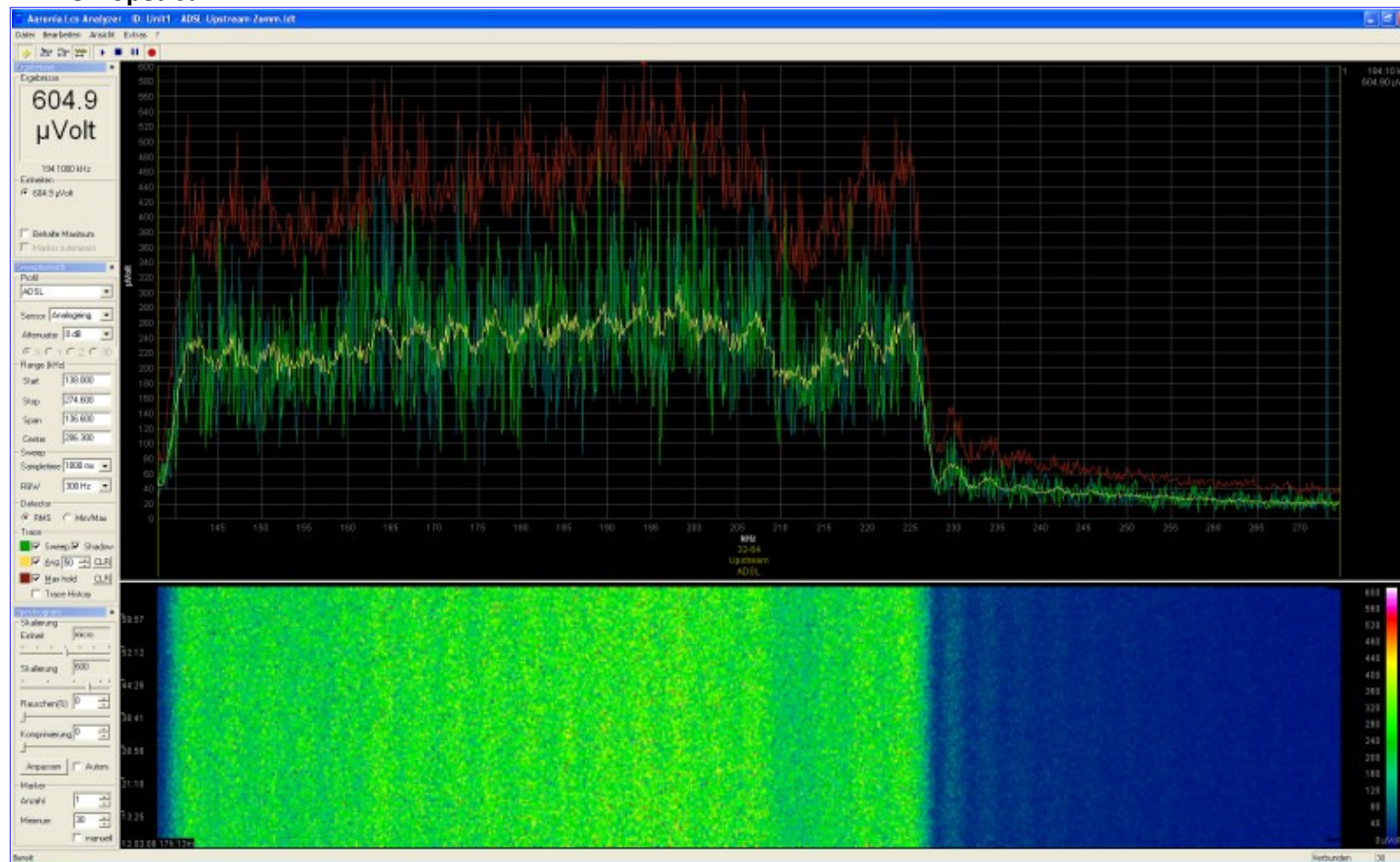## PROFESSIONAL spectrum analyzer software for all SPECTRAN EMC handheld measurement devices

A MUST-HAVE for any professional: The high-quality analysis software for SPECTRAN. Included for free (downloadable over the internet).
Also available as ENGLISH version on our DOWNLOAD area!

SCREENSHOTS:
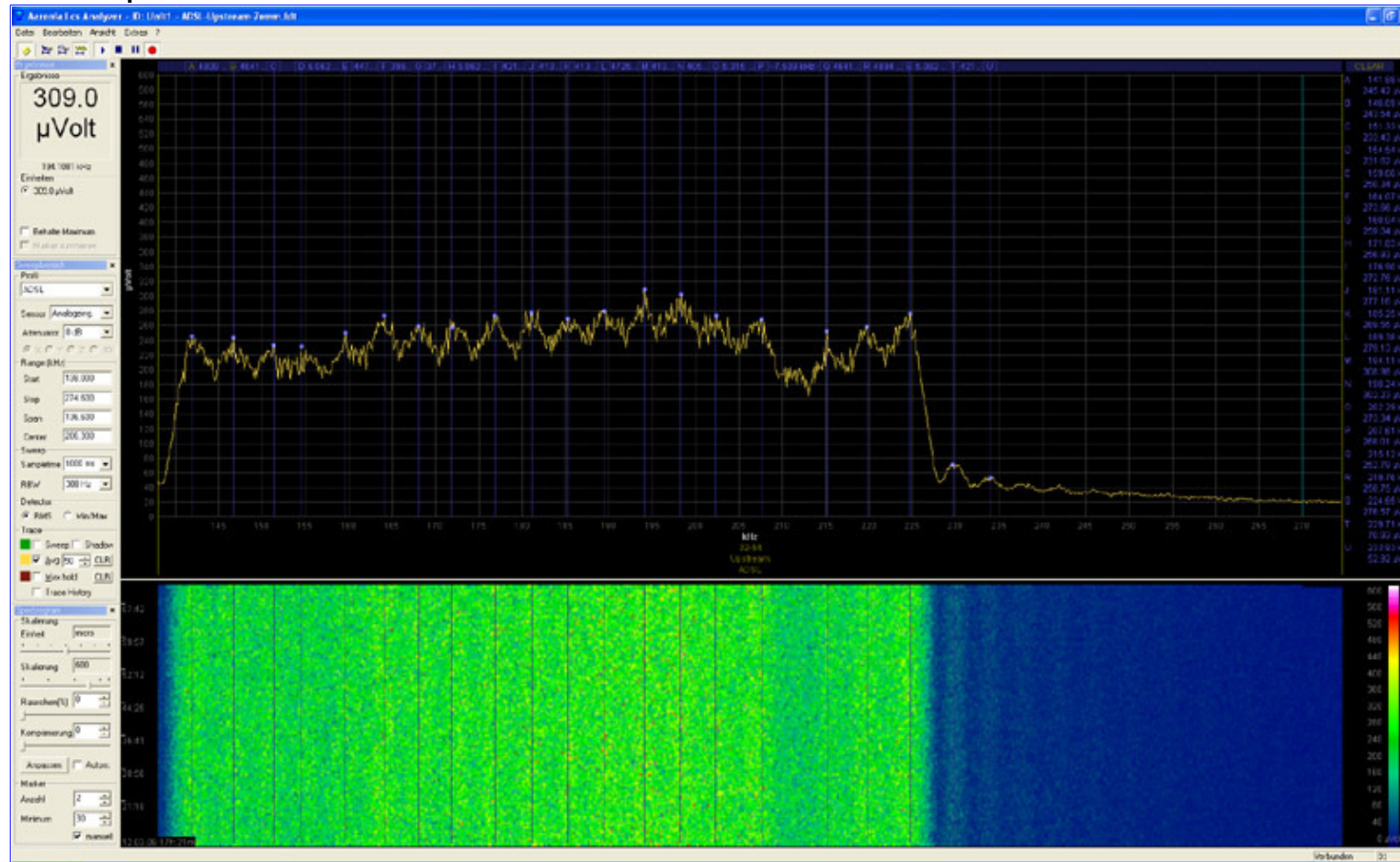
- **ADSL Upstream:**

[+] Zoom Picture

Does YOUR Spectrum-Analyzer offer THIS too?

Measured with our active Differentiel Probe and a SPECTRAN NF-50xx unit with DDC (option 005).
Super high resolution of a ADSL upstream. Showing Sweep, Shadow, AVG and HOLD at the same time.
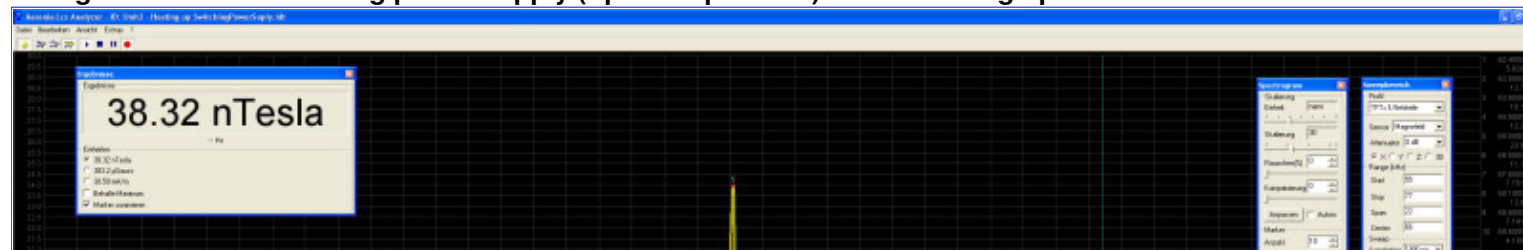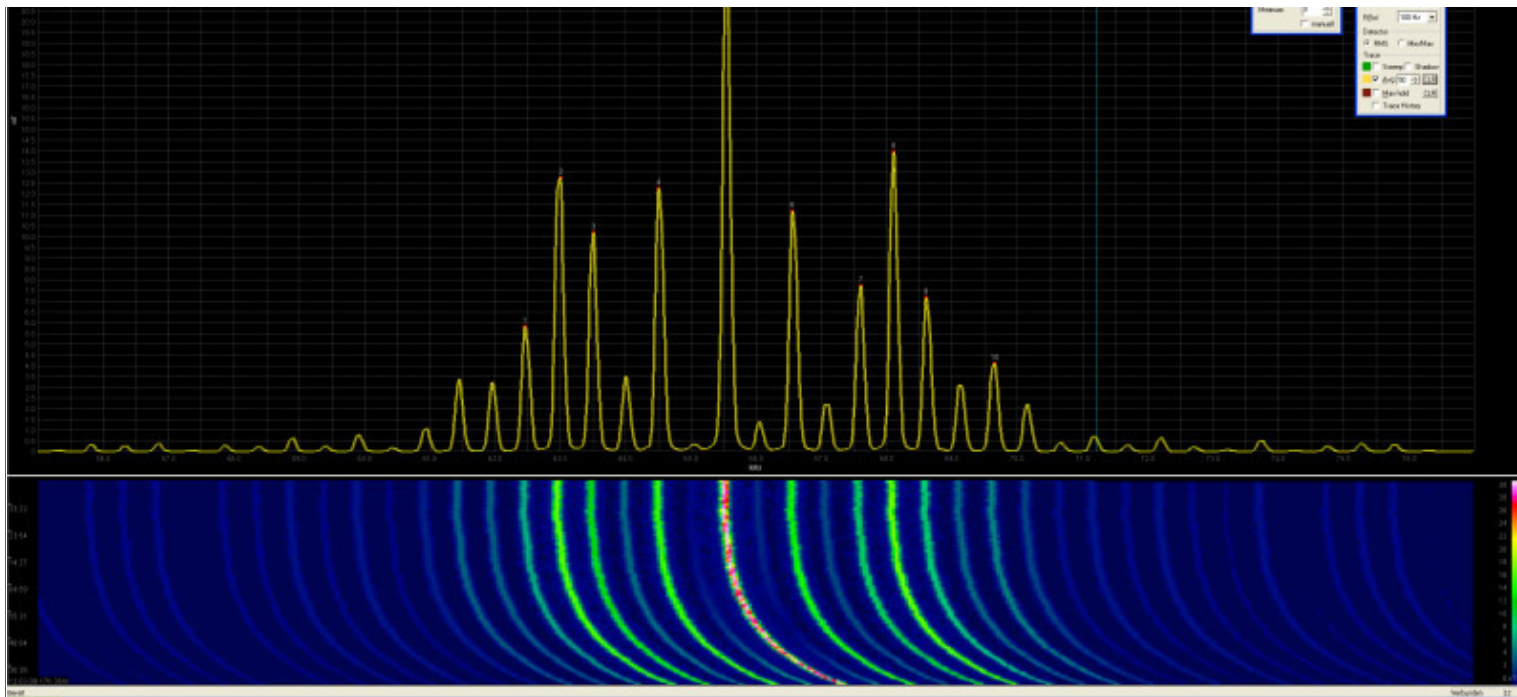
- **ADSL Upstream:**

