the last line before the terminating semicolon may be surpressed.
Additional white space may be inserted before and after parameters in query responses.
The flow control characters /DC1 and /DC3 may not be used in commands.

Some examples for comands with valid syntax:

CMD_A;
CMD_B param1;
CMD_C param1,param2/CR/LFparam3;
CMD_A?;
CMD_B? param1;

Some examples for query responses with valid syntax:

param1;
/CR param1, param2;
param1, param2 /CR param3;

The SRM 3000 is sending no response when it has received a set command.
It is recommended to send the "ERROR?" command after each set command.
With this method communication can also be verified for set commands.
Normally a value of zero will be returned.
Other values indicate an error occured by handling the last command.
See the chapter "Error Codes " for details.
The communication with get commands can be verified with the query response.
If no response is received after 10 seconds there is a communication problem.

!!! Before any other command can be interpreted by the SRM 3000 it must receive the command "REMOTE ON" !!!

This command sets the SRM 3000 into the remote control mode.
The key pad is not active in remote control mode.
Pressing the ON/OFF key in remote control mode switches to normal mode.
Normal mode can also be invoked by the command "REMOTE OFF".

The following table shows the possible formats for parameters:

Parameter Formats

String	The maximum number of charcters is specified. Within a string upper and lower case is distinguished. Also white space is maintained within a string
Enum	Stored as a four byte value A set of defined strings is specified for each command
Float/Double	Stored as 32 bit or 64bit float value Input parameters are converted in to float or double. Output parameters are automatically formated
ShortInt	Stored as 16 bit signed integers Sometimes a allowed range or set of values is specified
LngInt	Stored as 32 bit signed integers Sometimes an allowed range or set of values is specified
dd.mm.yy	Date stored as three bytes Input and output as a 8 char string: dd.mm.yy d: 01 to 31, m: 01 to 12, y: 00 to 99. The range of the days is also resticted to possible dates in the years 2000 to 2999
hh:mm:ss	Time stored as three bytes Input and output as a 8 char string: hh:mm:ss h: 00 to 23, m: 00 to 59, s:00 to 59.

In the next chapter all commands are described in a table.
Some columns have a very short header which is not self explaining.
The following table describes this short headers:

Columns

S	Belongs to	a **S**et command
G	Belongs to	a **G**et command
R	Belongs to	the **R**esponse of a get command
A	Command available in	Spectrum **A**nalysis Mode
E	Command available in	Safety **E**valuation Mode
U	Command available in	UMTS P-CPICH Demodulation Mode
T	Command available in	**T**ime Analysis Mode

In the next chapter "Commands" there is also information include regarding parameters and default values.

Setup parameters are shown in "**bold**" in the column "Parameter"
The factory defaults values and the default values for none set up parameters are also shown in " **bold**" in the column "Range".

2. Commands

Mode Parameters

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Fmin	F_MIN	x				x				Fmin	double	Hz		
	F_MIN?		x			x								
				x		x				Fmin	double	Hz		
Fmax	F_MAX	x				x				Fmax	double	Hz		
	F_MAX?		x			x								
				x		x				Fmax	double	Hz		
Fcent	F_CENT	x				x		x	x	**Fcent**	double	Hz		default
	F_CENT?		x			x		x	x					(FminHigh+FmaxLow)/2 in TA Mode
				x		x		x	x	Fcent	double	Hz		2.1672 GHz im UMTS Mode
Fspan	F_SPAN	x				x				**Fspan**	double	Hz		
	F_SPAN?		x			x								
				x		x				Fspan	double	Hz		
Frequency Limits	F_LIMITS?		x			x		x	x					
				x		x		x	x	FminHigh,	double	Hz		
				x		x		x	x	FmaxLow	double	Hz		
Full Span	F_FULL	x				x								
Frequency setting Mode	F_MODE	x				x				**Fmode**	Enum		MIN_MAX, **CENT_SPAN**	
	F_MODE?		x			x								
				x		x				**Fmode**	Enum		MIN_MAX, CENT_SPAN	
UMTS Channel Selection Mode	F_UMTS_MODE	x							x	**Cmode**	Enum		**FCENT**, CHANN	Has effect on device GUI only
	F_UMTS_MODE?		x						x					In remote interface always FCENT
				x					x	**Cmode**	Enum		FCENT, CHANN	is used to change Channel
FEmin	FE_MIN	x					x			**FEmin**	double	Hz		
	FE_MIN?		x				x							
				x			x			FEmin	double	Hz		
FEMax	FE_MAX	x					x			**FEmax**	double	Hz		
	FE_MAX?		x				x							
				x			x			FEmax	double	Hz		
FELimits	FE_LIMITS?		x				x							
				x			x			FEminHigh,	double	Hz		
				x			x			FEmaxLow	double	Hz		
FE Full Span	FE_FULL	x					x							
Index of lowest selected	IE_MIN	x					x			**IEmin**	ShortInt		**1** to 20	
service	IE_MIN?		x				x							
				x			x			IEmin	ShortInt			
Index of highest slected	IE_MAX	x					x			**IEmax**	ShortInt		**1** to 20	
service	IE_MAX?		x				x							
				x			x			IEmax	ShortInt			
Index range of selectable services	IE_LIMITS?		x				x							
				x			x			IEminHigh,	ShortInt		1 to 20	
				x			x			IEmaxLow	ShortInt			
Select maximum index range	IE_FULL	x					x							
Frequency / Index setting Mode	FE_IE__MODE	x					x			**FEIEmode**	Enum		FE_MIN_MAX, **IE_MIN_MAX**	Select service range
	FE_IE_MODE?		x				x							by frequency or index
				x			x			**FEIEmode**	Enum		FE_MIN_MAX, IE_MIN_MAX	
RBW	RBW	x				x	x	x		**RBW**	Float	Hz		default: highest possible
	RBW?		x			x	x	x						
				x		x	x	x		RBW	Float	Hz		
RBW Limits	RBW_LIMITS?		x			x	x	x						
				x		x	x	x		RbwLow,	Float,	Hz		
				x		x	x	x		RbwHigh	Float	Hz		
RBW Automatic	RBW_AUTO	x				x				**RbwMode**	Enum		FAST, HIGH_RES, **OFF**	
		x					x						**ON,**OFF	
	RBW_AUTO?		x			x	x							
				x		x				RbwMode	Enum		FAST, HIGH_RES, OFF	
				x			x						ON,OFF	
Meas. Range	MR	x				x	x	x	x	**MR**	Float	"Unit"		default: highest possible
	MR?		x			x	x	x	x					
				x		x	x	x	x	MR	Float	"Unit"		
Meas. Range Limits	MR_LIMITS?		x			x	x	x	x					
				x		x	x	x	x	MrLow,	Float	"Unit"		
				x		x	x	x	x	MrHigh	Float	"Unit"		

