# HF-Monitoring
## overview

function, concept, examples

# Introduction

The aim of the HF-Monitor development is the continuous or alternating metrological monitoring of given frequency ranges.

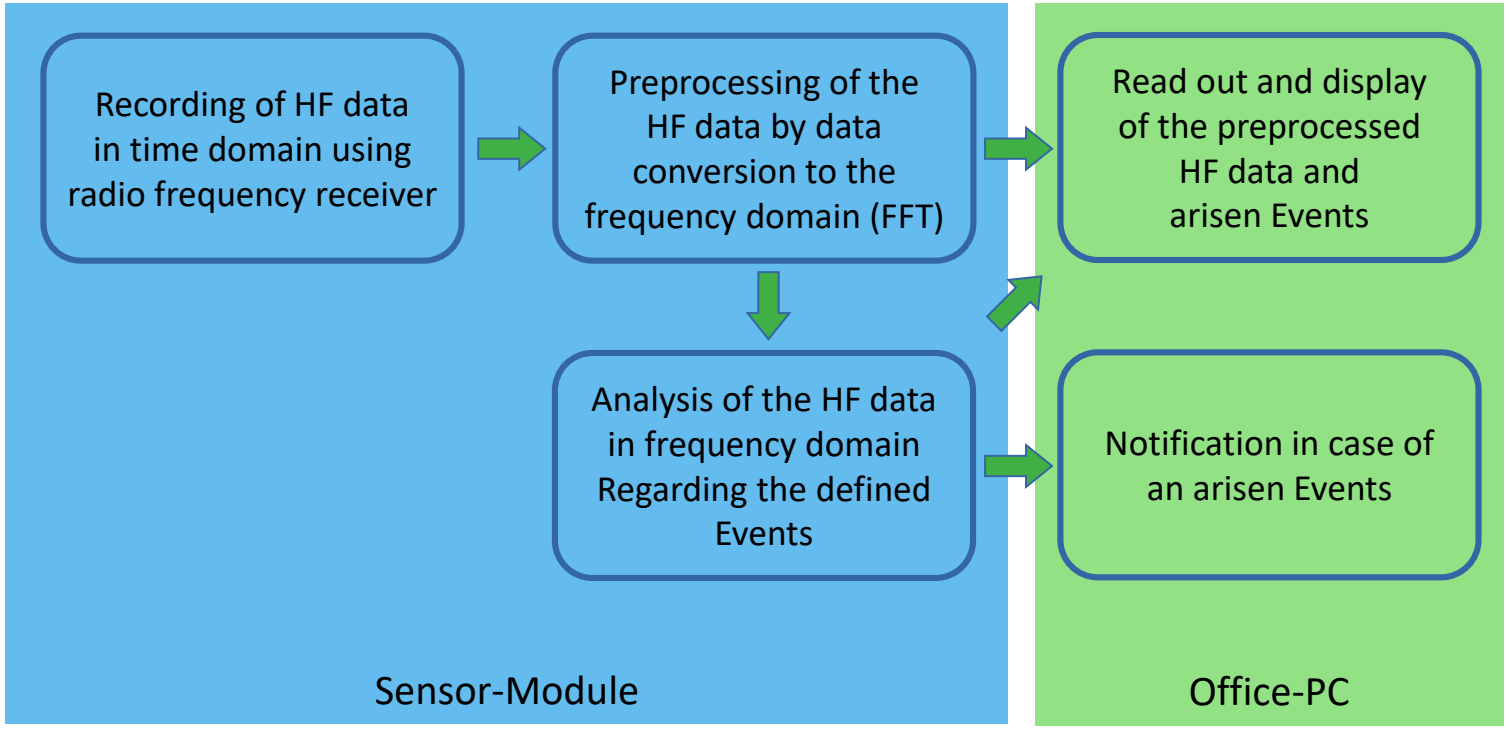
The radio frequency data is captured using detached receiving hardware with pre-processing of the recorded data on a single board computer (SBC).

Different HF receiver can be used as receiving hardware depending on the application and the measurement resolution. One possibility is to use a software defined radio (SDR) as a HF receiver.

A key element is the automatic initiation of configurable Events which can be used as starting point for a detailed analysis. If the configured terms of an Event are met a pre-programmed action is started like the transmission of an email or trigger an SMTP notification.