- **ADSL Upstream:**

+ Zoom Picture

Does YOUR Spectrum-Analyzer offer THIS too?
Measured with our active Differentiel Probe and a SPECTRAN NF-50xx unit with DDC (option 005).
Super high resolution of a ADSL Upstream (AVG-Display). Free number of manual marker can be set.

- **Magnetic field of switching power supply (Spread Spectrum) while "heating up":**

+ Zoom Picture

Does YOUR Spectrum-Analyzer offer THIS too?
Measured with the internal sensor coil (standard) of a SPECTRAN NF-50xx unit with DDC (option 005).
Ultra high resolution of the "heating up" period of a switching power supply (AVG-Display). Quadratic mean of measurement results of the 10 auto-marker.
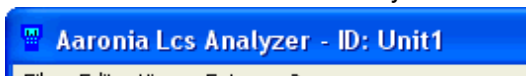

USER INSTRUCTIONS:

● After launching the SPECTRAN spectrum analyser software "LCS", among other things, the following window appears:
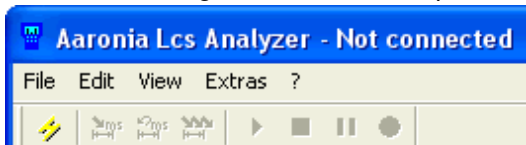
● Connect the SPECTRAN to your PC and turn it on. Now click on the "Ray" symbol to establish the connection to SPECTRAN:

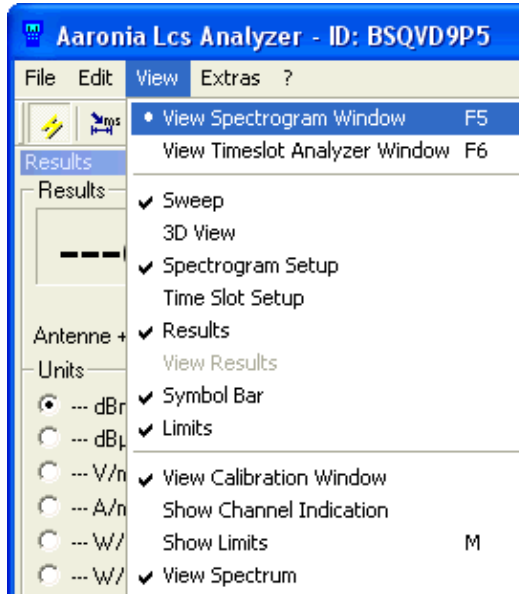● After correct connection the Symbol Bar will show the following:

- With the current software, the following functions can already be performed:

1.) HIGH RESOLUTION spectrum display with "Spectrogram" display and CHANNEL LIST display:

- Activate "View Spectrogram Window" in the "View" menu (or press the F5 key):

- After that, a complex Design of new Functions appears, as:
  (If the windows are placed "wrong", just start the Software with holded STRNG-Button.)
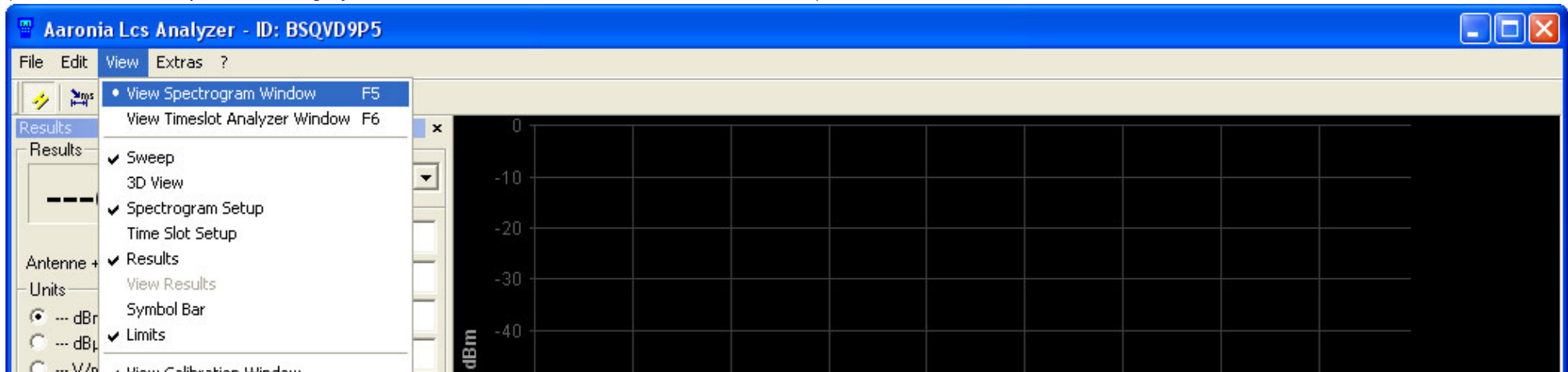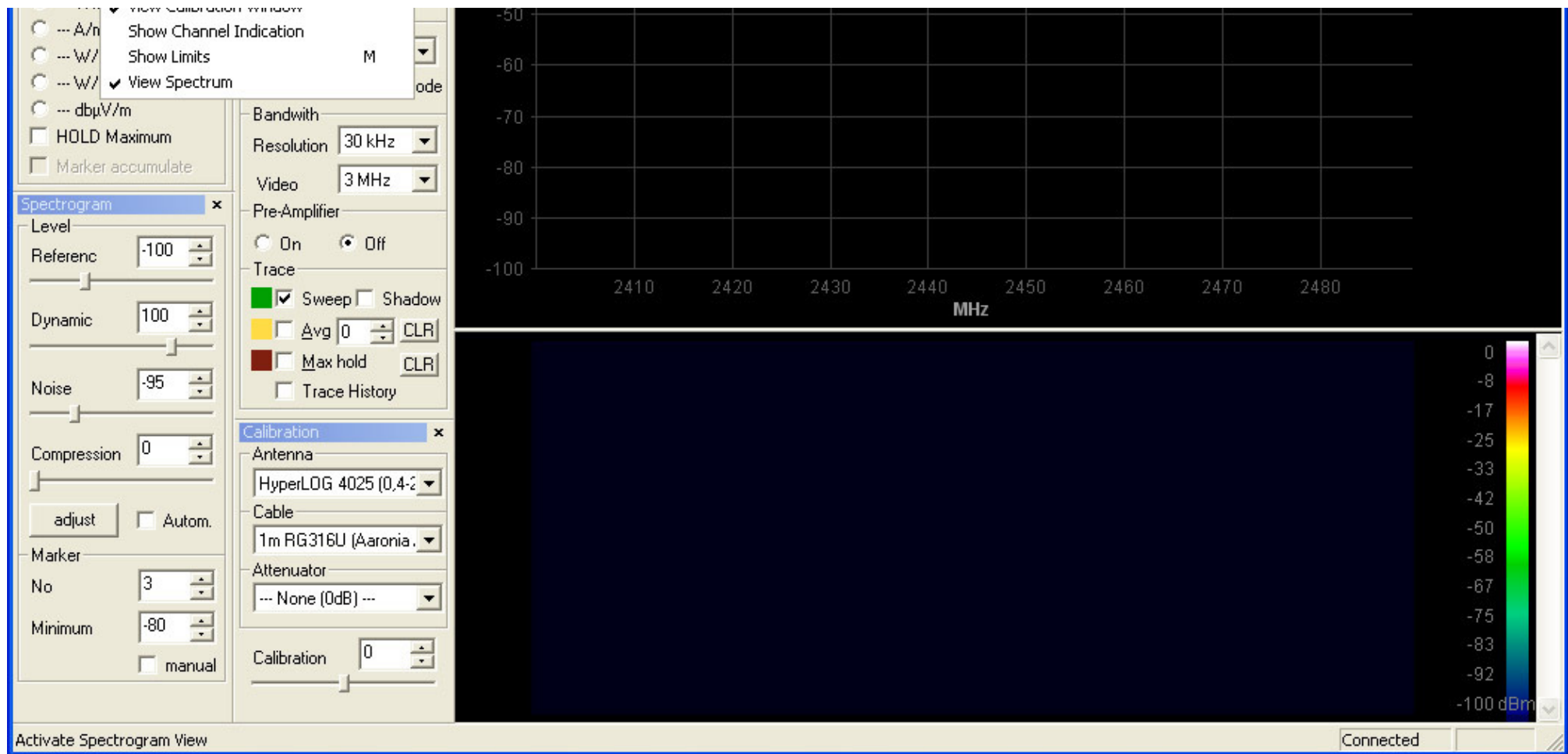
- **Using the left-hand menu "Scan range", you can now adjust all parameters and control SPECTRAN remotely! After doing all desired adjustments, just click on the "Upload-Button":**

- On the other hand, you can also download all parameters from SPECTRAN to your PC. For example, press "Hotkey 7" (GSM900) on your SPECTRAN. All relevant settings & parameters can now be downloaded to the PC using the "Download-Button":

