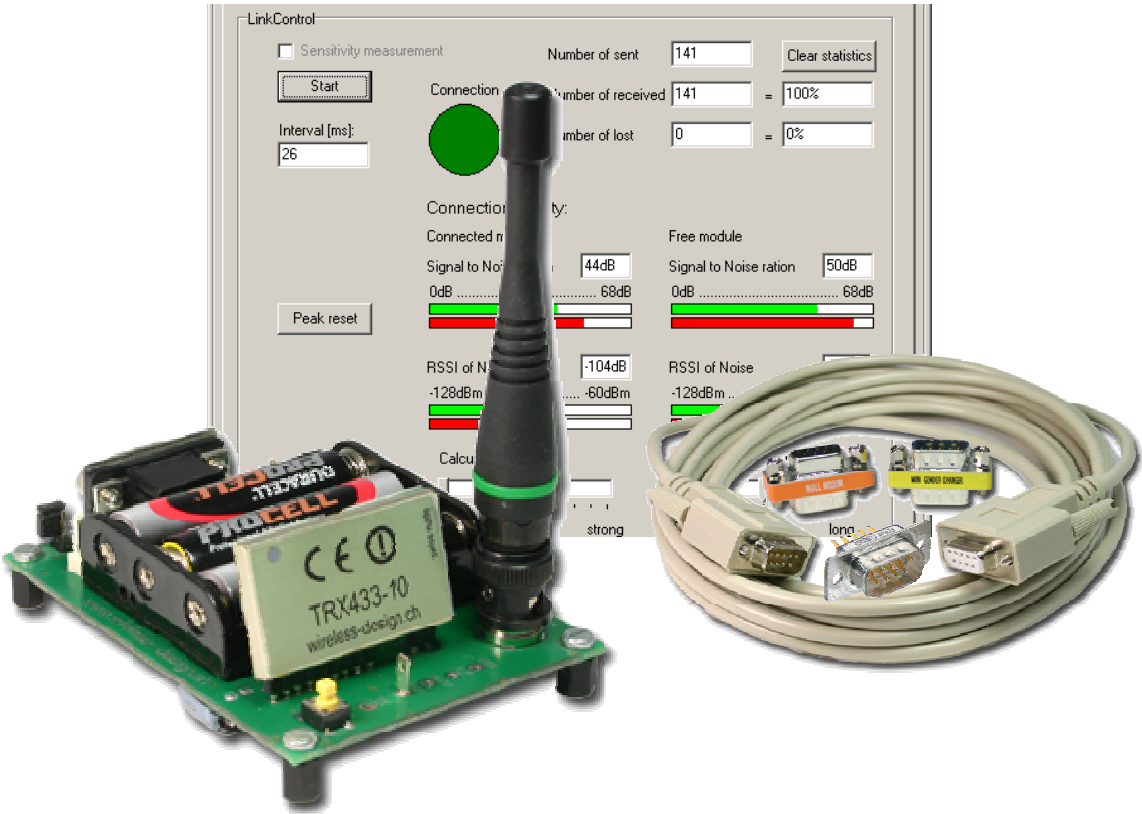


User Guide

Configuration tool for TRX433-10B/C TRX868-10B/C



Version list

Date	Version	Description
04.06.2009	1.1E	Handbook translated into English

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1. Installation and Deinstallation

There is no installation necessary for the TRX-configuration tool. You can simply copy the data file TRX-Conf.exe to the desired place. The EXE data file should be stored in a separate folder (don't copy it directly on the desktop) because the program writes its own files for saving the data.

When Windows is set to German, then all texts will be shown in German. With all other languages, texts will be shown in English.