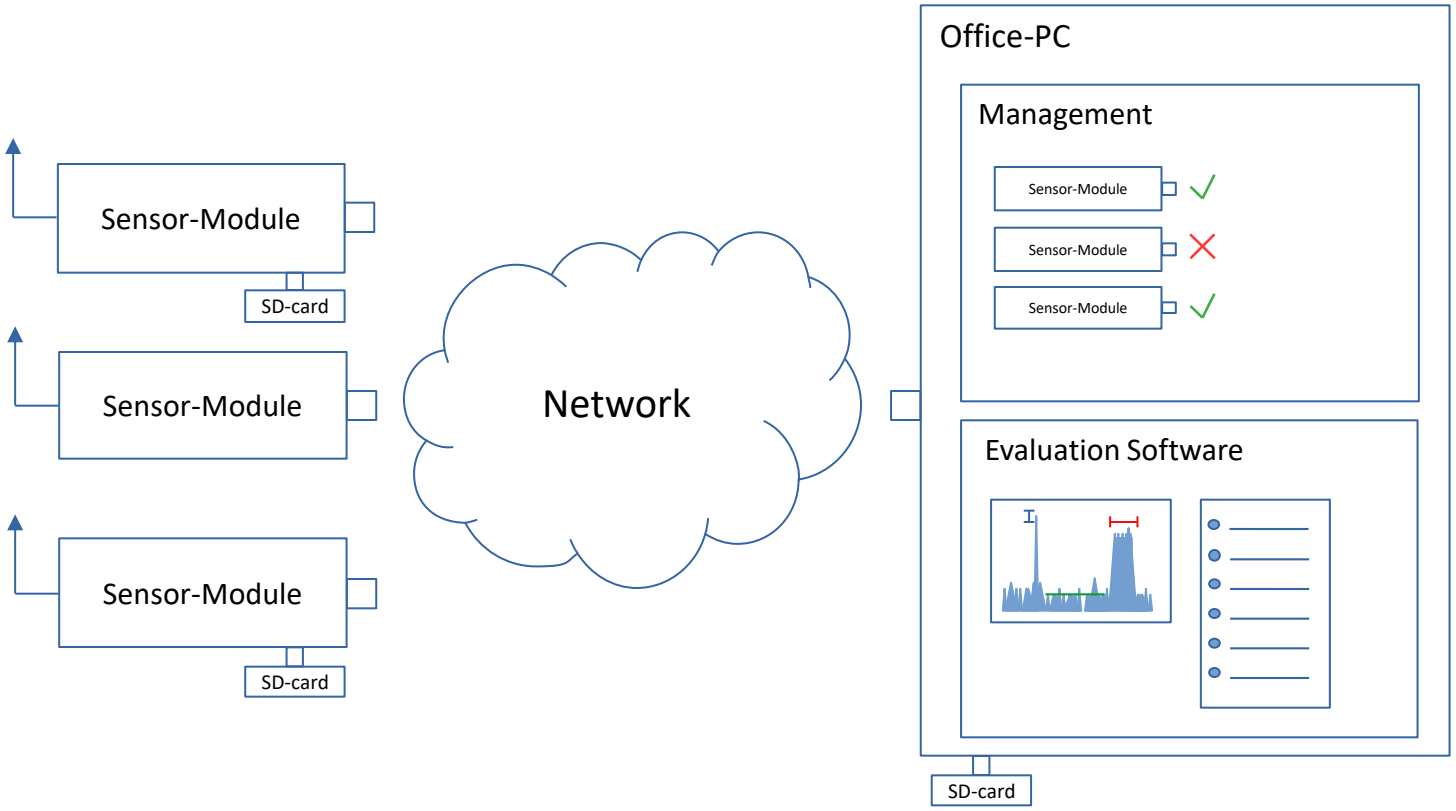
# Concept

Description of the basic construction:



# Concept

The hardware concept of the HF-Monitoring System:

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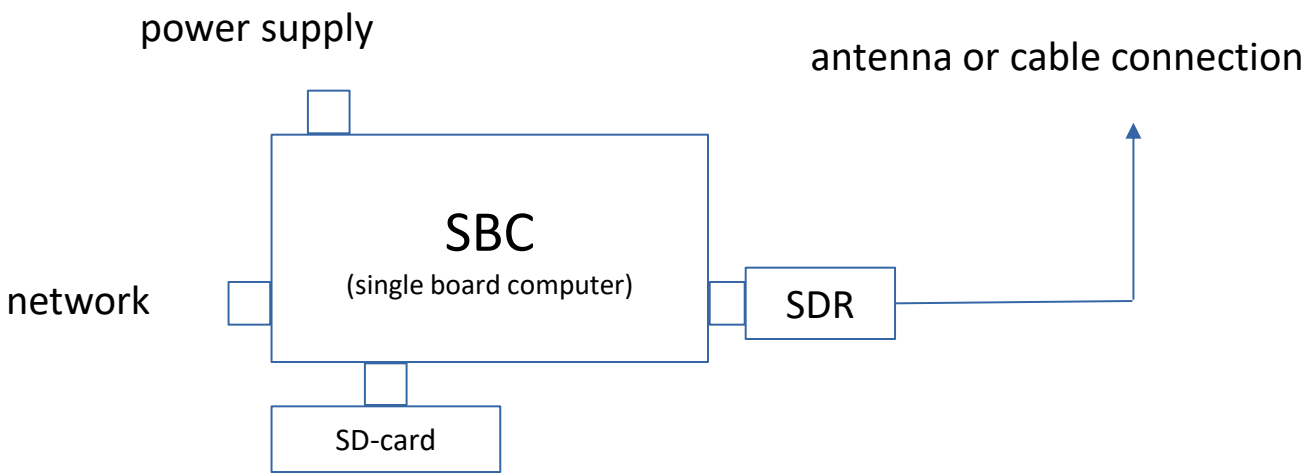
# Concept