- The easiest way to communicate is to activate"Always send Parameter immediately to unit". All settings & parameters will now directly be send to the SPECTRAN.
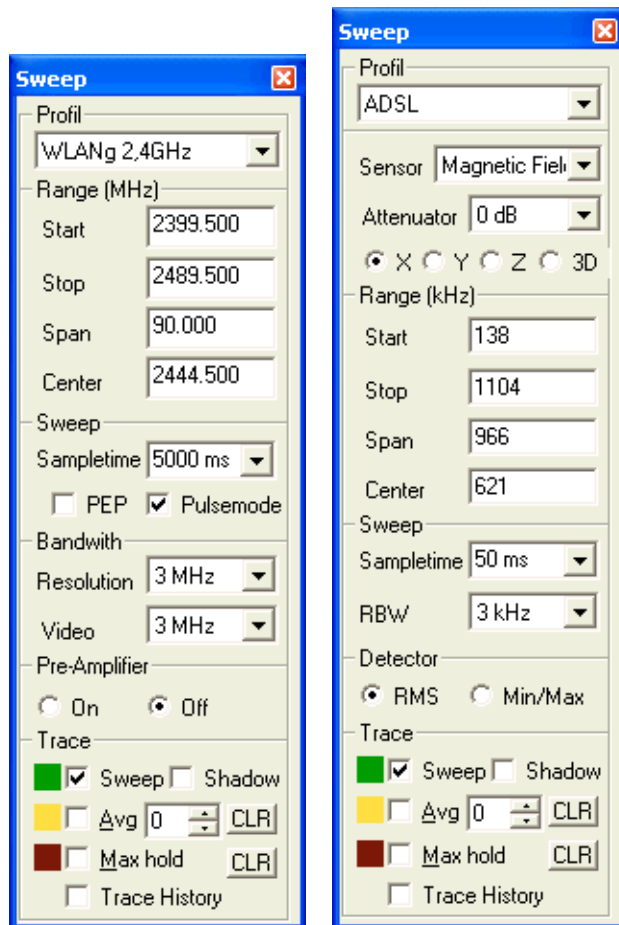
This Function is automatically set "on":

• Like with a video cassette recorder, you can start (PLAY-Button), stop (STOP-button), suspend (PAUSE-button) the sweep mode or start a record (Record-Function / red Dot):
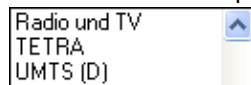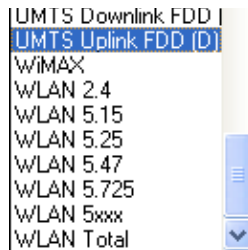
● In the "Sweep Area" window, you can adjust the most important parameters. You can also select from a list of PRESETS (profiles) for UMTS, DECT, WLan, mobile phones etc. etc.:

Profil-menu:
Select the desired profile (for example DECT)

UMTS Downlink FDD |
UMTS Uplink FDD (D)
WiMAX
WLAN 2.4
WLAN 5.15
WLAN 5.25
WLAN 5.47
WLAN 5.725
WLAN 5xxx
WLAN Total

Sensor = Choose Sensor of NF-SPECTRAN [Magnetic Field, E-Field, Stat.Magnet., Analoginput.]
Attenuator = Choose Attenuator of NF-SPECTRAN [Auto, 0dB, 10dB, 20dB, 30dB, 40dB]
X = Choose X-Axis of NF-Magnetic Field Sensor
Y = Choose Y-Axis of NF-Magnetic Field Sensor
Z = Choose Z-Axis of NF-Magnetic Field Sensor
3D = Activate Isotrop (3D) Measuring of NF-Magnetic Field Sensor

Range-menu (HF):
Start = START-Frequency [MHz]
Stop = STOP-Frequency [MHz)
Span = FREQUENCY span (Start to Stop) [MHz]
Center = CENTER-Frequency [MHz]

Range-menu (NF):
Start = START-Frequency [kHz]
Stop = STOP-Frequency [kHz)
Span = FREQUENCY span (Start to Stop) [kHz]
Center = CENTER-Frequency [kHz]

Sweep-menu: (HF)
Sampletime = SAMPLETIME (1mS to 10000mS) [mS]. A Sampletime lower than 100mS is only usable with the SPECTRANV4.
PEP = Peak Envelope Power Measuring (as long as saved in Profil), otherwise the Measurement will be in RMS.
Pulsmode = PULSMODE [ON/OFF]

Sweep-menu: (NF)
Sampletime = SAMPLETIME (50mS to 10000mS) [mS].
RBW = FilterBandwith (RBW).

Bandwith-menu:
Resolution = FilterBandwith (RBW)
Video = Videofilter (VBW)

Pre-Ampliefier:
Turn ON/OFF the optional Pre-Amplifier of the Spectran4

Detector-menu:
Choose between RMS and Min/M...

Choose between RMS and Min/Max

Trace-menu:

Sweep = Show regular Sweep

Shadow = Activate Sweepshadow

Avg = Activate Average. Aside: Choose number of Sweeps, wich should be used (1-100). Aside (CLR): Delete Avg Cache.

Max hold = Activate HOLD Function. Aside (CLR): Reset HOLD-View.

Trace History = Any areas in the Spectrogram could be viewed again by moving the mouse over the Spectrogram. By holding the left mouse button, any areas could be marked. (AVG or Max Hold).

- **In the "Spectrogram" window you can change any setting and scale of the Spectrum- and Spectrogram-View:**
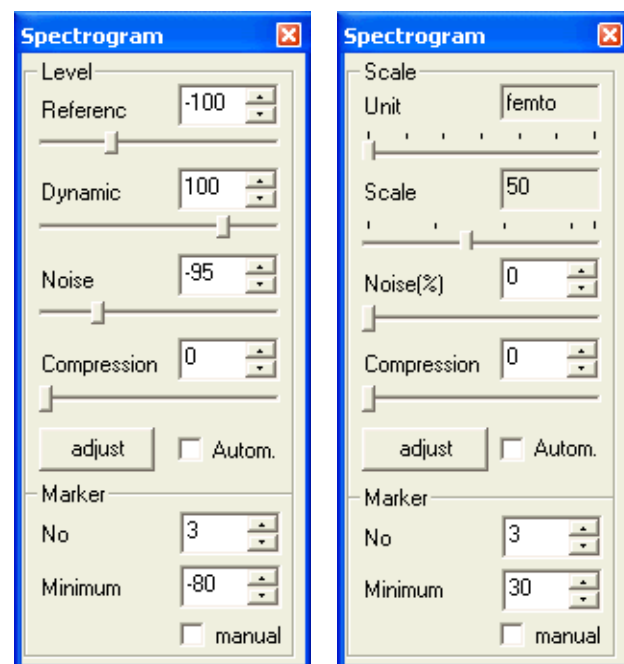
Level-menu (HF):

Reference = Adjust Reference level (lowest level, where anything should be displayed) [dBm]

Dynamic = Adjust Dynamic (dB over Reference level) [dB]

Noise = Adjust Noise level (All lower level will not be displayed) [dBm]

Compression = Continous compression of the Spectrogram from 1:1 to 1:40. Allows a quick overview of mounts of datas [whole number]

Scale-menu (NF):

Unit = Fix the unit, wich will be used for the Scale of the Spectrum [femto, pico, nano, micro, milli, 1:1, kilo]

Scale = Adjust Dynamic. Highest value, wich should be viewed [1 - 1000 bzw. LG10, LG100, LG1000]

Noise = Adjust Noise level (All lower level will NOT be displayed) [%]

Compression = Continous compression of the Spectrogram from 1:1 to 1:40. Allows a quick overview of mounts of datas [whole number]

Compression = Continues compression of the Spectrogram from 1:1 to 1:100. Allows a quick overview of months of datas [whole number]

Adjust = Allows a quick and optimal scale of the Spectrum- and Spectrogram-View per mouse click.
Autom. = Constant and ideal Scale of the Spectrum- and Spectrogram View.

Marker-menu (HF):
No. = Change number of Markers. Possible are 1-10 Marker.
Minimum = Level, from which on the marker will be showed [dBm]. Level-Resolution: 1dB.

Marker-menu (NF):
No = Change number of Markers. Possible are 1-10 Marker.
Minimum = PERCENTAGE (Relation between bottom edge and top edge of the screen), from which on the marker will be showed [%]. Resolution: 1%.

- **In the "Calibration" window, you can perform a highly precise calibration of the entire measurement subsystem:**
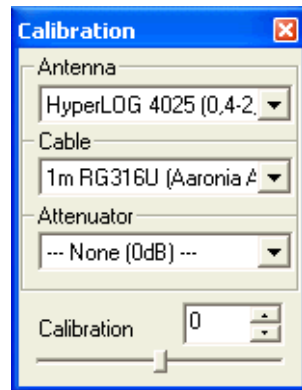
- **"Antenna"** = Here you can select **EXTREMELY PRECISE calibration data** of various antennas (exact to 10MHz!). The corresponding entries for our HyperLOG antennas are included.
  By selecting "None (0dBi)", no antenna is being chosen.
- **"Cable"** = Here, **EXTREMELY PRECISE calibration data** of a wide variety of cables can be selected. The matching entry for our included 1m RG316U cables is available as a preset.
  By selecting "None (0dB)", no cable is being chosen.
- **"Attenuator"** = Here you can select **EXTREMELY PRECISE calibration data** of a wide variety of attenuators. ATTENTION: This function is ONLY applicable to the HF-6080! The matching entry for our 20dB attenuator is already included.
  By selecting "None (0dB)", no attenuator is being chosen.
- **"Calibration"** (OFFEST) = **Here you can perform a MANUAL PRECISION CALIBRATION using a slider or direct numeric entry. A really nice function, as this way precision is adjustable in 0,1dB steps! Hence, you can, for example, "normalize" the readings of SPECTRAN as close as 0,1dB to the readings of foreign units. Another use of this function would be to do a HIGHLY EXACT calibration of your SPECTRAN including the used cables, in the desired frequency range, using an external signal generator!** As a precaution, the current setting is continuously being displayed in the spectrum window.