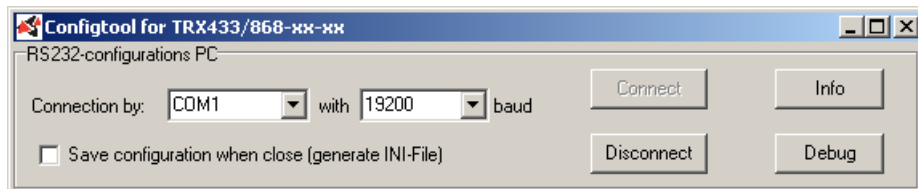
The deinstallation isn't necessary. The EXE files and all written data files can be deleted directly. (TRX-Config.exe, M1.txt...M9.txt, TRX_ComSetting.ini)

You can find the current version of the TRX-Config.exe under www.wireless-design.ch

2. Establish connection to TRX-Module

Connect the Evalkit3 with help of the provided cable to the COM port of your computer and start the program TRX-Config.exe. You can deal with the settings of the port on the top part of the window. When you select *save configuration when close*, the program writes an INI-File in which the settings of the port are saved. Therefore you don't have to deal with the settings over again.

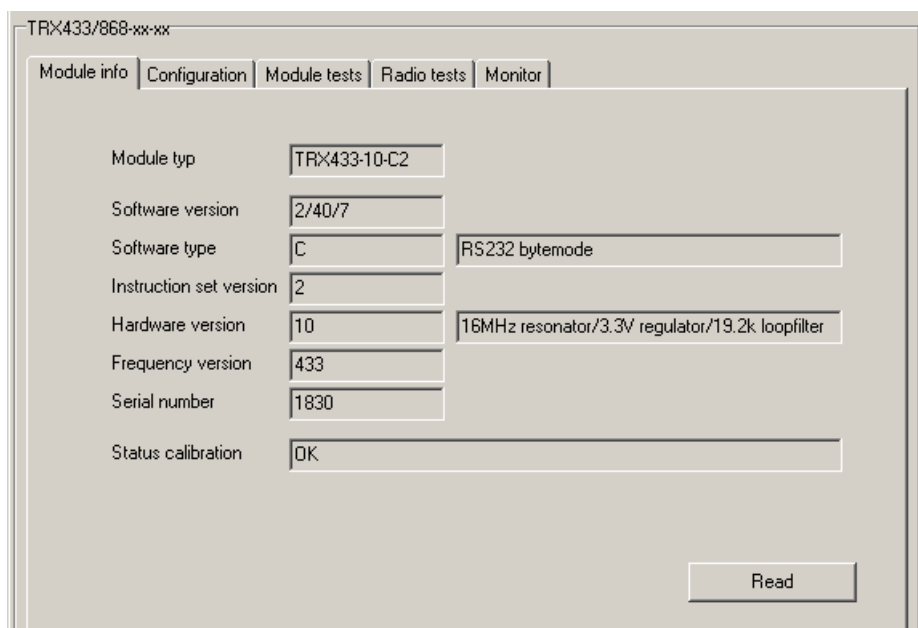
Example:



By clicking on the button *connect*, the connection to the TRXnnn-10 is established and the LED on the TRXnnn-10 glow. With the button *disconnect*, the connection can be cut and the supply of the module can be turned off.

3. Tab *Module Info*

The constant information of the connected module are shown in the tab *Module Info*. By clicking on the button *Read*, the data can be actualized.



Information If NOK is listed under *Status Calibration*, then the calibration values in EEPROM of the TRXnnn-10 are damaged and the module has to be sent back to the manufacturer for a recalibration.

4. Tab Configuration

When you establish a connection to TRXnnn-10 or when you click on the button *Read* then the configurations of TRXnnn-10 will be shown in the tab *Configuration*. The pictured parameter corresponds to the current configuration in EEPROM of the TRXnnn-10.

The configuration can be modified optionally and sent to the TRXnnn-10 by pressing the button *Configure*. If *Data to EEPROM* is selected then the sent configurations are stored in EEPROM of the TRXnnn-10. After that, those will be re-established every time the supply is enabled. Otherwise, the configurations are just temporary written in the RAM of the TRXnnn-10.

Caution, when the configuration was only written in the RAM and then you press *Read* then the EEPROM configuration will be shown again. That can possibly differ from the active configuration (in the RAM).