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Meas. Range Automatic	MR_AUTO	x				x	x	x	x	**MrMode**	Enum		**ON**, OFF	
	MR_AUTO?		x			x	x	x	x					
				x		x	x	x	x	MrMode	Enum		ON, OFF	
Result Type	TRACE	x				x	x	x	x	**Trace**	Enum		**ACT**, AVG, MAX, MAX_AVG	MAX and MAX_AVG not available in UMTS Mode
	TRACE?		x			x	x	x	x					
				x		x	x	x	x	Trace	Enum		ACT, AVG, MAX, MAX_AVG	
Unit	UNIT	x				x	x	x	x	**Unit**	Enum		**dBm**, dBV, dBmV, dBuV, dbV/m, dBmV/m, dBuV/m, dBA/m, **V/m**, **A/m**, W/m^2, W/cm^2, %, **A**	
	UNIT?		x			x	x	x	x					
				x		x	x	x	x	Unit	Enum		dBm, dBV, dBmV, dBuV, dbV/m, dBmV/m, dBuV/m, dBA/m, V/m, A/m, W/m^2, W/cm^2, %, A	
Average Method	AVG_METHOD	x				x	x		x	**AvgMethod**	Enum		**NUMBER,**TIME	
	AVG_METHOD?		x			x	x		x					
				x		x	x		x	AvgMethod	Enum		NUMBER,TIME	
TIME_AVG	TIME_AVG	x				x	x		x	**TimeAvg**	**Enum**		60,120,180,240,300,**360,**420,480,540,600,660,720,780,840,900,960,1020,1080,1140,1200,1260,1320 1380,1440,1500,1560,1620,1680.1740,1800	
	TIME_AVG?		x			x	x		x					
				x		x	x		x	TimeAvg	Enum		60,120,180,240,300,360,420,480,540,600,660,720,780,840,900,960,1020,1080,1140,1200,1260,1320, 1380,1440,1500,1560,1620,1680.1740,1800	
N_AVG	N_AVG	x				x	x		x	**Navg**	Enum		**4**, 8, 16, 32, 64	
	N_AVG?		x			x	x		x					
				x		x	x		x	Navg	Enum		4, 8, 16, 32, 64	
Threshold	THRESH	x				x	x	x	x	**Threshold**	Float	"Unit"		default = 0 for nomal units
	THRESH?		x			x	x	x	x					default = -200 for dB units
				x		x	x	x	x	Threshold	Float	"Unit"		
Threshold Limits	THRESH_LIMITS?		x			x	x	x	x					
				x		x	x	x	x	ThresholdLow	Float	"Unit"		
				x		x	x	x	x	ThresholdHigh	Float	"Unit"		
Y-Scale Range	Y_RANGE	x				x		x	x	**Yrange**	Enum	dB	20, 40, 60,80, **100**	
	Y_RANGE?		x			x		x	x					
				x		x		x	x	Yrange	Enum	dB	20, 40, 80, 100	
Y-Scale Reference	Y_REF	x				x		x	x	**Yref**	Float	"Unit"		default = MR
	Y_REF?		x			x		x	x					
				x		x		x	x	Yref	Float	"Unit"		
Y-Scale Reference Auto	Y_REF_AUTO	x				x		x	x	**YrefAuto**	Enum		**ON**, OFF	
	Y_REF_AUTO?		x			x		x	x					
				x		x		x	x	YrefAuto	Enum		ON, OFF	
Y-Scale Reference Limits	Y_LIMITS?		x			x		x	x					
				x		x		x	x	YrefLow	Float,	"Unit"		
				x		x		x	x	YrefHigh	Float,	"Unit"		
Full screen	FULL_SCRN	x				x	x	x	x	**FullScrn**	Enum		ON, **OFF**	
	FULL_SCRN?		x			x	x	x	x					
				x		x	x	x	x	FullScrn	Enum		ON, OFF	
Observation Length	T_OBS	x						x	x	**Tobs**	Enum	s	60, 120, 180, **300, 360,** 600, 1200, 1800, 3000, 3600	
	T_OBS?		x					x	x					
				x				x	x	Tobs	Enum	s	60, 120, 180, 300, 360, 600, 1200, 1800, 3000, 3600	
Detection Type	DETECT	x						x		**Detector**	Enum		**RMS**, PEAK	
	DETECT?		x					x						
				x				x		Detector	Enum		RMS, PEAK	
T_AVG	T_AVG	x						x		**Tavg**	Enum	s	**0.96,1.2,2.4**, 3.6, 6, 12, 18, 30, 60, 120, 180, 300, 360, 600, 900, 1200, 1800	
	T_AVG?		x					x						
				x				x		Tavg	Enum	s	2.4, 3.6, 6, 12, 18, 30, 60, 120, 180, 300, 360, 600, 900, 1200, 1800	
Display Split	DISPLAY	x						x		**DispSplit**	Enum		NUM, GRAPH, **BOTH**	
	DISPLAY?		x					x						
				x				x		DispSplit	Enum		NUM, GRAPH, BOTH	
Display Condensed	DISPLAY_COND	x					x			**DispCond**	Enum		**DETAIL**, CONDENSED	
	DISPLAY_COND?		x				x							
				x			x			DispCond			DETAIL, CONDENSED	

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
UMTS Time Graph Content	GRAPH_CONTENT	x							x	**GraphContent**	Enum		**VALUE**, MAX_VALUE	
	GRAPH_CONTENT?		x						x					
				x					x	GraphContent	Enum		VALUE, MAX_VALUE	
UMTS Power Correction Factor	POWER_CORR_FACT	x							x	**PwrCorrFact**	Float		default 1.0	
	POWER_CORR_FACT?		x						x					
				x					x	PwrCorrFact	Float			
UMTS Power Correction Mode	POWER_CORR_MODE	x							x	**PwrCorrMode**	Enum		ON, **OFF**	
	POWER_CORR_MODE?		x						x					
UMTS Display Mode	DISPLAY_UMTS	x							x	**UmtsDisplay**	Enum		**TABLE_NORMAL**, TABLE_RATIO, BARS, NUM, GRAPH, BOTH	
	DISPLAY_UMTS?		x						x					
				x					x	UmtsDisplay	Enum		TABLE_NORMAL, TABLE_RATIO, BARS, NUM, GRAPH, BOTH	
UMTS Select ScrCode	UMTS_SCR_SEL	x							x	UMTSCode	ShortInt		0 to 511	
									x	UMTSSelected	Enum		YES,NO	
UMTS Select All ScrCode	UMTS_SCR_SEL_ALL	x							x					Select the founding scr code
UMTS Sort Table by	UMTS_SORT	x							x	**Column**	Enum		**CODE**, VALUE, MAX_VALUE, CELL	
	UMTS_SORT?		x						x					
				x					x	Couumn	Enum		CODE, VALUE, MAX_VALUE, CELL	
UMTS Parameter set	UMTS_PARAM	x							x	**UmtsParam**	Enum		FAST, **SENSITIVE**	
	UMTS_PARAM?		x						x					
				x					x	UmtsParam	Enum		FAST, SENSITIVE	
Noise Cap	NOISE_CAP	x							x	**NoiseCap**	Enum		ON,**OFF**	
	NOISE_CAP?		x						x					
				x					x	NoiseCap	Enum		ON,OFF	
Noise Cap Factor	NOISE_CAP_FACT	x							x	**NoiseCapFact**	Enum		0,3,6,10,15,20	value in dB
	NOISE_CAP_FACT?		x						x					
				x					x	NoiseCapFact	Enum		0,3,6,10,15,20	

Mode parameters may exist in all three modes and are stored for each mode separately.