- **In the "Exposure limits" window, you can choose from a variety of complex authoritative exposure limits and perform a wide range of special displays and calculations:**
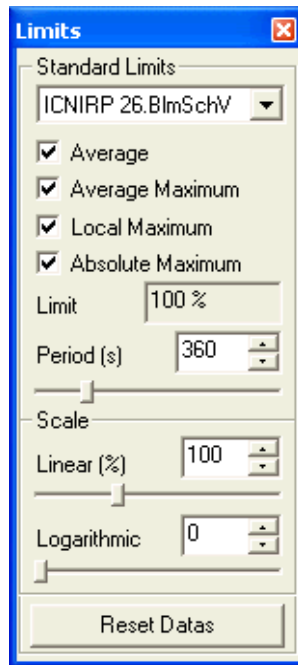
- **"Standard Limits"** = Here you can choose among different exposure limits. After you made your selection, the current reading is being displayed as a green bar with percentage. Upon exceeding the limit, the bar becomes red. Additionally, you can display up to 4 further bargraphs:
- **"Average"** = Displays the current average (over the exposure time).
- **"Average Maximum"** = Displays the highest average maximum (over the exposure time) that has ever occured.
- **"Local Maximum"** = Displays the current maximum over the exposure time.
- **"Absolute Maximum"** = Displays the highest reading that ever occured.
- **"Limit"** = Informational field. Displays the selected exposure limit and its unit.
- **"Period"** = Here you can adjust the timespan used for the functions "Average", "Average maximum" and "Local maximum" via slider or direct input.
- **"Linear"** = Here you can change the scaling of the exposure limit display. Very helpful with "overflowing" or "hardly changing" exposure limit readings.
- **"Logarithmic"** = Here you can change the "dynamics" of the exposure limit display. Especially helpful for getting "sudden peaks" or "very low rates of change" under control.
- **"Reset Datas"** = Resets all bargraphs. All exposure limit calculations are restarted.
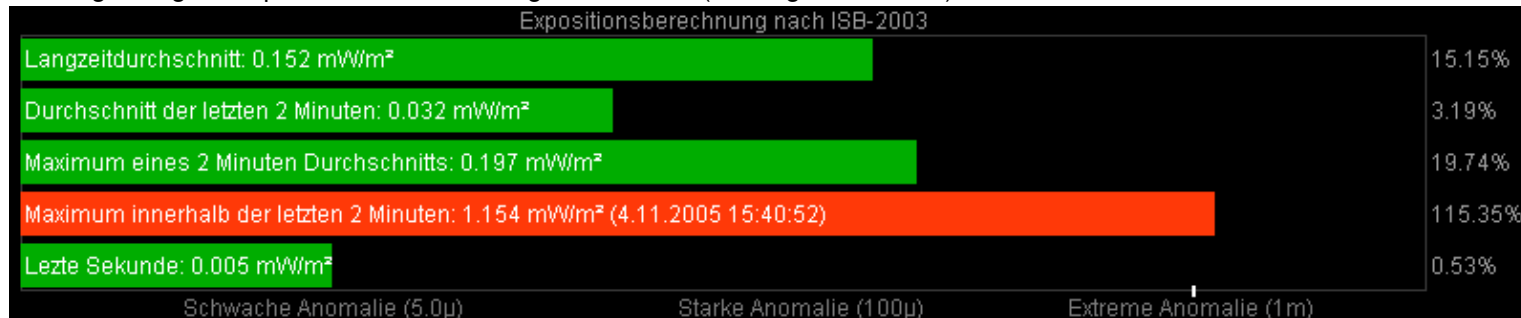
"LCS" offers infinite possibilities for calculating and displaying exposure limits. Here are two examples:

Authoritative exposure limit calculation according to ICNIRP (as percentages):

Building biological exposure limits according to ISB-2003 (readings in mW/m^2):

ADVANCED HINT: Press the right mouse button in the exposure limit window for loading CUSTOM exposure limits. These can be added to the file "limits.ini". Various examples of the complex functionality are already included, amongst others, a comparison (simultaneous display) of the old "Salzburg precautionary limit" and the ICNIRP limit. For the scripting master, everything is possible here ;-)

● **The "Results" window can be used to have the highest reading displayed, as well as for selecting the physical unit to use:**
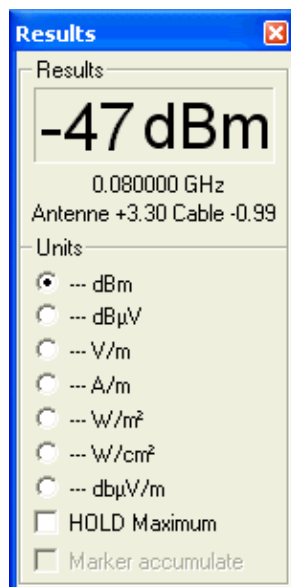
Results:

Shows the maximum reading and the corresponding frequency. The unit selected under "Units" is being used for display. The size of the main display (font size) is adjusted automatically. Furthermore, if there is enough space, the unit is also being displayed in the big main display.

Units:
SIMULTANEOUSLY shows the current reading in dBm, dBµV, V/m, A/m and W/m². In case of "small" values, an autorange feature (for example, **p**W/m²) is automatically activated.
You can also choose a physical unit here, which will be used automatically for the spectrum display as well as the "Results" display.
"HOLD Maximum" activates the Hold feature.
"Marker accumulate" simply shows an accumulation of all Markers.
ATTENTION: The selected unit also influences the spectrum display. As these values are not displayed logarithmically, it might be necessary to adjust dynamics so that the complete sweep becomes visible again.