Example:

TRX433/868-xx-xx

Module info | **Configuration** | Module tests | Radio tests | Monitor

Receive frequency: K130 434.6750 MHz

Transmit frequency: K130 434.6750 MHz

Radio datarate: 38400 Baud

RS232 baudrate: 19200 Baud

Powerup mode: run after powerup, reset after wakeup, other pins normal

Power control: RF on, LED on

Auto recalibration: if dT >= 20°C

Data format: CRC16 off, handshake on, fast send on, with RSSI-TLG, with RSSI-Noise

☒ **Data to EEPROM**

Read

Configure

More information about the configurations parameter can be taken from the data sheet of the TRXnnn-10.

The current shown configurations can be saved in the computer. For that, select the desired disk space (M1...M9) and write a comment to the configuration in the info field. By clicking on *Save*, a text file (e.g. M1.txt) will be written which contains the configurations (for every disc space, a text file will be written)

Example:

Save configuration to PC

Memory location: [Dropdown]

Info: [Text Field]

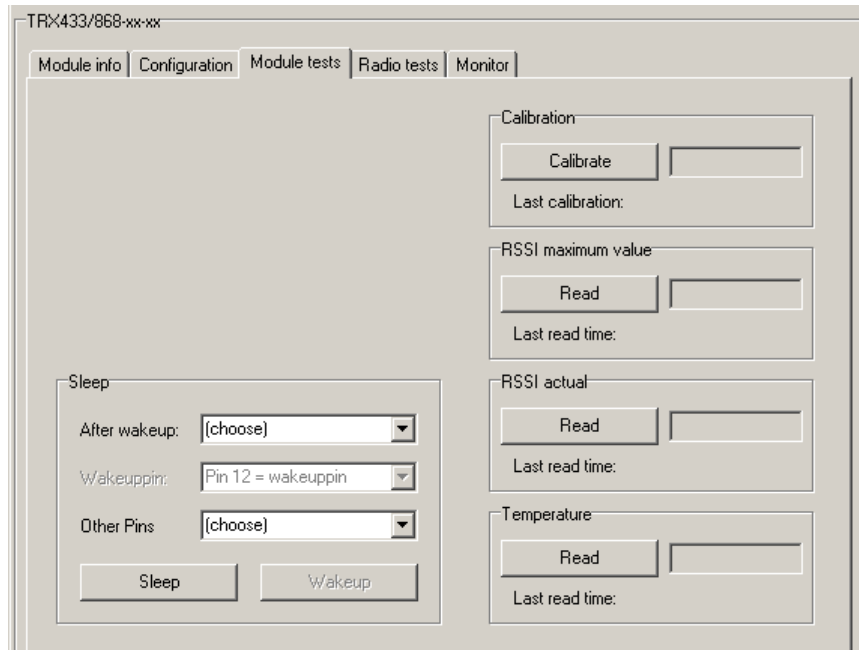
Save

Load

Is a disk space still free then (*empty*) is shown in the info filed. Is a disk space used then the comment is shown in the info field as well. The saved configuration can be overwritten by clicking on *Save* anytime. To load a configuration, the disk space in which the configuration is deposited has to be selected (info field is for checking purposes). When you click on *load* then the saved configuration will be loaded automatically in the tab *configuration*. Now that can be (as aforementioned) sent to the TRXnnn-10.

5. Tab *Module Tests*

In this tab, simple tests with the TRXnnn-10 can be completed.



5.1 Sleep

The energy-saving mode of the TRXnnn-10 can be tested under sleep. You can choose if you want to run a complete reset after sleep (configuration will be loaded from the EEPROM and a VCO-calibration will be accomplished) or if you want the program to simply continue. By the B-Version, you can choose with which pin the module will awake. If Pin 12 is chosen then the module can be awoken over the button *Wakeup*. With Pin 9, the module can only be awoken over the yellow button on the Evalkit3. Furthermore, it can be chosen if the remaining I/O-pins turn on Exit and 0V or not during the sleep.