General parameters in configuration menue

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Date	DATE	x				x	x	x	x	Date	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 00 to 99	
	DATE?		x			x	x	x	x					
				x		x	x	x	x	Date	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 00 to 99	
Date Format of Decvice	DATE_FRMT	x				x	x	x	x	**DateFormat**	Enum		**DMY**, MDY	Date format
	DATE_FRMT?		x			x	x	x	x					dd.mm.yyy or mm.dd.yy
				x		x	x	x	x	DateFormat	Enum		DMY, MDY	affects device display only
Time	TIME	x				x	x	x	x	Time	hh:mm:ss		h: 00 to 23, m: 00 to 59, s: 00 to 59:	
	TIME?		x			x	x	x	x					
				x		x	x	x	x	Time	hh:mm:ss		h: 0 to 23, m: 0 to 59, s: 0 to 59:	
Antenna or Sensor Selection	CT_ANT_SEL	x				x	x	x	x	**AntIndex**	ShortInt		**0** to 20	0 = no
	CT_ANT_SEL?		x			x	x	x	x					
				x		x	x	x	x	AntIndex,	ShortInt		0 to 21	21 = auto Antenna
				x		x	x	x	x	ShrtName,	String		max. 10 chars	Short name
				x		x	x	x	x	LngName	String		max. 35 chars	Long name
				x		x	x	x	x	Fmin,	String		max. 15 chars	
				x		x	x	x	x	Fmax,	String		max 15 chars	
				x		x	x	x	x	Property	Enum		E-FIELD, H-FIELD, CURRENT	
Cable Selection	CT_CBL_SEL	x				x	x	x	x	**CblIndex**	ShortInt		**0** to 20	0 = no
	CT_CBL_SEL?		x			x	x	x	x					
				x		x	x	x	x	CblIndex,	ShortInt		0 to 21	21 = auto Cable
				x		x	x	x	x	ShrtName,	String		max. 10 chars	Short name
				x		x	x	x	x	LngName	String		max. 35 chars	Long name
				x		x	x	x	x	Fmin,	String		max. 15 chars	
				x		x	x	x	x	Fmax	String		max. 15 chars	
Service Table Selection	CT_SRV_SEL	x				x	x	x	x	**SrvIndex**	ShortInt		**0** to 20	0 = no
	CT_SRV_SEL?		x			x	x	x	x					
				x		x	x	x	x	SrvIndex,	ShortInt		0 to 20	
				x		x	x	x	x	ShrtName,	String		max. 10 chars	Short name
				x		x	x	x	x	LngName	String		max 35 chars	Long name
Cell Name Table Selection	CT_CLN_SEL	x				x	x	x	x	**ClnIndex**	ShortInt		**0** to 20	0 = no
	CT_CLN_SEL?		x			x	x	x	x					
				x		x	x	x	x	ClnIndex,	ShortInt		0 to 20	
				x		x	x	x	x	ShrtName,	String		max. 10 chars	Short name
				x		x	x	x	x	LngName	String		max 35 chars	Long name
Standard Selection	CT_STN_SEL	x				x	x	x	x	**StnIndex**	ShortInt		**1** to 20	
	CT_STN_SEL?		x			x	x	x	x					
				x		x	x	x	x	StnIndex,	ShortInt		1 to 20	
				x		x	x	x	x	ShrtName,	String		max. 10 chars	Short name
				x		x	x	x	x	LngName	String		max. 35 chars	Long name
Get Antenna or Sensor List	CT_ANT_LST?		x			x	x	x	x					
				x		x	x	x	x	Index,	ShortInt		1 to 20	
				x		x	x	x	x	ShrtName,	String		max. 10 chars	
				x		x	x	x	x	LngName,	String		max. 35 chars	
				x		x	x	x	x	Fmin,	String		max. 15 chars	
				x		x	x	x	x	Fmax,	String		max 15 chars	
				x		x	x	x	x	Property/CR	Enum		E-FIELD, H-FIELD, CURRENT	20 lines with same format
Get Cable List	CT_CBL_LST?		x			x	x	x	x					
				x		x	x	x	x	Index,	ShortInt		1 to 20	
				x		x	x	x	x	ShrtName,	String		max. 10 chars	
				x		x	x	x	x	LngName,	String		max. 35 chars	
				x		x	x	x	x	Fmin,	String		max. 15 chars	
				x		x	x	x	x	Fmax/CR	String		max. 15 chars	20 lines with same format
Get Service Table List	CT_SRV_LST?		x			x	x	x	x					
				x		x	x	x	x	Index,	ShortInt		1 to 20	
				x		x	x	x	x	ShrtName,	String		max. 15 chars	
				x		x	x	x	x	LngName/CR	String		max. 35 chars	20 lines with same format
Get Cell Name Table List	CT_CLN_LST?		x			x	x	x	x					
				x		x	x	x	x	Index,	ShortInt		1 to 20	
				x		x	x	x	x	ShrtName,	String		max. 15 chars	
				x		x	x	x	x	LngName/CR	String		max. 35 chars	20 lines with same format
Get Standard List	CT_STN_LST?		x			x	x	x	x					
				x		x	x	x	x	Index,	ShortInt		1 to 20	
				x		x	x	x	x	ShrtName,	String		max. 10 chars	
				x		x	x	x	x	LngName/CR	String		max. 35 chars	20 lines with same format

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Get Device Info	DEV_INFO?		x			x	x	x	x	Manufacturer,	String		max. 15 chars	
				x		x	x	x	x	DeviceName,	String		max. 15 chars	
				x		x	x	x	x	TypeNo,	String		max. 15 chars	
				x		x	x	x	x	SerialNo,	String		max. 15 chars	
				x		x	x	x	x	HW Version,	String		max. 15 chars	
				x		x	x	x	x	CalDate,	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	
				x		x	x	x	x	FW Version	String		Firmware version format "V(x)x.(y)y.(z)z" examples: V1.1.1	
Get Device Diagnostics	DEV_DIAG?		x			x	x	x	x					
				x		x	x	x	x	RSPTestresult,	String		max. 15 chars, shows 16 Bit Number in Hexformat,	0000 = OK
				x		x	x	x	x	FPGATestresult,	String		max. 15 chars, shows 16 Bit Number in Hexformat,	0000 = OK
				x		x	x	x	x	RFBTestresult,	String		max. 15 chars, shows 16 Bit Number in Hexformat,	0000 = OK
				x		x	x	x	x	RFBStartupStatus /CR	String		max. 15 chars, shows 16 Bit Number in Hexformat,	0000 = OK
				x		x	x	x	x	FMDTestResult,	Enum		OK,ERROR	
				x		x	x	x	x	FFSVolume,	Enum		OK, ERROR	
				x		x	x	x	x	FFS PCState,	Enum		OK, ERROR	
				x		x	x	x	x	FFSPDState,	Enum		OK, ERROR	
				x		x	x	x	x	LastPowerDown,	String		max. 15 chars, shows 16 Bit Number in Hexformat,	0000 = OK
				x		x	x	x	x	DataConsist/CR	String		max. 15 chars, shows 16 Bit Number in Hexformat,	0000 = OK
				x		x	x	x	x	RemotePort	Enum		USB, SERIAL	
				x		x	x	x	x	BaudSave	Enum		9600, 19200, 38400, 57600, 115200, 230400	
				x		x	x	x	x	BaudBootLoader/CR	Enum		9600, 19200, 38400, 57600, 115200, 230400	
				x		x	x	x	x	BootFWVersion,	String		max. 15 chars	
				x		x	x	x	x	RFBFWVersion /CR	String		max. 40 chars,	
				x		x	x	x	x	RFBStatus,	String		max. 15 chars, shows 16 Bit Number in Hexformat,	0000 = OK, actual, not filtered
				x		x	x	x	x	RFBVolt,	float	V		actual
				x		x	x	x	x	RFBTemp,	float	°C		actual
				x		x	x	x	x	MainboardTemp,	float	°C		actual
				x		x	x	x	x	HWOptionsNo /CR	ShortInt		0 to 100	
				x		x	x	x	x	HWOName,	String		max. 40 chars	HWOptionsNo lines
				x		x	x	x	x	HWOState /CR	String		max. 40 chars	HWOptionsNo lines
				x		x	x	x	x	FWOptionsNo /CR	ShortInt		0 to 63	
				x		x	x	x	x	FWOptName,	String		max. 40 chars	FWOptionsNo lines
				x		x	x	x	x	HWOptState /CR	Enum		FREE, CLOSED, UNKNOWN	FWOptionsNo lines
Numerical Display Format	NUM_FORMAT	x				x	x	x	x	**NunDisplay**	Enum		**NORMAL,** EXPONENTIAL	
	NUM_FORMAT?		x			x	x	x	x					
				x		x	x	x	x	NumDisplay	Enum		NORMAL, EXPONENTIAL	
MR Search Auto	MR_SEARCH_AUTO	x				x	x	x	x	MRSearchAuto	Enum		START,STOP	
	MR_SEARCH_AUTO?		x			x	x	x	x					
				x		x	x	x	x	MRSearchAuto	Enum		HIGH,BUSY,STOPPED,OK,MANUAL	
MR Serach Mode	MR_SEARCH_MODE	x				x	x	x	x	**MRSearchMode**	Enum		CONSERVATIVE,**NORMAL**	
	MR_SEARCH_MODE?		x			x	x	x	x					
				x		x	x	x	x	MRSearchMode	Enum		CONSERVATIVE,NORMAL	
MR Serach Setup	MR_SEARCH_SETUP	x				x	x	x	x	**MRSearchSetup**	Enum		ON,**OFF**	
	MR_SEARCH_SETUP?		x			x	x	x	x					
				x		x	x	x	x	MRSearchSetup	Enum		ON,OFF	