- **EXAMPLES:**

  Well visible here: Optimal use of colour for displaying the level of a 1945 MHz signal modulated at different frequencies.
 PRO feature: Up to 10! markers are being created automatically (what more could you ask).
  By the way: the readings used to create the waterfall display can also be queried AT A LATER TIME. Just move your mouse to the desired spot in the diagram, and hold the CTRL key. While holding the CTRL key, you can also just continue moving your mouse. The values will get updated continuously.
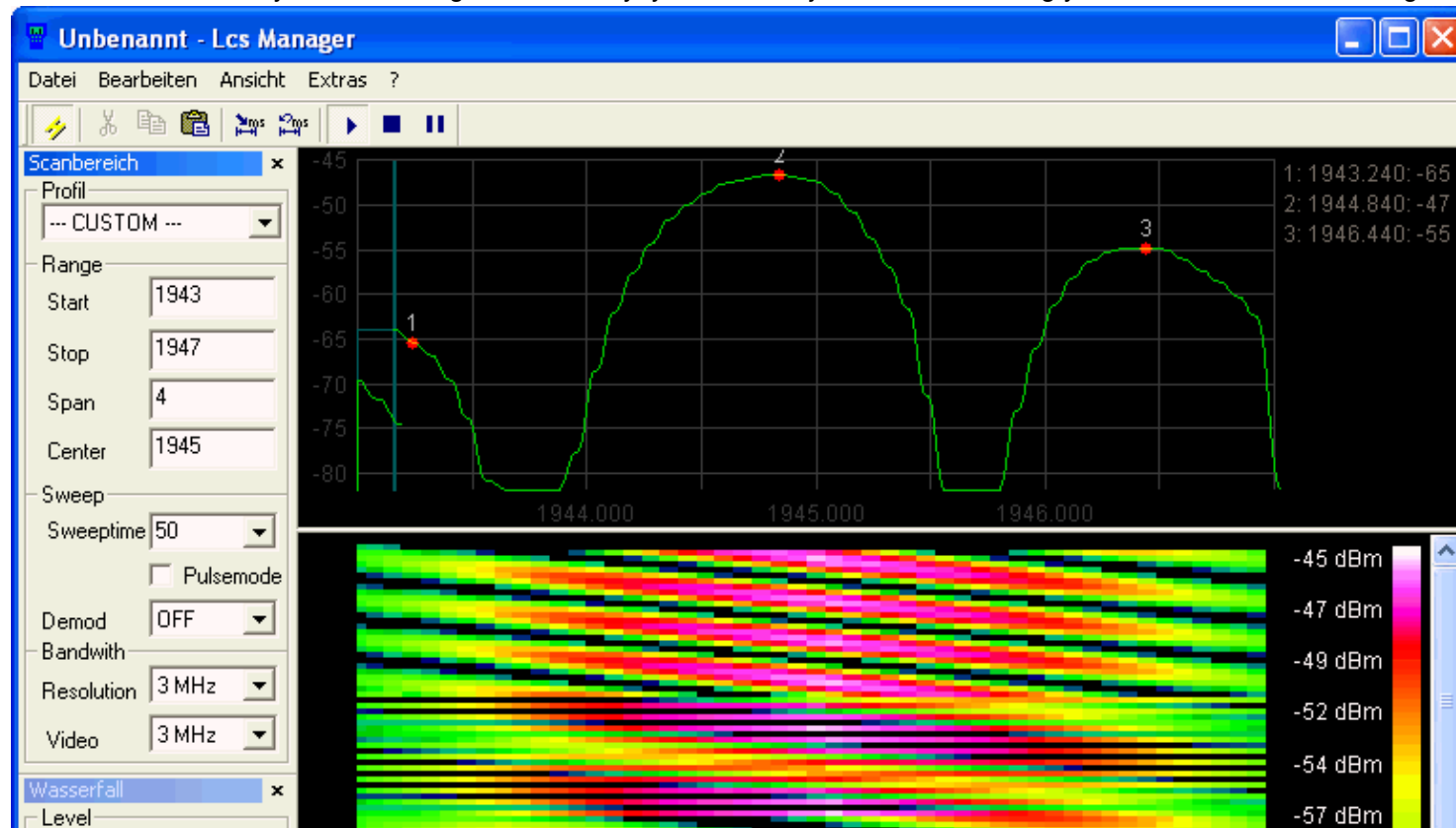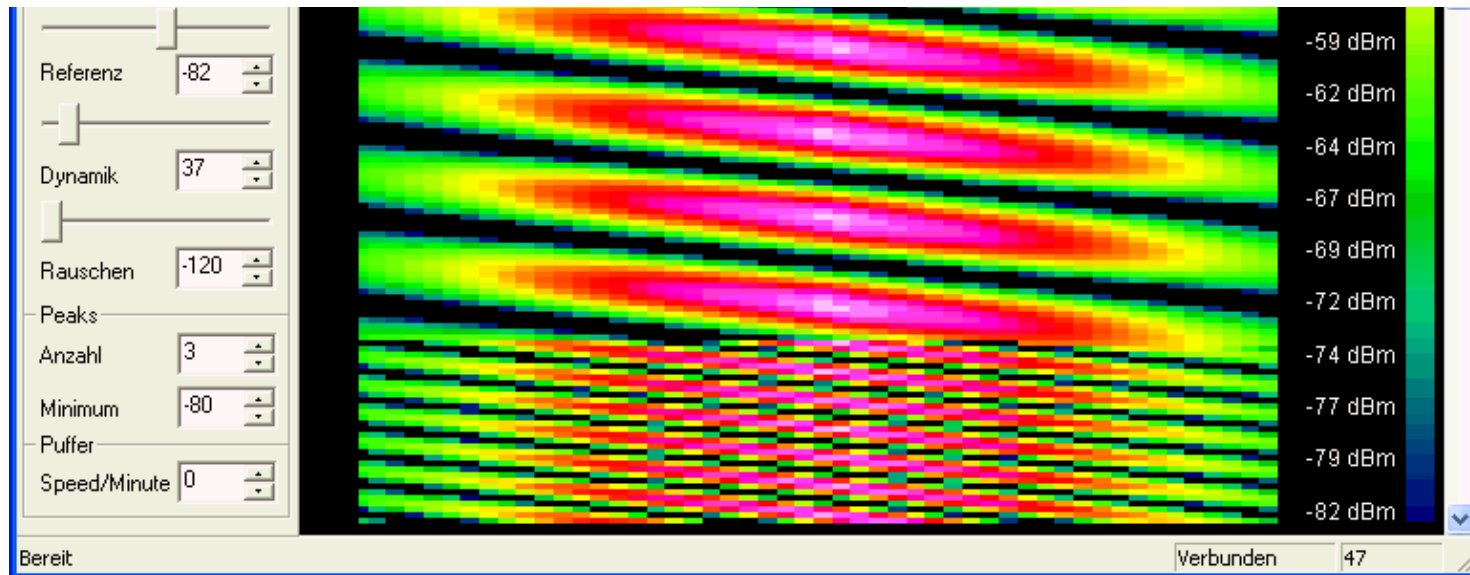
Nice graphical display of the influence of various filter types on a single UMTS signal (first 3MHz, then 1MHz, then 300kHz). Using the "Waterfall" display, this weak signal is still well visible in spite of backgrund noise:
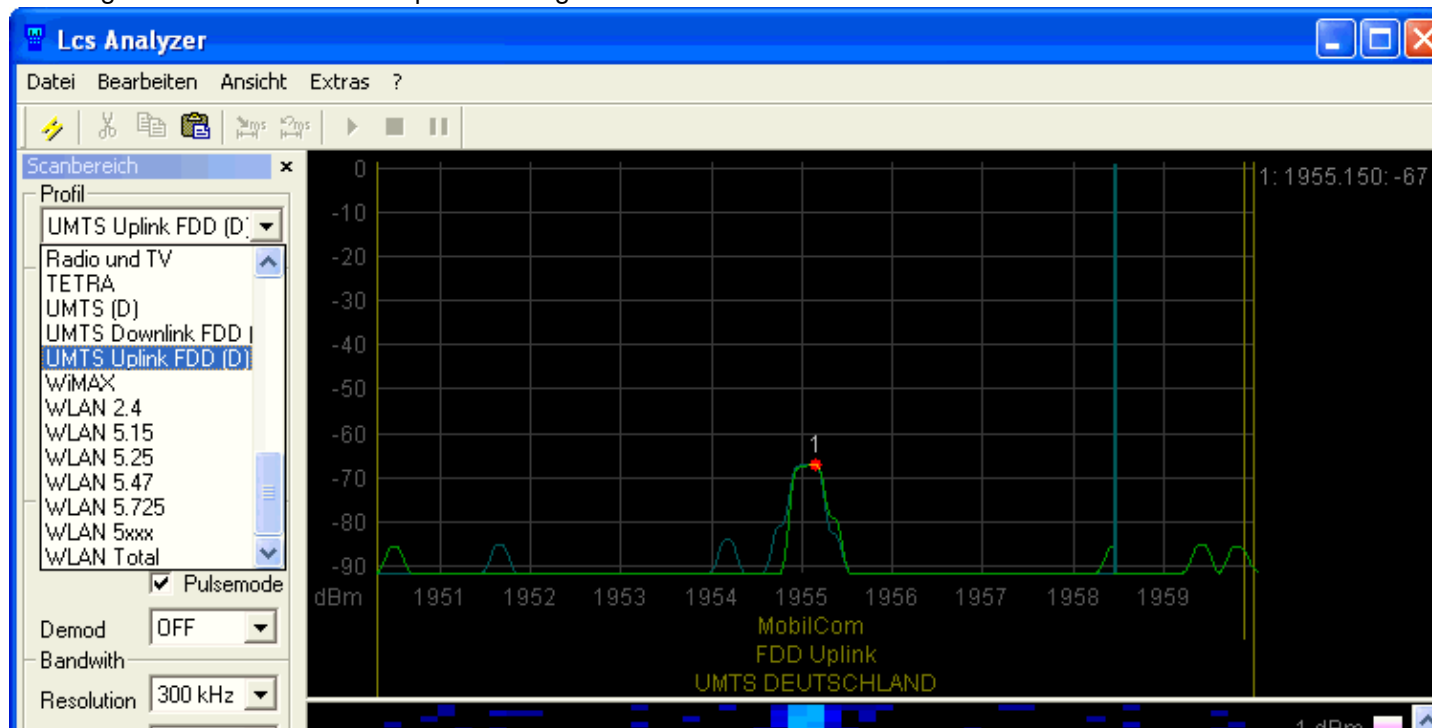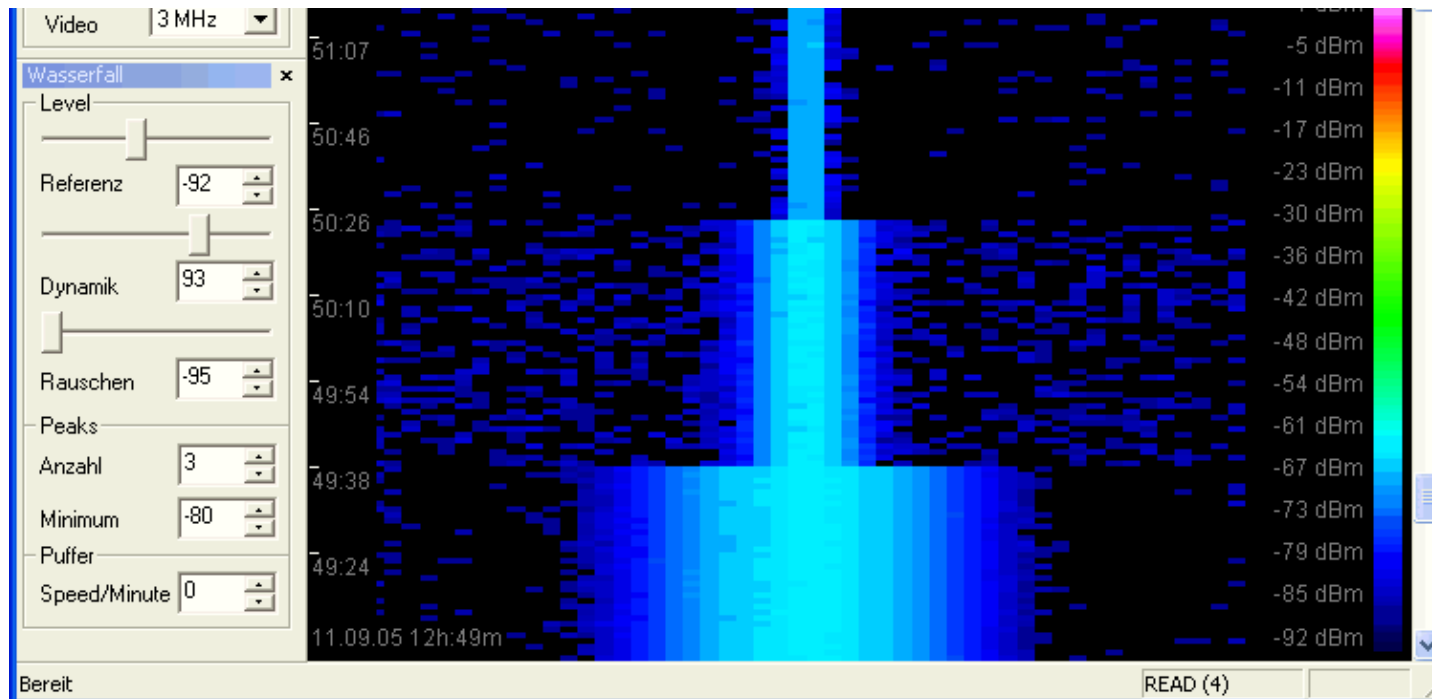
An amazing PROFESSIONAL feature is the display of channel grids! With this feature, arbitrary grids can be displayed and labelled in any desired way. Using this feature, you can, for instance, visualize the exact SERVICE PROVIDERS of transmission towers etc. in CLEAR TEXT, WITHOUT the need for looking them up in tedious tables. Even several hierarchical levels are possible: You could display an additional level "Uplink" and "Downlink" in addition to the "Providers" level.
The channel labels can be toggled in the "View" menu using the "Display channel labels" option.
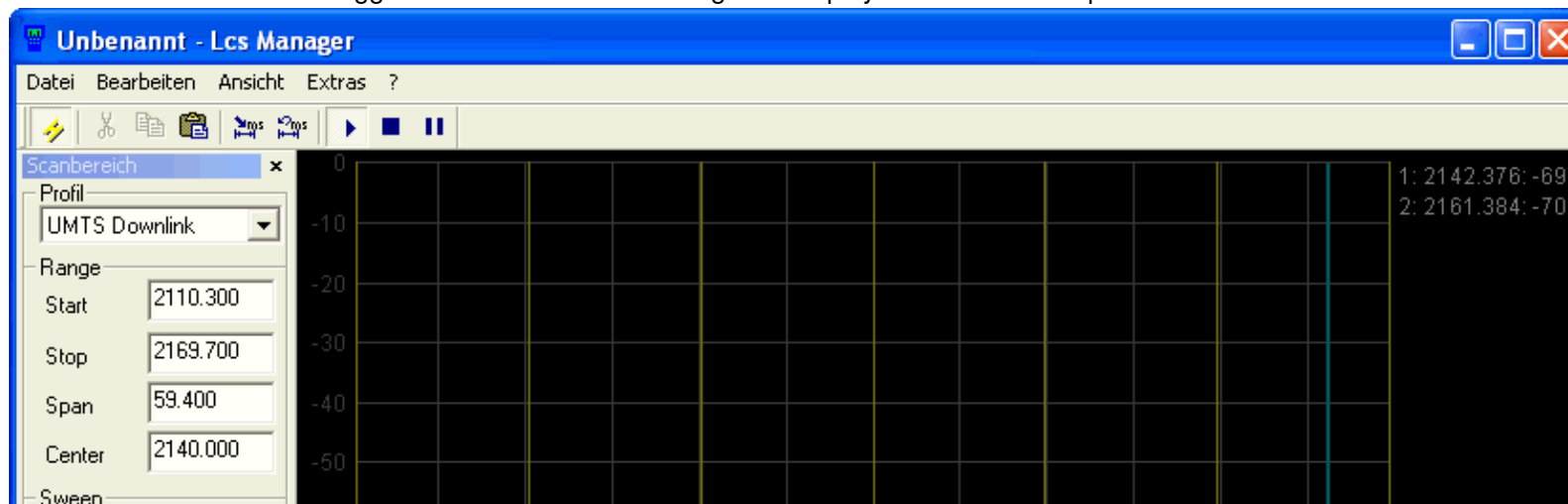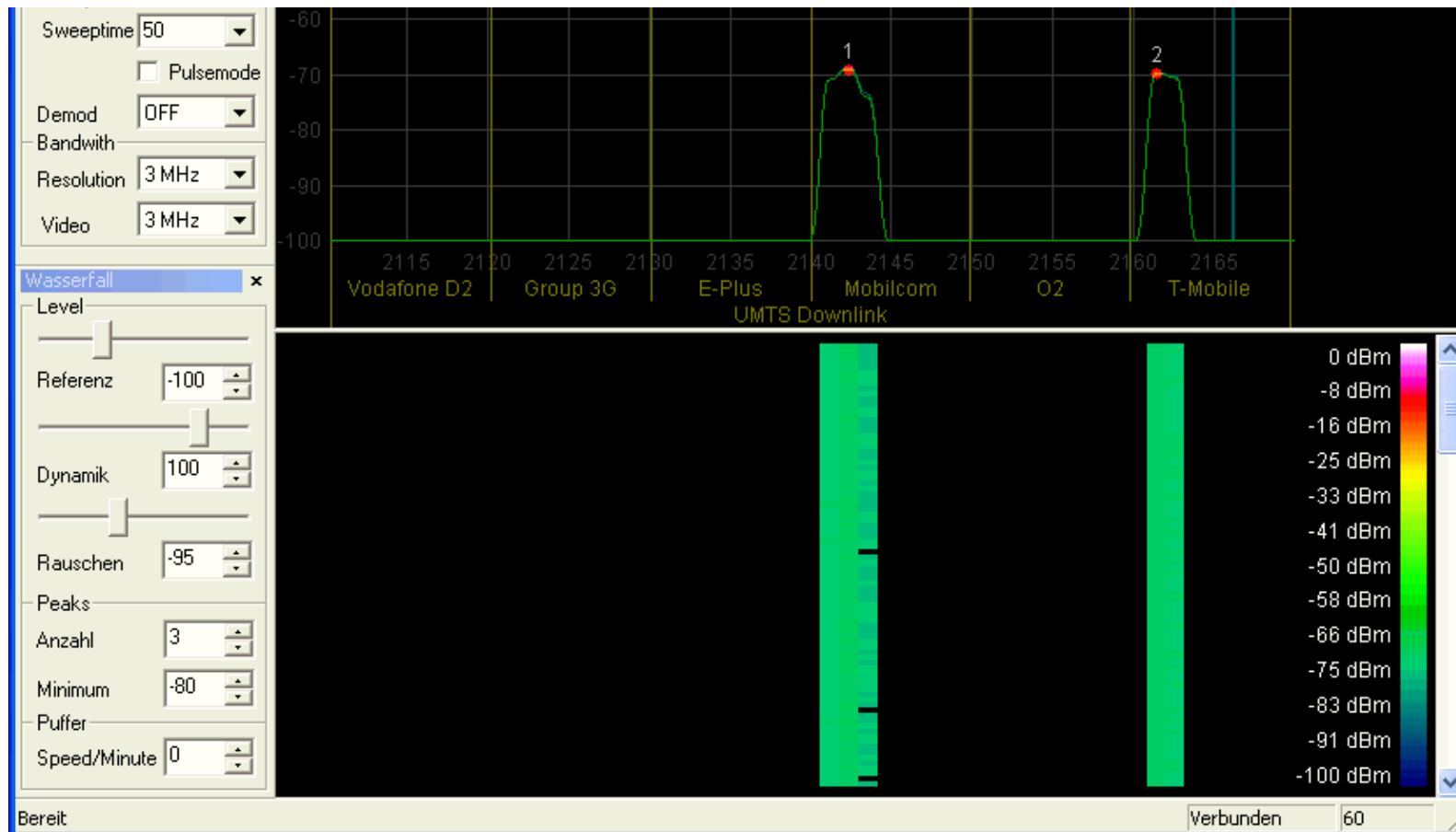
Want exposure limits ? No problem with LCS. Various ways of displaying a variety of exposure limits are at your disposal. Even a precise calibration up to 0,1dB is possible with LCS:
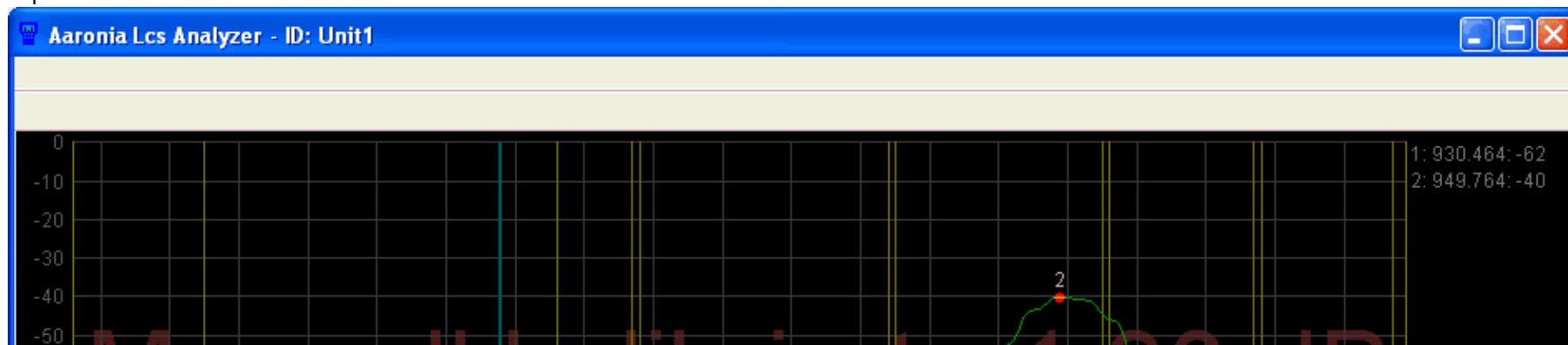
The intuitive zoom feature simplifies operation considerably. As shown, simply select the desired range with your mouse, and a new, full resolution sweep is initiated in the zoomed range. Simply AMAZING!
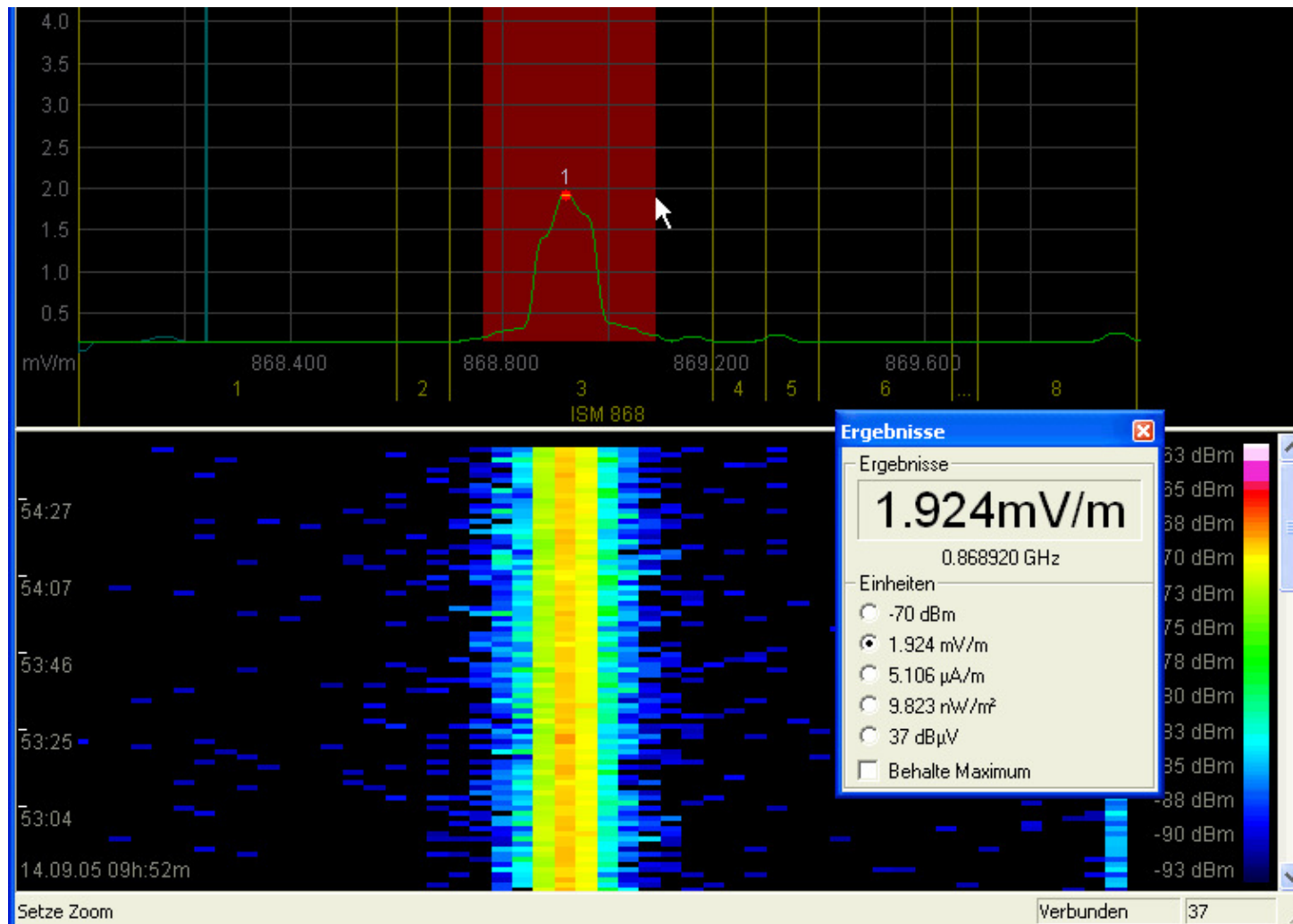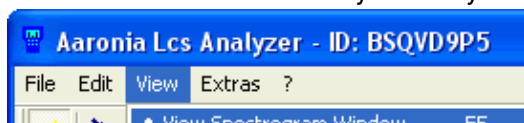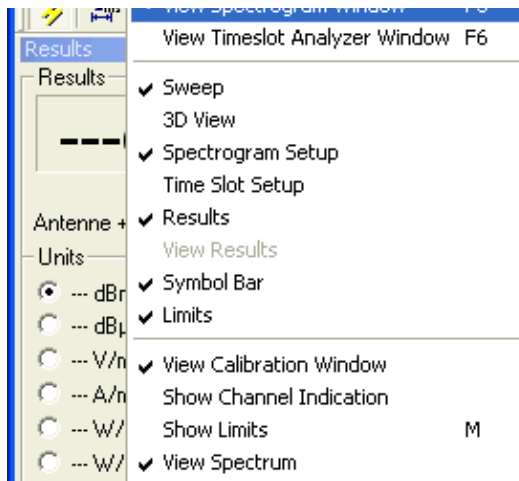
- **HINT:**