5.2 Calibration

By clicking on the button *Calibrate*, the VCO-Calibration of the TRXnnn-10 can be started manually. In the Status field beneath the button, *started* will be shown and shortly afterwards *succeeded* or *not succeeded* will be shown. Furthermore, it can be chosen if the remaining I/O-pins turn on Exit and 0V during the sleep.

5.3 RSSI-maximal value

By clicking on the button *Read*, the maximal RSSI-level since the last readout will show in the field next to the press button. Besides, the time of the readout is evident underneath the button.

5.4 RSSI-active

By clicking on the button *Read*, the current RSSI-level will read out and shown in the field next to the press button. Besides, the time of the readout is evident underneath the button.

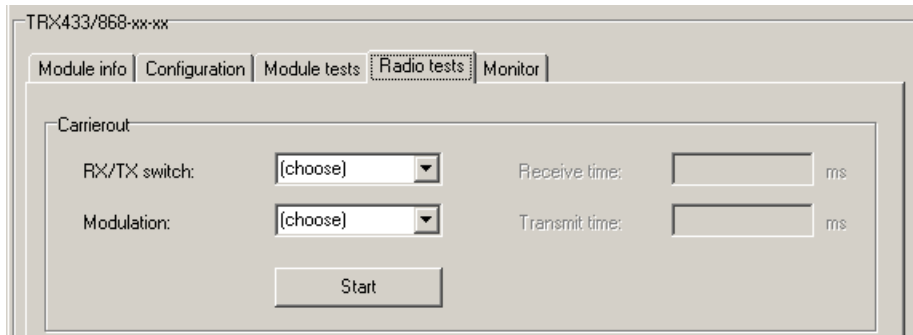
5.5 Temperature

By clicking on the button *Read*, the current temperature will be read out and shown in the field next to the press button. Besides, the time of the readout is evident underneath the button.

6. Tab *HF-Tests*

6.1 Send carrier

Under *Send Carrier*, a modulated or a not modulated carrier with the current configuration of the TRXnnn-10 can be output. With only TX, the carrier will be output continually. When RX and TX are selected, a time can be chosen in the fields *Receive time* and *Transmit time*. Thus, the carrier will be just output pulse by pulse, i.e. the module switches cyclical between transmitting mode and receiving mode. The output of the carrier can be started respectively stopped by pressing on the button.



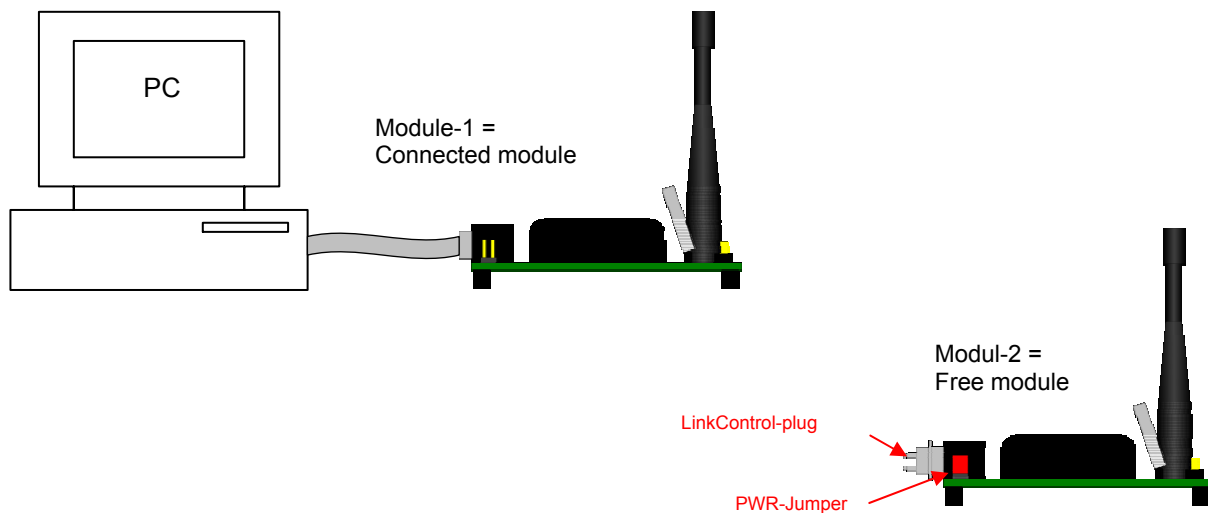
6.2 LinkControl

LinkControl is only available for the C-Version of the TRXnnn-10. With LinkControl, any radio range can be measured and the quality of the connection can be tested.