Marker and evaluation functions (only one function can be active at one time)

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Marker on / off	MRK_MODE	x				x		x		**MrkMode**	Enum		**ON**, OFF	
	MRK_MODE?		x			x		x						
				x		x		x		MrkMode	Enum		ON, OFF	
Marker Index	MRK_INDEX	x				x		x		MrkIndex	ShortInt		0 to MaxIndex	
	MRK_INDEX?		x			x		x						
				x		x		x		MrkIndex	ShortInt			
Marker Informatin	MRK_INFO?		x			x		x						
				x		x		x		MaxIndex,	ShortInt			highest possible index
				x		x		x		dF , dT or 0	double	Hz , s,		frequency or time resolution
Goto Next Peak	MRK_RIGHT	x				x		x	X					next peak in frequency or time
Goto Highest Peak	MRK_HIGHEST	x				x		x	X					peak with the highest level
Goto Previous Peak	MRK_LEFT	x				x		x	X					previous peak in freq. or time
Goto Higher Peak	MRK_HIGHER	x				x		x	X					next Peak with higher level
Goto lower Peak	MRK_LOWER	x				x		x	X					next Peak with lower level
Get Marker Values	MRK_VALUE?		x			x		x						
				x		x		x		AvgFlag	Enum		AV,OK	
				x		x		x		OvlFlag	Enum		OV,OK,MAX_OV	
				x		x		x		F , T or Code	double	Hz,, s,		or average and ovedrive info
				x		x		x		Value,	Float	"Unit"		
				x		x		x		NoiseFlag	Enum		UNCHECKED,LOW,OK	in SA Mode- UNCHECKED
				x		x		x		Service	String		max. 15 chars	
Peak Table on / off	PKT_MODE	x				x				**PktMode**	Enum		ON, **OFF**	
	PKT_MODE?		x			x								
				x		x				PktMode	Enum		ON, OFF	
Use Threshold	PKT_THRSH	x				x				**PktThrsh**	Enum		ON, **OFF**	
	PKT_THRSH?			x		x								
				x		x				**PktThrsh**	Enum		ON, OFF	
Get Peak Table	PKT_TABLE?		x			x								
				x		x				Freq,	double	Hz		0,0, "Under Threshold"
				x		x				Value,	Float	"Unit"		if peak is to low
				x		x				Service	String		max. 15 chars	20 lines with same format
Max. Number of Peaks in Peak Table	PKT_PEAKS	x				X				**PktPeaks**	Enum		1,2,3,5,10,20,30,50	only the highest PktPeaks Peaks
	PKT_PEAKS?		x			X								are available
				x		X				PktPeaks	Enum		1,2,3,5,10,20,30,50	
Band Integration on / off	BI_MODE	x				x				**BiMode**	Enum		ON, **OFF**	
	BI_MODE?		x			x								
				x		x				BiMode	Enum		ON, OFF	
Low Band Limit	BI_F_LOW	x				x				**BiFlow**	double	Hz		deafult = Fmin
	BI_F_LOW?		x			x								
				x		x				BiFlow	double	Hz		
High Band Limit	BI_F_HIGH	x				x				**BiFhigh**	double	Hz		default = Fmax
	BI_F_HIGH?		x			x								
				x		x				BiFhigh	double	Hz		
Get Band Integration Values	BI_VALUE?		x			x								
				x		x				Flow,	double	Hz		
				x		x				Fhigh,	double	Hz		
				x		x				Value	Float	"Unit"		
Move Band	BI_MOVE	x				x				BiFmed	double	Hz		(BiFhigh+BiFLow) /2
	BI_MOVE?		x			x								
				x		x				BiFmed	double	Hz		
Duty Cycly on/off	DC_MODE	x						x		**DcMode**	Enum		ON, **OFF**	
	DC_MODE?		x					x						
				x				x		DcMode	Enum		ON, OFF	
Get Duty Cycle Value	DC_VALUE?		x					x						
				x				x		DutyCycle	Float			

Setup commands

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Recall Setup	SU_RECALL	x				x	x	x	x	Index	ShortInt		1 to 20	MR Search Auto not automatic activated
Get Setup List	SU_LIST?		x			x	x	x	x					
				x		x	x	x	x	Index,	ShortInt		1 to 20	Name = "default" when empty
				x		x	x	x	x	Name,	String		max. 15 chars	20 lines with same format
				x		x	x	x	x	date,	dd.mm.yy			
				x		x	x	x	x	time/CR	hh:mm:ss.			
Store Setup	SU_STORE	x				x	x	x	x	Index,	ShortInt			
		x				x	x	x	x	Name	String		max. 15 chars	
Factory defaults	SU_DEFAULT	x				x	x	x	x					
				x		x	x	x	x	sSetup	Setup Str.			
Clear Setup	SU_CLR	x				x	x	x	x	Index	ShortInt		1 to 20	
Clear all Setups	SU_CLR_ALL	x				x	x	x	x					
Overwrite Setup	SU_OVERWRITE	x				x	x	x	x	Index,	ShortInt		1 to 20	
Check Setup	SU_CHECK?		x			x	x	x	x	Index	ShortInt		1 to 20	
				x		x	x	x	x	sSetupCheckData	Setup Str.			
ChangeSetup	SU_CHANGE	x				x	x	x	x	sSetupChangeData	Setup Str.			