In the included file "scanprofile.ini", you can create CUSTOM profiles which then become available for instant selection in the spectrum analyser software. Various examples are already included.
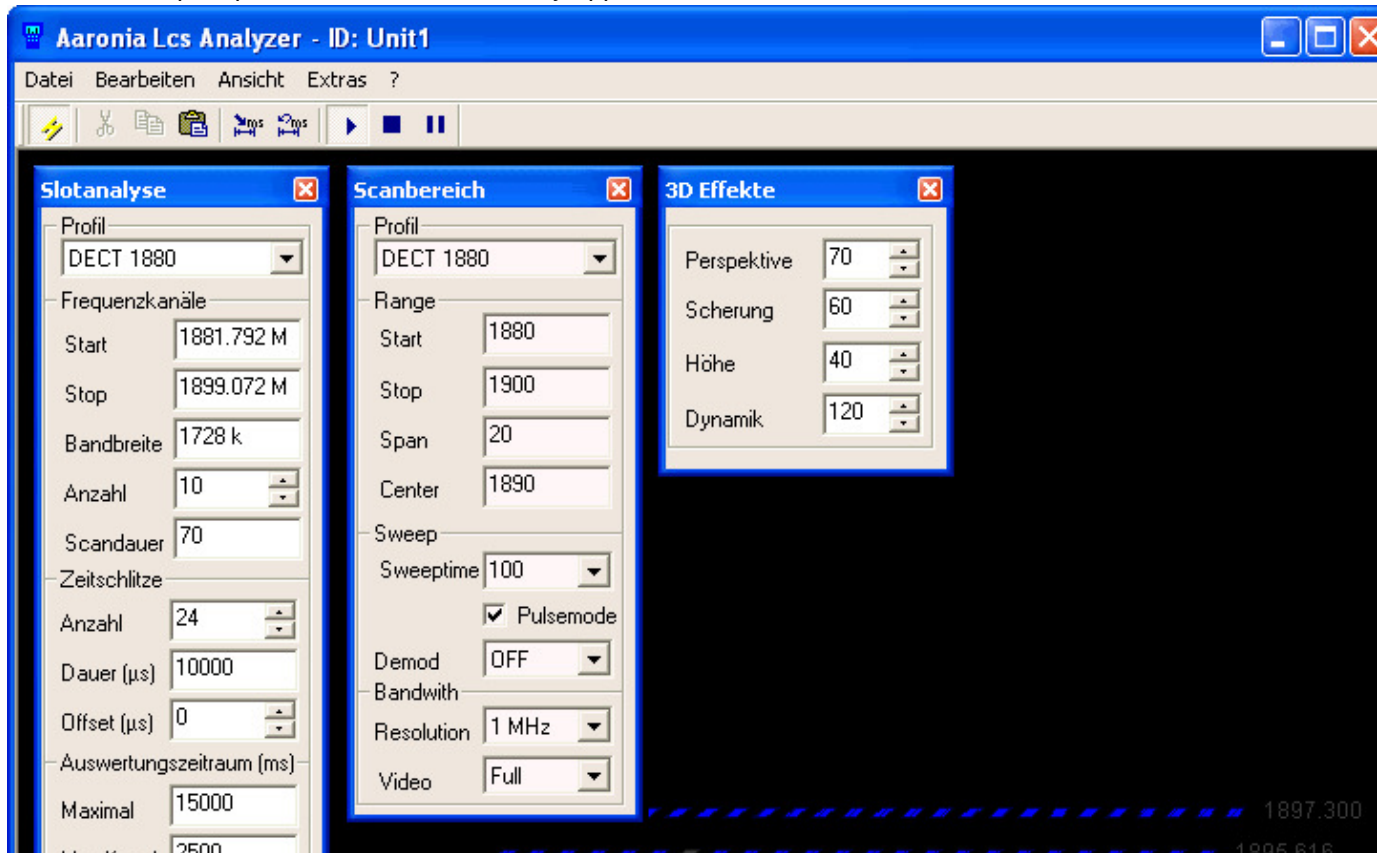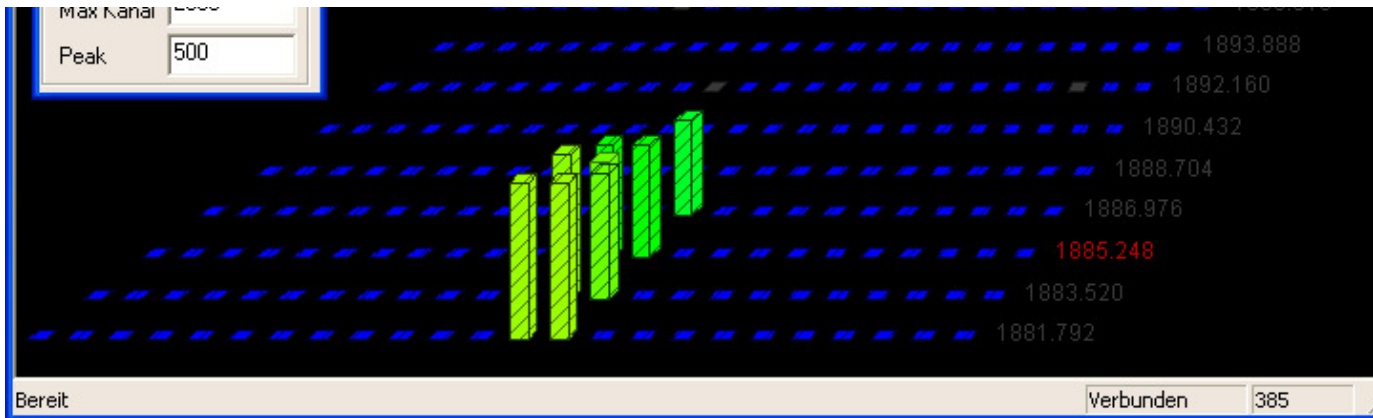
2.) High resolution Slot Analyser:

- Activate the "Timeslot analysis" entry in the "View" menu (or press the F6 key):

- Now, a complex panel with new functionality appears as follows:

This is a true playground for the professional technician: This elaborate and complex level diagram allows, for instance, display of utilization of the individual channels including TIME SLOTS graphically. Here SPECTRAN truly shows off its capabilities! There are only a few very expensive high-end units which even offer this kind of functionality. Have fun building your own ;-)
Nicely visible in this example: DECT signals are, contrary to popular belief, a very complex THREE DIMENSIONAL signal and change position in TIME!
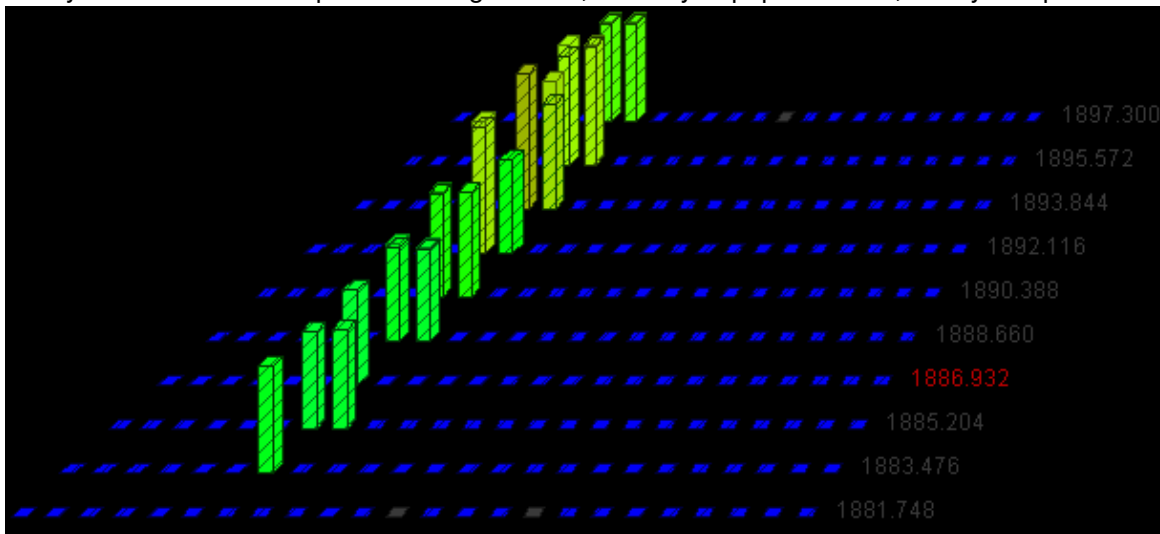
Nice to see: The signal of the DECT phone hase a position "in time"!
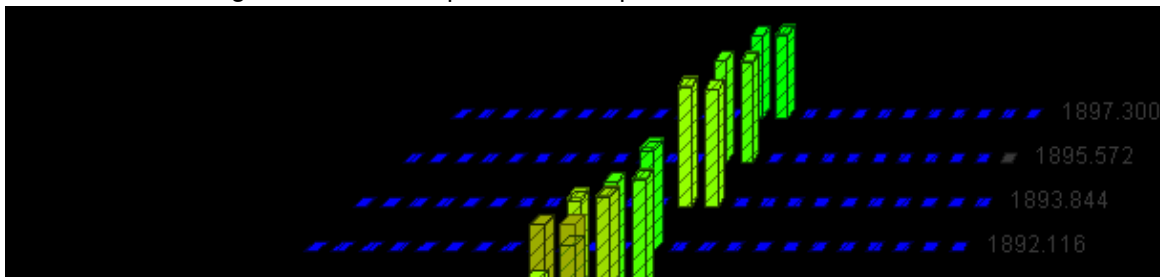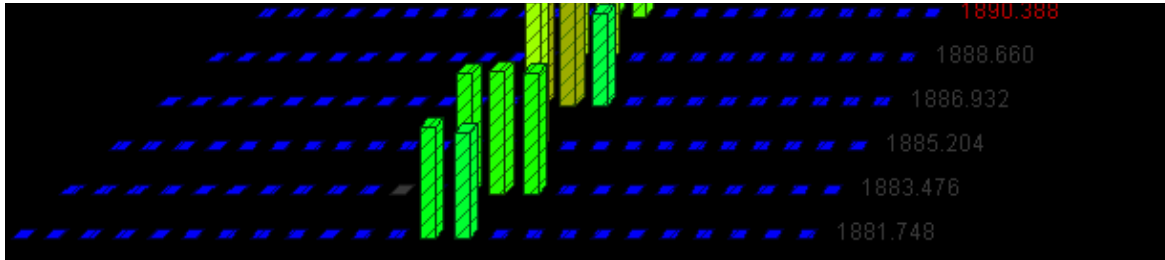
The new "position" of the DECT phone after the channelchange.
Does your spectrumanalyzer offer THIS too?

HINT:
In the included file "scanprofile.ini", you can create CUSTOM profiles which then become available for instant selection in the spectrum analyser software. Various examples are already included.