For LinkControl, you need both unites of Evalkit3 (incl. TRXnnn-10C), as well as the LinkControl plug (DSUB9 plug with two bridges).

1. Attach one of the two unites of Evalkit3 to the computer.
2. Establish a connection.
3. Adjust the parameter in the tab *Configuration*, for which the quality of the connection should be established. Caution, the RS232-baud rate of the computer and TRXnnn-10C have to match for the LinkControl! (Possibly cut connection and change computer-baud rate.)
4. Change to the tab HF-tests and start the Config-Wizard (bottom left corner). The Wizard directs you step by step through the configuration. (The Wizard asks you to connect both unites of Evalkit3 in turn to the computer therewith those can be configured by the computer). So that LinkControl works, the tool partly has to adjust the configurations and save the changes in the EEPROM.
5. When the Config-Wizard is finished then the control of the connection (LinkControl) can be started by clicking on the start button.
6. The control of the connection can be stopped with another click on this button.

In Config-Wizard, Module-1 identifies Evalkit3 incl. TRXnnn-10C which was attached when Wizard started and which was also attached during the test of the connection of the computer. Module-2 is the module which is furnished as a free module with the LinkControl plug during the test of connection. The Power-Jumper is located next to the DSUB9-plug on the Evalkit3 and switches the supply of the TRXnnn-10C.