General commands

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Measurement Mode	MODE	x				x	x	x	x	**Mode**	Enum		**SPECTRUM,** SAFETY, TIME, UMTS	
	MODE?		x			x	x	x	x					
				x		x	x	x	x	Mode	Enum		SPECTRUM, SAFETY, TIME, UMTS	
Contrast	CONTRAST	x				x	x	x	x	**Contrast**	ShortInt	%	0 to 100	
	CONTRAST?		x			x	x	x	x					
				x		x	x	x	x	Contrast	ShortInt	%	0 to 100	
Backlight	LIGHT	x				x	x	x	x	**Light**	Enum		**ON**, OFF	
	LIGHT?		x			x	x	x	x					
				x		x	x	x	x	Light	Enum		ON, OFF	
Hold	HOLD	x				x	x	x	x	**Hold**	Enum		ON, **OFF**	Stops measurement
	HOLD?		x			x	x	x	x					and locks parameters
				x		x	x	x	x	Hold	Enum		ON, OFF	
Battery State	BATTERY?		x			x	x	x	x					
				x		x	x	x	x	BatState	ShortInt	%	0 to 100	
Power Mode	POWER_MODE?		x			x	x	x	x					
				x		x	x	x	x	ePowerMode	Enum		PWR_LINE, BATTERY	

Data logger

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Viewer Tree	DL_TREE	x				x	x	x	x	**ViewTree**	Enum		**COLLAPSED**, EXPANDED	
	DL_TREE?		x			x	x	x	x					
				x		x	x	x	x	ViewTree	Enum		COLLAPSED, EXPANDED	
Store Data	DL_STORE	x				x	x	x	x					
Auto Store Immediate Start	DL_START	x				x	x	x	x	DlStart	Enum		**OFF**,C_IMD,T_IMD,T_PROG	
	DL_START?		x			x	x	x	x					
				x		x	x	x	x	DlStart	Enum		OFF,C_IMD,T_IMD,T_PROG	
Auto Store Start Time	DL_TSTART_TIME	x				x	x	x	x	**TstartTime**	hh:mm:ss		h: 00 to 23, m: 00 to 59, s: 00 to 59	default = 00:00:00
	DL_TSTART_TIME?		x			x	x	x	x					
				x		x	x	x	x	TstartTime	hh:mm:ss		h: 00 to 23, m: 00 to 59, s: 00 to 59	
Auto Store Start Date	DL_TSTART_DATE	x				x	x	x	x	**TstartDate**	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	default = 01.01.00
	DL_TSTART_DATE?		x			x	x	x	x					
				x		x	x	x	x	TstartDate	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	
Auto Store Length	DL_TLENGTH	x				x	x	x	x	**Tlength**	hh:mm:ss		h: 00 to 99, m: 00 to 59, s: 00 to 59	default = 23:59:59
	DL_TLENGTH?		x			x	x	x	x					
				x		x	x	x	x	Tlength	hh:mm:ss		h: 00 to 99, m: 00to 59, s: 00 to 59	
Auto Store Resolution	DL_TRES	x				x	x	x	x	**AutoRes**	Enum		AOAP,1.2,2.4, 3.6, 6, 12, 18, 30, 60, 120, 180, 300, 360, 600, 1200, 1800,3600	default = 1.2 s
	DL_TRES?		x			x	x	x	x					
				x		x	x	x	x	AutoRes	Enum		AOAP,1.2,2.4, 3.6, 6, 12, 18, 30, 60, 120, 180, 300, 360, 600, 1200, 1800,3600	
Max. number of conditional datassets	DL_MAX_C	x				x	x	x	x	**MaxCDatasets**	Enum		2, 3, 5, 10, 20, 30, 50,100, 300, 500, **AMAP**	
	DL_MAX_C?		x			x	x	x	x					
				x		x	x	x	x	MaxCDatasets	Enum		2, 3, 5, 10, 20, 30, 50,100, 300, 500, AMAP	
Conditional Mode	DL_CMODE	x				x	x	x	x	**CondMode**	Enum		**FIRST**, ALL	
	DL_CMODE?		x			x	x	x	x					
				x		x	x	x	x	CondMode	Enum		FIRST, ALL	
Number of main data sets	DL_NUMBER?		x			x	x	x	x					
				x		x	x	x	x	NoOfDataSets	ShortInt			
Get data set overview	DL_INFO?		x			x	x	x	x					
			x			x	x	x	x	Index	ShortInt			
				x		x	x	x	x	NoSubs,	ShortInt			Number of sub data sets
				x		x	x	x	x	Type,	Enum		SPEC, TAB, LIST, VAL, UTAB	
				x		x	x	x	x	StoreMode,	Enum		MAN, C_FIRST, C_ALL, AUTO_N, AUTO_S, AUTO_A,	
				x		x	x	x	x	Date,	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	
				x		x	x	x	x	Time	hh:mm:ss		h: 00 to 23, m: 00 to 59, s:00 to 59	
				x		x	x	x	x	Comment	String		max. 35 chars	
Get data set overview	DL_DS_INFO?		x			x	x	x	x					
			x			x	x	x	x	Index	ShortInt			
				x		x	x	x	x	NoSubs,	ShortInt			Number of sub data sets
				x		x	x	x	x	Type,	Enum		SPEC, TAB, LIST, VAL, UTAB	
				x		x	x	x	x	StoreMode,	Enum		MAN, C_FIRST, C_ALL, AUTO_N, AUTO_S, AUTO_A,	
				x		x	x	x	x	Date,	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	
				x		x	x	x	x	Time	hh:mm:ss		h: 00 to 23, m: 00 to 59, s:00 to 59	
Get detailed data set	DL_DATA?		x			x	x	x	x	Index,	ShortInt		1 to NoOfDataSets	
			x			x	x	x	x	Sub	ShortInt		1 to NoSubs	
				x		x	x	x	x	**see "Data Logger Formats"**				
Clear Data Set	DL_CLR	x				x	x	x	x	Index	ShortInt			
Clear All Data Sets	DL_CLR_ALL	x				x	x	x	x					
Amount of free Memory	DL_MEMORY?		x			x	x	x	x					
				x		x	x	x	x	Memory	ShortInt	%	0 to 100	

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Data Set comment	DL_COMMENT	x				x	x	x	x	Index,	ShortInt			
		x				x	x	x	x	Comment	String		max. 35 chars	
	DL_COMMENT?		x			x	x	x	x	Index,	ShortInt			
				x		x	x	x	x	Comment	String		max. 35 chars	
Comment input	DL_COMMENT_INPUT	x				x	x	x	x	**CommentInput**	Enum		**NO_COMMENT,**STANDARD_COMMENT,INDIVIDUAL_COMMENT	
	DL_COMMENT_INPUT?		x			x	x	x	x					
				x		x	x	x	x	CommentInput	Enum		NO_COMMENT,STANDARD_COMMENT,INDIVIDUAL_COMMENT	
Comment standard	DL_COMMENT_STN	x				x	x	x	x	**Comment**	String		**max. 35 chars**	
	DL_COMMENT_STN		x			x	x	x	x					
				x		x	x	x	x	Comment	String		max. 35 chars	
Auto Maximum Reset Mode	DL_RESET_MODE	x				x	x	x	x	**ResetMode**	Enum		NORMAL, START, **ALL**	
(only in TimerControlledMode)	DL_RESET_MODE?		x			x	x	x	x					
				x		x	x	x	x	ResetMode	Enum			