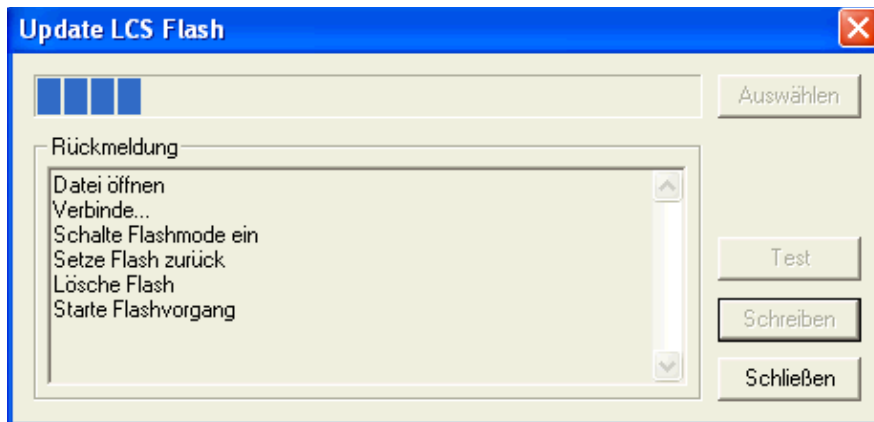### 3.) Convenient firmware updates (software updates) for your SPECTRAN unit:

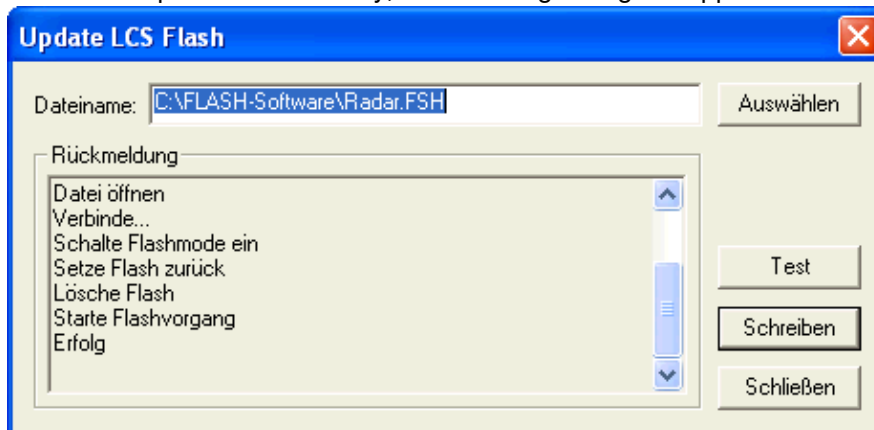• Activate the "Firmware update" entry in the "Extras" menu:
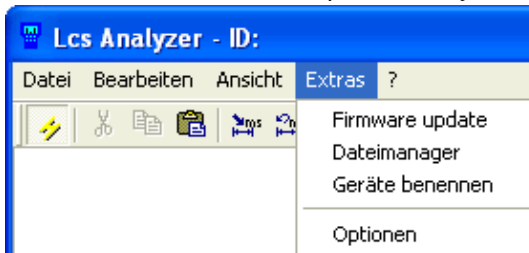
• Next, a new window appears:
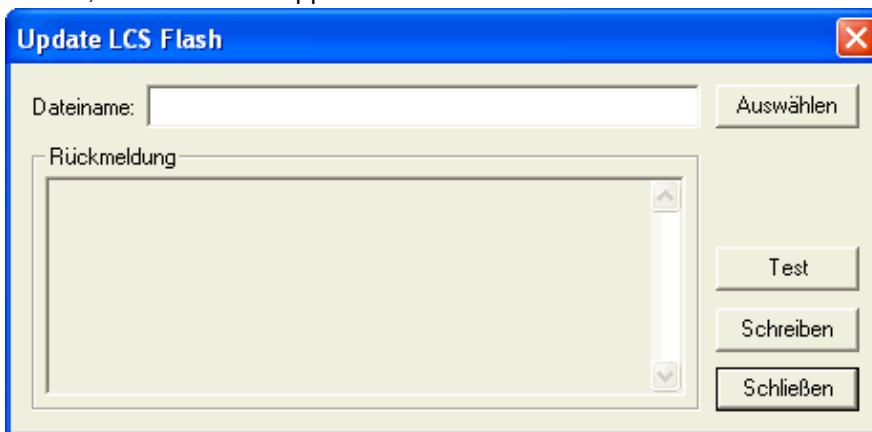
• Click on "Select" and choose the full path and filename of the previously downloaded update, and then click on "Write".
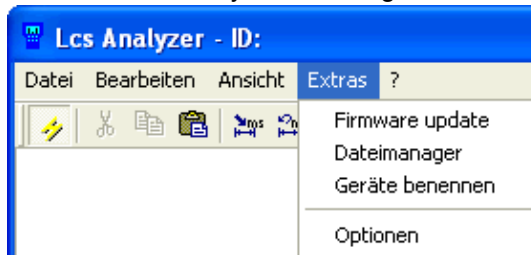Afterwards, the following bargraph will appear:

- Once completed successfully, the following dialog will appear:

- After the update, you can turn SPECTRAN back on and use the "Factor" function in the "Setup" menu, as usual, to complete the update.
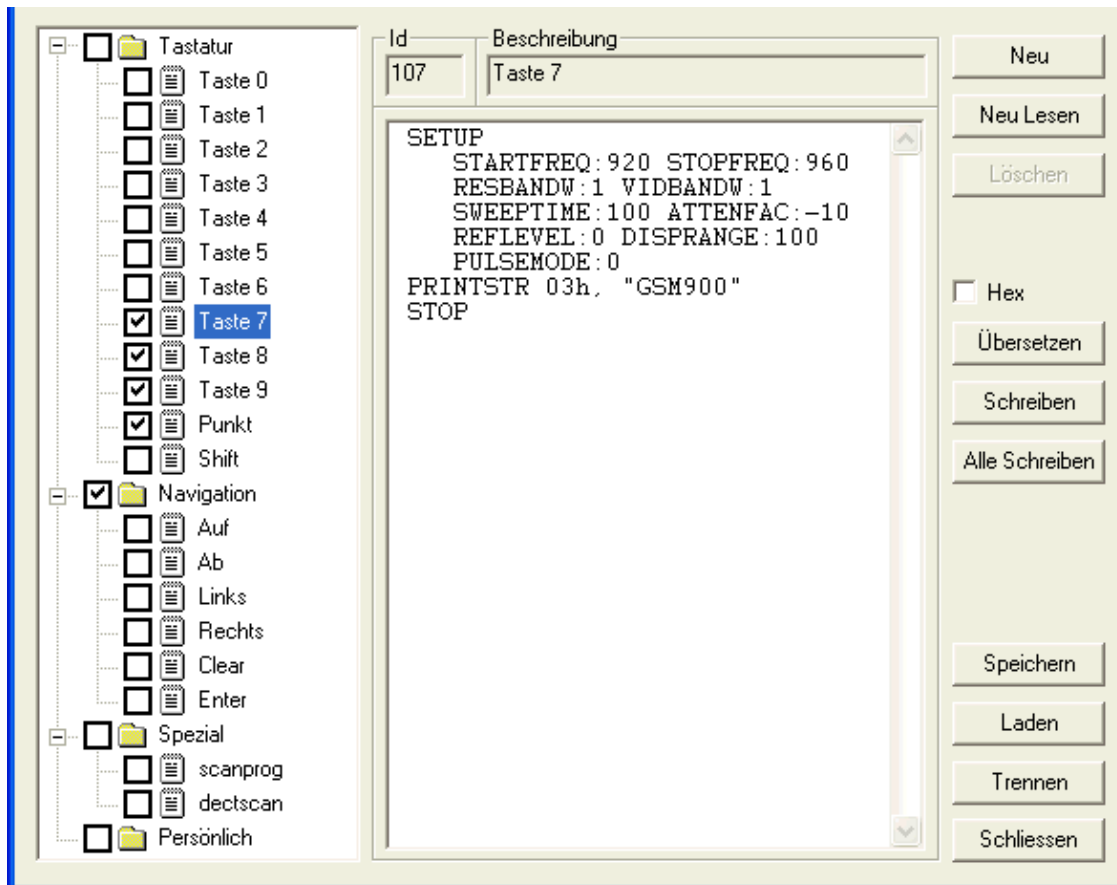
4.) File manager for SPECTRAN (incl. editable key assignments!):

- Activate the entry "File manager" in the "Extras" menu:
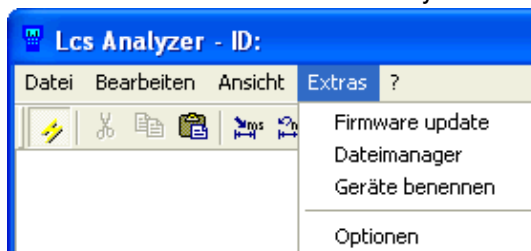

- A new dialog will appear:

● Here you can manage and modify the key assignments in your SPECTRAN units, and even create and upload YOUR OWN CUSTOM PROGRAMS.
ATTENTION: For uploading changes or programs to SPECTRAN, you need to click on "Compile" and then on "Write"!
Key assignments can also be saved to and retrieved from disk by clicking "Save" or "Load".

### 5.) Managing and renaming several SPECTRAN units on the same PC:

● Choose the "Rename units" entry in the "Extras" menu:

● Next, a new dialog will appear:
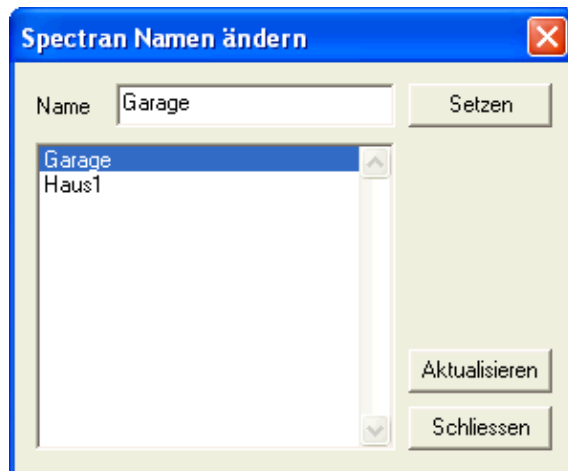
- Here you can rename each of your SPECTRAN units. This allows simple tracking when using several units on the same PC. One way to name your units is, as shown in the example, using the location as a name.
Enter the desired name for the respective SPECTRAN unit in the "Name" field.
Press "Set" to PERMANENTLY store the name in the SPECTRAN unit.
Press "Refresh" to refresh the list of currently connected SPECTRAN units. Use this button to find units which have been connected after launching LCS.
- You can change to a different SPECTRAN unit at AN TIME. For this, use the entry "Choose device" in the File menu:
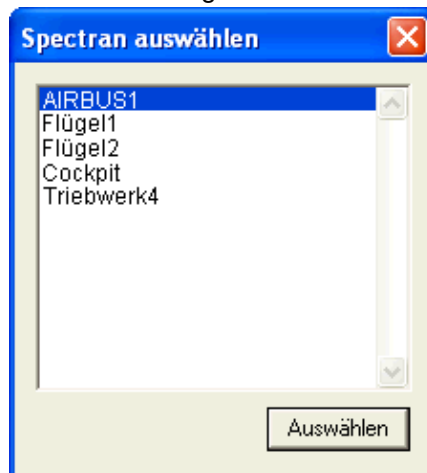
Simply choose the desired unit for acquiring readings or transmitting data.

NOTE: For OPTIMUM usage of the PC software, we STRONGLY recommend the following options & accessories for your SPECTRAN device:

- **1MB MEMORY EXPANSION:**
  If you plan to use the SPECTRAN's INTERNAL datalogger (HF-4040 and above), we STRONGLY recommend our 1MB memory expansion (Option 001). It is

available at as low as € 99,95*. For using this expansion, you will need to send us your unit for installation.

- **ADDITIONAL TRIPOD:**
  We STRONGLY recommend an ADDITIONAL miniature tripod for being able to use the SPECTRAN device as a tabletop unit (like a multimeter), or our large aluminum tripod for optimally adjusting the HyperLOG antenna.
  Our miniature tripod is available at € 19,95*, the large aluminum tripod at € 49,95* **Order**

- **SMA extension cable:**
  With our special 5m or 10m low-loss SMA cables, you can install the HyperLOG antenna far away from your measurement equipment. Hence, you can install your PC and your SPECTRAN unit in a safe, well-protected place for performing long-time measurements or similar tasks.
  The 5m low-loss cable is available at € 79,95*, the 10m version at € 99,95* **Order**