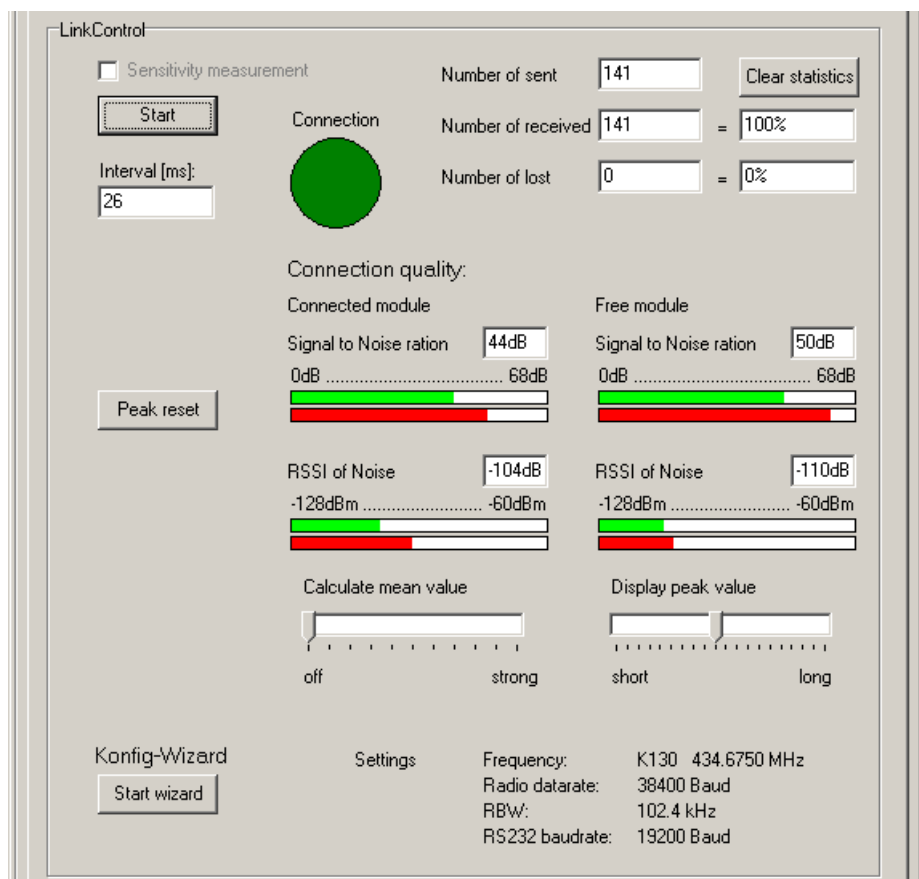


By LinkControl, the connected module sends a telegram to a free module. The free module sends the telegram back and adds the information about the reception quality to it. When the connected module receives this telegram, it adds information about the reception quality as well.

These reception qualities are displayed graphically with bars and as numerical values under *Reception Quality*.

With the two sliding controllers underneath the bars, the average connection of the received data and the duration of the Peak display (red bar) can be set up. By increasing of the average, the display becomes less nervous and can be read better. However, short impulses are hidden.

The statistic shows how many telegrams have been sent and how many of those have been returned respectively how many of those have been lost. With *Clear Statistic*, the statistic can be reset.



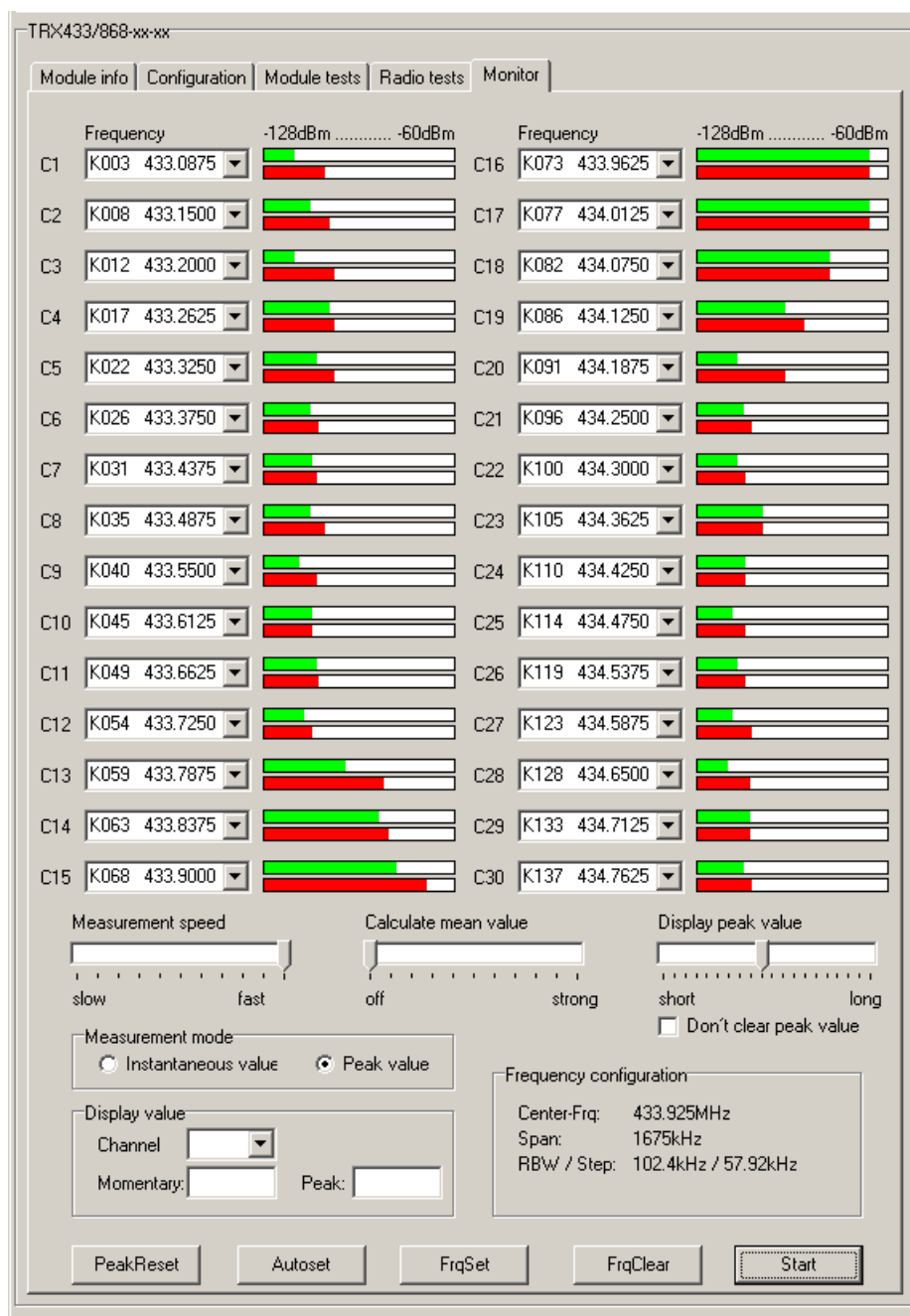
The configuration of the connected module is shown for information on the very bottom of the LinkControl-field.