Measurement

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Get Spectrum	SPEC?		x			x								
				x		x					**see "Measurement Formats"**			
Get Safety Evaluation Table	TAB?		x				x							
				x			x				**see "Measurement Formats"**			
Get Safety Evaluation ShortTable	**STAB?**		x				x							
				x			x				**see "Measurement Formats"**			
Get UMTS Table	UTAB?		x						x					
				x					x		**see "Measurement Formats"**			
Get TA Value	VAL?		x					x						
				x				x		Value,	**see "Measurement Formats: VAL-Table"**			
Sart TA Values	VAL_START?		x					x						
				x				x		Value,	**see "Measurement Formats Val_Start -Table"**			permanent response in
Stop TA Values	VAL_STOP	x						x						Stops permanent response
Get Averaging Progress	AVG_PROG?		x			x	x	x	x					
				x		x	x	x	x	AvgProgress	ShortInt	%	0 to 100	
Get Averaging Flag	AVG_FLAG?		x			x	x	x	x					
				x		x	x	x	x	AvgFlag	Enum		AV, OK	
Get Overload Flag	OVL_FLAG?		x			x	x	x	x					
				x		x	x	x	x	OvlFlag	Enum		OV, OK, MAX_OV	MAX_OV in UMTS Mode only
Get Sweep Counter	SWP_COUNT?		x			x	x		x					
				x		x	x		x	SwpCounter	LngInt		0 to 999 999	
Get Sweep Counter (Shortform)	**SC?**		x			x	x		x					
				x		x	x		x	SwpCounter	LngInt		0 to 999 999	
Get Number of SAVG counts	**SAVG_COUNT?**		x			x	x	x						
				x		x	x	x		NoSAVG	LngInt		0 to 999 999	
Get Sweep time	SWP_TIME?		x			x	x		x					
				x		x	x		x	SwpTime	ShortInt	ms		
Get Axis	AXIS?		x			x	x	x	x					
				x		x	x	x	x	Axis	Enum		X, Y, Z, RSS, SINGLE	SINGLE if no antenna
ISO Mode	ISO_MODE	x				x	x		x	**IsoMode**	Enum		**3CH_ISO**, **3CH_X,** 3CH_Y, 3CH_Z, UNI_ISO, **UNI_ SINGLE**	UNI_SINGLE if no antennea
	ISO_MODE?		x			x	x		x					priority of deafults from left to right
				x		x	x		x	IsoMode	Enum		3CH_ISO, 3CH_X, 3CH_Y, 3CH_Z, UNI_ISO, UNI_ SINGLE	UNI_SINGLE if no antennea
UMTS Reset Max. values	UMTS_RESET_MAX	x							x					
UMTS Reset Table	UMTS_RESET_TABLE	x							x					

Configuration

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
IDN	DEV_ID?		x			x	x	x	x					ID Number of device
				x		x	x	x	x		String		16 chars.	
Antenna or Sensor Data set	CT_ANT_DS	x				x	x	x	x	Index,	ShortInt		1 to 20	
		x				x	x	x	x	**see "Cofiguration Tables Formats"**				
	CT_ANT_DS?		x			x	x	x	x	Index	ShortInt		1 to 20	
				x		x	x	x	x	**see "Cofiguration Tables Formats"**				
Cable Data set	CT_CBL_DS	x				x	x	x	x	Index,	ShortInt		1 to 20	
		x				x	x	x	x	**see "Cofiguration Tables Formats"**				
	CT_CBL_DS?		x			x	x	x	x	Index	ShortInt		1 to 20	
				x		x	x	x	x	**see "Cofiguration Tables Formats"**				
Service Table Data set	CT_SRV_DS	x				x	x	x	x	Index,	ShortInt		1 to 20	
		x				x	x	x	x	**see "Cofiguration Tables Formats"**				
	CT_SRV_DS?		x			x	x	x	x	Index	ShortInt		1 to 20	
				x		x	x	x	x	**see "Cofiguration Tables Formats"**				
Cell Name Table Data set	CT_CLN_DS	x				x	x	x	x	Index,	ShortInt		1 to 20	
		x				x	x	x	x	**see "Cofiguration Tables Formats"**				
	CT_CLN_DS?		x			x	x	x	x	Index	ShortInt		1 to 20	
				x		x	x	x	x	**see "Cofiguration Tables Formats"**				
Standard Data set	CT_STN_DS	x				x	x	x	x	Index,	ShortInt		1 to 20	
		x				x	x	x	x	**see "Cofiguration Tables Formats"**				
	CT_STN_DS?		x			x	x	x	x	Index	ShortInt		1 to 20	
				x		x	x	x	x	**see "Cofiguration Tables Formats"**				
Clear Antenna	CT_ANT_CLR	x				x	x	x	x	Index	ShortInt		1 to 20	
Clear all Antennas	CT_ANT_CLR_ALL	x				x	x	x	x					
Clear Cable	CT_CBL_CLR	x				x	x	x	x	Index	ShortInt		1 to 20	
Clear all Cables	CT_CBL_CLR_ALL	x				x	x	x	x					
Clear Service Table	CT_SRV_CLR	x				x	x	x	x	Index	ShortInt		1 to 20	
Clear all Service Tables	CT_SRV_CLR_ALL	x				x	x	x	x					
Clear Cell Name Table	CT_CLN_CLR	x				x	x	x	x	Index	ShortInt		1 to 20	
Clear all Cell Name Tables	CT_CLN_CLR_ALL	x				x	x	x	x					
Clear Standards	CT_STN_CLR	x				x	x	x	x	Index	ShortInt		1 to 20	
Clear all Standards	CT_STN_CLR_ALL	x				x	x	x	x					
Get Version	DEV_VERSION?	x				x	x	x	x	ModuleType	enum		FW, BL	
				x		x	x	x	x	FWVersion	String		max. 15 chars	

Special Remote

Description	Command string	S	G	R		A	E	T	U	Parameter	Format	Unit	Range	Remarks
Remote	REMOTE	x				x	x	x	x	Remote	Enum		ON, **OFF**	**!!! Must be send before any other command to bring device into remote mode !!!**
	REMOTE?		x			x	x	x	x					
				x		x	x	x	x	Remote	Enum		ON, OFF	
Baudrate	BAUD	x				x	x	x	x	BaudRate	Enum		**LOW,** HIGH	LOW = 115 200 bit/s
	BAUD?		x			x	x	x	x					HIGH = 230 400 bit/s
				x		x	x	x	x	BaudRate	Enum		LOW, HIGH	
BEEPER	BEEPER	x				x	x	x	x	Beeper	Enum		ON,**OFF**	
	BEEPER?		x			x	x	x	x					
				x		x	x	x	x	Beeper	Enum		ON, OFF	
BEEP	BEEP	x				x	x	x	x	BeepTime	short		0 to 32.767	beep time in milli seconds
System Errror	ERROR?		x			x	x	x	x					
				x		x	x	x	x	ErrorNumber	Enum			
Switch the device off	POWER_OFF	x				x	x	x	x					

3. Measurement Formats

Parameter	SA-Spectrum	SE-Table	**Short SE-Table**	UMTS-Table	VAL-Table	Val_Start-Table	Format	Unit	Range	Remarks
NoSAVG	x	x			x		LngInt		0 to 999999	
AvgFlag	x	x		x	x	x	Enum		AV,OK	
OvlFlag	x	x		x	x	x	Enum		OV,OK,MAX_OV	
df,	x						Double	Hz	Double instead of Float (New in Release 0.12)	frequency resolution
Value					x	x	Float	"Unit"		
ValueNoiseFlag					x	x	Enum		UNCHECKED,LOW,OK	
TotalValue,		x	**x**				Float	"Unit"		
TotalNoiseFlag,		x					Enum		UNCHECKED,LOW,OK	
OthersValue,		x	**x**				Float	"Unit"		
OtherNoiseFlag,		x					Enum		UNCHECKED,LOW,OK	
Total,				x			Float	"Unit"		
TotalMax,				x			Float	"Unit"		
Analog				x			Float	"Unit"		
AnalogNoiseFlag,				x			Enum		UNCHECKED,LOW,OK	
AnalogMax,				x			Float	"Unit"		
AnalogMaxNoiseFlag,				x			Enum		UNCHECKED,LOW,OK	
n CR/	x	x	**x**	x			ShortInt			Number of following lines
SpecValue /CR	x						Float	"Unit"	d.dddE(-)(e)e (normal) or (-)(d)(d)d.dd (dB Units)	Value (max. 10 bytes per line)
TabValue,		x	**x**				Float	"Unit"		Value, Service, F1, F2
TabNoiseFlag		x					Enum		UNCHECKED,LOW,OK	
TabService,		x					String			
TabF1,		x					double	Hz		
TabF2 /CR		x					double	Hz		
UMTSCode,				x			ShortInt		0 to 8191	
UMTSValue,				x			Float	"Unit"		
UMTSMaxValue,				x			Float	"Unit"		
UMTSCell,				x			String		max . 15 chars	
UMTSSelected /CR				x			Enum		YES, NO	
BatState						x	ShortInt	%	0-100	

Note that some paramters are separated with /CR and not with a comma to organize the output line by line.
The last line is repeated n times with the same format.
The crosses in the second and third columns indicate if a parameter is used in the specific data set.

UMTS Tables are sorted like in device GUI
All found but only found scramblig codes are transmitted

4. Configuration Table Formats

Antennas

Parameter	Format	Unit	Range	Remarks
ShortName,	String		max 10 chars	
LongName,	String		max 35 chars	
Manufacturer,	String		max. 15 chars	
DeviceName,	String		max. 15 chars	
TypeNo,	String		max. 15 chars	
SerialNo,	String		max. 15 chars	
CalDate,	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	
Fmin	String	max. 15 chars		
Fmax	String	max. 15 chars		
Property,	Enum		E-FIELD, H-FIELD, CURRENT	
MNOL,	float	dBm		
Channels,	Enum		1CH, 3CH	
nCal/CR	ShortInt		2 to 200	Number of following calibration point lines
CalFreq,	double	Hz		
CalValue/CR	float	dB1/m or dBA/V		dBA/V for Property = Current only

Cables

Parameter	Format	Unit	Range	Remarks
ShortName,	String		max 10 chars	
LongName,	String		max 35 chars	
Manufacturer,	String		max. 15 chars	
DeviceName,	String		max. 15 chars	
TypeNo,	String		max. 15 chars	
SerialNo,	String		max. 15 chars	
CalDate,	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	
Fmin	String	max. 15 chars		
Fmax	String	max. 15 chars		
nCal/CR	ShortInt		2 to 200	Number of following calibration point lines
CalFreq,	double	Hz		
CalValue/CR	float	dB		Cable Attenuation

Standards

Parameter		Unit	Range	Remarks
ShortNname,	String		max 10 chars	
LongName,	String		max 35 chars	
nEField/CR	ShortInt		1 to 10	Number of following E-Field lines
EFieldFrequency,	double	Hz		
EFieldValue,	float	V/m		
EFieldSteepness/CR	float			
nHField/CR	ShortInt		1 to 10	Number of following H-Field lines
HFieldFrequency,	double	Hz		
HFieldValue,		V/m		
HFieldSteepness/CR	float			

Service Table

Parameter	Format	Unit	Range	Remarks
ShortName,	String		max 15 chars	
LongName,	String		max 35 chars	
nServices/CR	ShortInt		1 to 20	Number of following Service lines
ServiceFlow,	double	Hz		
ServiceFhigh,	double	Hz		
ServiceName/CR	String		max. 15 chars	

Cell Name Table

Parameter	Format	Unit	Range	Remarks
ShortName,	String		max 15 chars	
LongName,	String		max 35 chars	
nCells /CR	ShortInt		1 to 50	Number of following cell name lines
Scramblingcode	ShortInt			
CellName /CR	String		max. 15 chars	

Some lines are repeated n times with the same format.
For empty data sets ShortName is returned as "noData",
all other strings as "", all numeric values as 0 and all Enums as "noEnum"

5. Data Logger Formats

Parameter	SPEC	TAB	UMTS	LIST	VAL	Format	Unit	Range	Remarks
DataSetType,	x	x	x	x	x	Enum		SPEC, TAB, LIST, VAL, UTAB	
StoreMode,	x	x	x	x	x	Enum		MAN, C_FIRST, C_ALL, AUTO_N, AUTO_S, AUTO_A	
Date,	x	x	x	x	x	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	
Time /CR	x	x	x	x	x	hh:mm:ss		h: 00 to 23, m: 00 to 59, s: 00 to 59	Time of first value for LIST
GPS Flag	x	x	x	x	x	Enum		NO, ACTUAL, FROZEN, NORMAL, DIFF	not active in V1.5.X (NO)
GPS Latitude	x	x	x	x	x	double	°	-90.000 00 ° ... + 90.000 00 °	not active in V1.5.X (0.00000)
GPS Longitude /CR	x	x	x	x	x	double	°	- 180.000 00 ° ... +180.000 00 °	not active in V1.5.X (0.00000)
Fmin,	x	x				double	Hz		
Fmax,	x	x				double	Hz		
Fcent,			x	x	x	double	Hz		
RBW,	x	x		x	x	Float	Hz		
MR,	x	x	x	x	x	Float	"Unit"		
Unit,	x	x	x	x	x	Enum		dBm, dBV, dBmV, dBuV, dbV/m, dBmV/m, dBuV/m, dBA/m, V/m, A/m, W/m^2, W/cm^2, %, A	
Trace,	x	x	x	x	x	Enum		ACT, AVG, MAX, MAX_AVG,SAVG	
Detector,				x	x	Enum		RMS, PEAK	
AvgMethod	x	x	x			Enum		NUMBER,TIME	
TimeAvg	x	x	x			Enum		60,120,180,240,300,360,420,480,540,600,660,720,780,840,900,960,1020,1080,1140,1200,1260,1320, 1380,1440,1500,1560,1620,1680.1740,1800	
Navg,	x	x	x			Enum		4, 16, 32, 64	
Tavg,				x	x	Enum	s	2.4, 3.6, 6, 12, 18, 30, 60, 120, 180, 300, 360, 600, 900, 1200, 1800	
kNoiseCapFact		x	x	x	x	Enum		0,3,6,10,15,20	
NoiseCap		x	x	x	x	Enum		ON, OFF	
Threshold,	x	x	x		x	Float	"Unit"		
Yref,	x		x	x	x	Float	"Unit"		
Yrange,	x		x	x	x	Enum	dB	20, 40, 80, 100	
Tobs,			x	x	x	Enum	s	60, 120, 180, 300, 360, 600, 1200, 1800, 3000, 3600	
DispCond,		x				Enum		DETAIL, CONDENSED	
DispSplit,					x	Enum		NUM, GRAPH, BOTH	
UmtsDisplay,			x			Enum		TABLE, BARS, NUM, GRAPH, BOTH	
UmtsParam,			x			Enum		FAST, SENSITIVE	
Column,			x			Enum		CODE, VALUE, MAX_VALUE, CELL	
PwrCorrFact,			x			Float		default 1.0	
PwrCorrMode,			x			Enum		ON, OFF	
GraphContent,			x			Enum		VALUE, MAX_VALUE	
Axis,	x	x	x	x	x	Enum		X, Y, Z, RSS, SINGLE	SINGLE also when no antenna
StandardName /CR	x	x	x	x	x	String		max. 10 chars	ShortName
SeviceTableName,	x	x	x	x	x	String		max. 15 chars	ShortName
CellNameTable,			x			String		max. 15 chars	ShorttName
Comment /CR	x	x	x	x	x	String		max. 40 chars	
DeviceSerNo,	x	x	x	x	x	String		max. 15 chars	
DeviceCalDate,	x	x	x	x	x	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	
DeviceFWVersion,	x	x	x	x	x	String			
CableName,	x	x	x	x	x	String		max. 10 chars	ShortName
CableSerNo,	x	x	x	x	x	String		max. 15 chars	
CableCalDate,	x	x	x	x	x	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	
AntennaName,	x	x	x	x	x	String		max. 10 chars	ShortName
AntennaSerNo,	x	x	x	x	x	String		max. 15 chars	
AntennaCalDate /CR	x	x	x	x	x	dd.mm.yy		d: 01 to 31, m: 01 to 12, y: 01 to 99	