RSSI – no signal condition is the field strength by the time no own telegram is transmitted. An increased value is a sign of a failure.

The noise-ratio is the difference between the RSSI – no signal condition and the field strength of the received telegram. The higher that value, the safer is the connection. For a good connection, that value should be at least 20dB.

7. Tab Monitor

In that tab, signals and disturbances in the surrounding area are displayed. The monitor can graph the signal strength of multiple frequencies (up to 30). Therefore, the occupation of the various channels are visible at a glance.



The channels which should be controlled can be selected manually. To do that, choose for every measuring field (C1...C30) the channel which is to be measured (K001...). Not every measuring field has to be used.

In order to make the setting up of the measuring field a little bit easier, there is a tab *Autoset* and *FrqSset*.

Autoset distributes the 30 measuring fields over the whole frequency range of the connected module. For a complete measurement, it should be $\text{step} \leq \text{RBW}$. When the tool shows **Step>RBW** in the field *Frequency settings*, then this condition isn't fulfilled. To correct this, you can increase the RF rate of the module (Tab *Configuration*) or reduce the span. For downsizing the span, you have to use the function *FrqSet*.

With *FrqSet*, you can declare the frequency of the average channel and of the range which has to be observed. The program automatically spreads the measuring fields over the span width in the distance of the bandwidth (RBW).

By clicking on the button *FrqClear*, all measuring fields will be reset.

To begin with a monitoring, click on *Start*. By clicking on the same button, you can stop the monitoring.

In the field *display value*, you can let the value of a measuring field to be displayed as numerical values. For that, you have to select the desired measuring field (respectively channel). Alternatively, you can click with the mouse on the marking (C1...C30) of the desired measuring field.

With the sliding controller *measurement speed*, the time lag of two measurements can be changed. This mainly has a bearing when the form of measuring is on Peak value.

Example: When the spectrum of an amplitude-modulated transmitter has to be recorded, there are always measurements during the modulation pause. To hide the modulation pause, the measurement mode should be syntonized to Peak and the measuring speed should be reduced. By *Peak value*, the tool of TRXnnn-10 lets the peak value establish over the measuring speed and displays it afterwards.

When the measuring mode is set to *Instantaneous value* then the measuring speed is exclusively the time lag between two measurements.

With the sliding controller *calculate mean value*, the averaging of the measuring value per channel can be set. With a strong averaging, the display is less nervous and the measured values can be read off better. However, short impulses are hidden.

The sliding controller *display peak value* indicates for how long a peak value is displayed. I.e. how long a very high measuring value with the red bar is shown before it will be rejected.

When *don't clear peak value* is selected, then the peak value can only be deleted manually. Thus long-term measurements are possible as well by which the max. impulse of every frequency can be established. By clicking the button *PeakReset*, all peak values will be reset manually.

8. Terms and abbreviations

RSSI	Received Signal Strength Indication (received field strength)
RBW	Receiver bandwidth
Span	Difference between minimal and maximal frequency
Step	distance in between two reading points