Parameter	SPEC	TAB	UMTS	LIST	VAL	Format	Unit	Range	Remarks
NoSAVG	x	x			x	LngInt		0 to 999 999	
AvgFLag,	x	x	x		x	Enum		AV, OK	
OvlFlag,	x	x	x		x	Enum		OV, OK, MAX_OV	
df,	x					double	Hz		frequency resolution
AutoRes,				x		double	s		time resolution
TotalValue,		x				Float	"Unit"		
TotalNoiseFlag,		x				Enum		UNCHECKED,LOW,OK	
OthersValue,		x				Float	"Unit"		
OtherNoiseFlag,		x				Enum		UNCHECKED,LOW,OK	
SingleValue					x	Float	"Unit"		Value
SingleNoiseFlag/CR					x	Enum		UNCHECKED,LOW,OK	
Total,			x			Float	"Unit"		
TotalMax,			x			Float	"Unit"		
Analog,			x			Float	"Unit"		
AnalogNoiseFlag,			x			Enum		UNCHECKED,LOW,OK	
AnalogMax,			x			Float	"Unit"		
AnalogMaxNoiseFlag,			x			Enum		UNCHECKED,LOW,OK	
n1/CR	x	x	x	x		ShortInt		>=0	Number of following lines
ListValue,				x		Float	"Unit"		Value, OVL-Fl. , AVG-Fl.
ListAvgFlag,				x		Enum		AV, OK	
ListOvlFlag ,				x		Enum		OV, OK	
ListNoiseFlag/CR				x		Enum		UNCHECKED,LOW,OK	
SpecValue /CR	x					Float	"Unit"		
TabValue,		x				Float	"Unit"		
TabNoiseFlag,		x				Enum		UNCHECKED,LOW,OK	
TabServiceName,		x				String		max. 15 chars	
TabFlow,		x				double	Hz		
TabFhigh /CR		x				double	Hz		
UMTSCode,			x			ShortInt		0 to 511	
UMTSValue,			x			Float	"Unit"		
UMTSMaxValue,			x			Float	"Unit"		
UMTSCell,			x			String		max . 15 chars	
UMTSSelected/CR			x			Enum		YES, NO	
n2/CR			x		x	DWORD		>=0	Number of following lines
HistoryTime,			x		x	Float	s		relative to the save time -> negative val
HistoryValue,			x		x	Float	"Unit"		
HistoryAvgFlag,			x		x	Enum		AV, OK	
HistoryOvFlag,			x		x	Enum		OV, OK	
HistoryNoiseFlag/CR					x	Enum		UNCHECKED,LOW,OK	

Note that some parameters are separated with /CR and not with a comma to organize the output line by line.
The last two lines may be repeated n1 and n2 times with the same format.

6. Setup Structure

tsSETUP_CHECK_DATA;

Parameter	Format		Range	Remarks
Name /CR	String			
ParaAutoChangeFlag	Enum		ePARA_OK,ePARA_CHANGE	
AntFlag,	Enum		ePARA_OK,ePARA_REPLACED,ePARA_MOVED	
AntIndex,	ShortInt		0 to 21	
AntName /CR	String		max. 10 chars	long name
NewAntIndex,	ShortInt		0 to 21	
NewAntName /CR	String		max. 10 chars	long name
CableFlag,	Enum		ePARA_OK,ePARA_REPLACED,ePARA_MOVED	
CableIndex,	ShortInt		0 to 21	
CableName /CR	String		max. 10 chars	long name
NewCableIndex,	ShortInt		0 to 21	
NewCableName /CR	String		max.10 chars	long name
StandardFlag,	Enum		ePARA_OK,ePARA_REPLACED,ePARA_MOVED	
StandardIndex,	ShortInt		0 to 20	
StandardName /CR	String		max. 35 chars	Long name
NewStandardIndex,	ShortInt		0 to 20	
NewStandardName /CR	String		max. 35 chars	Long name
ServiceFlag,	Enum		ePARA_OK,ePARA_REPLACED,ePARA_MOVED	
ServiceIndex,	ShortInt		0 to 20	
ServiceName /CR	String		max. 35 chars	Long name
NewServiceIndex,	ShortInt		0 to 20	
NewServiceName /CR	String		max. 35 chars	Long name
CellNameFlag,	Enum		ePARA_OK,ePARA_REPLACED,ePARA_MOVED	
CellNameIndex,	ShortInt		0 to 20	
CellName /CR	String		max. 35 chars	Long name
NewCellNameIndex,	ShortInt		0 to 20	
NewCellName;	String		max. 35 chars	Long name

tsSETUP_CHANGE_DATA;

Parameter	Format		Range	Remarks
SetupIndex,	ShortInt		1 to 20	
AntFlag,	Enum		ePARA_REPLACED, ePARA_NOT_SET	
AntIndex,	ShortInt		0 to 21	
CableFlag,	Enum		ePARA_REPLACED, ePARA_NOT_SET	
CableIndex,	ShortInt		0 to 21	
StandardFlag,	Enum		ePARA_REPLACED, ePARA_NOT_SET	
StandardIndex,	ShortInt		0 to 20	
ServiceFlag,	Enum		ePARA_REPLACED, ePARA_NOT_SET	
ServiceIndex,	ShortInt		0 to 20	
CellNameFlag,	Enum		ePARA_REPLACED, ePARA_NOT_SET	
CellNameIndex;	ShortInt		0 to 20	

7. Error codes

Code	Description
0	no error
401	remote command is not implemented in the remote module
402	invalid parameter
403	invalid count of parameters
404	invalid parameter range
405	last command is not completed
406	answer time between remote module and application module is too high
407	wrong quit message from application module
408	invalid or corrupt data
409	error while accessing the EEPROM
410	error while accessing hardware resources
411	command is not supported in this version of the application module
412	remote is not activated (please send "REMOTE ON;" first)
413	command is not supported in the selected mode
414	memory of data logger is full
415	defragmentation of flash file system is required
416	option code is invalid
417	incompatible version
418	Subindex full
419	Filecounter full
420	Data lost
421	CMD not accepted (during MR_SEARCH_AUTO not all cmds are accepted)