The setup of a Sensor-Module:



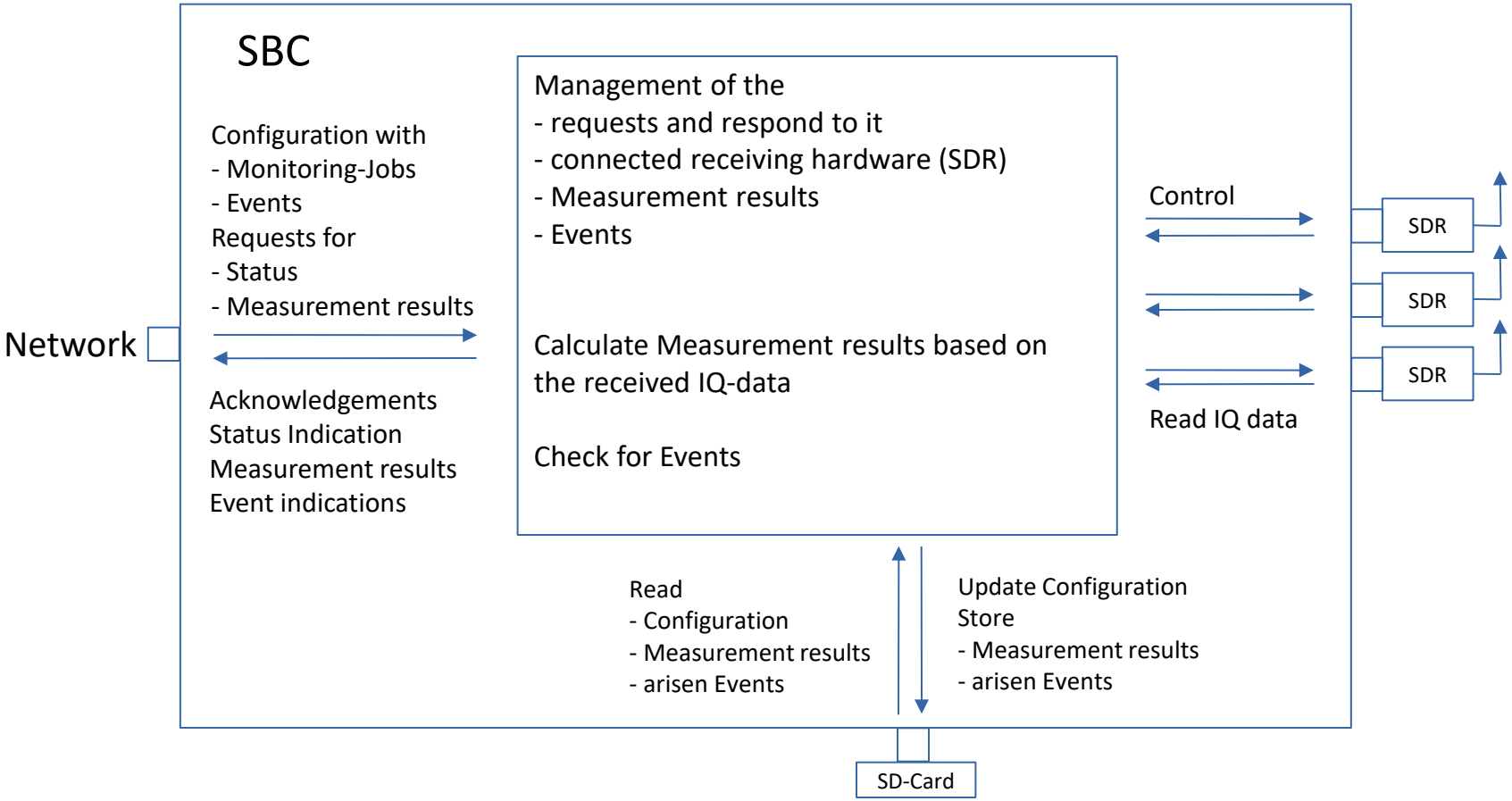
# Function

Configuration of the Sensor-Modules each with:

- Name
- Location
- Monitoring-Jobs
    - Frequency range
    - Time interval
    - Resolution of the measurement
- Events
    - Noise floor surveillance
    - Level surveillance
    - Peak detection
    - SNR surveillance or Carrier surveillance with spectral mask

# Function

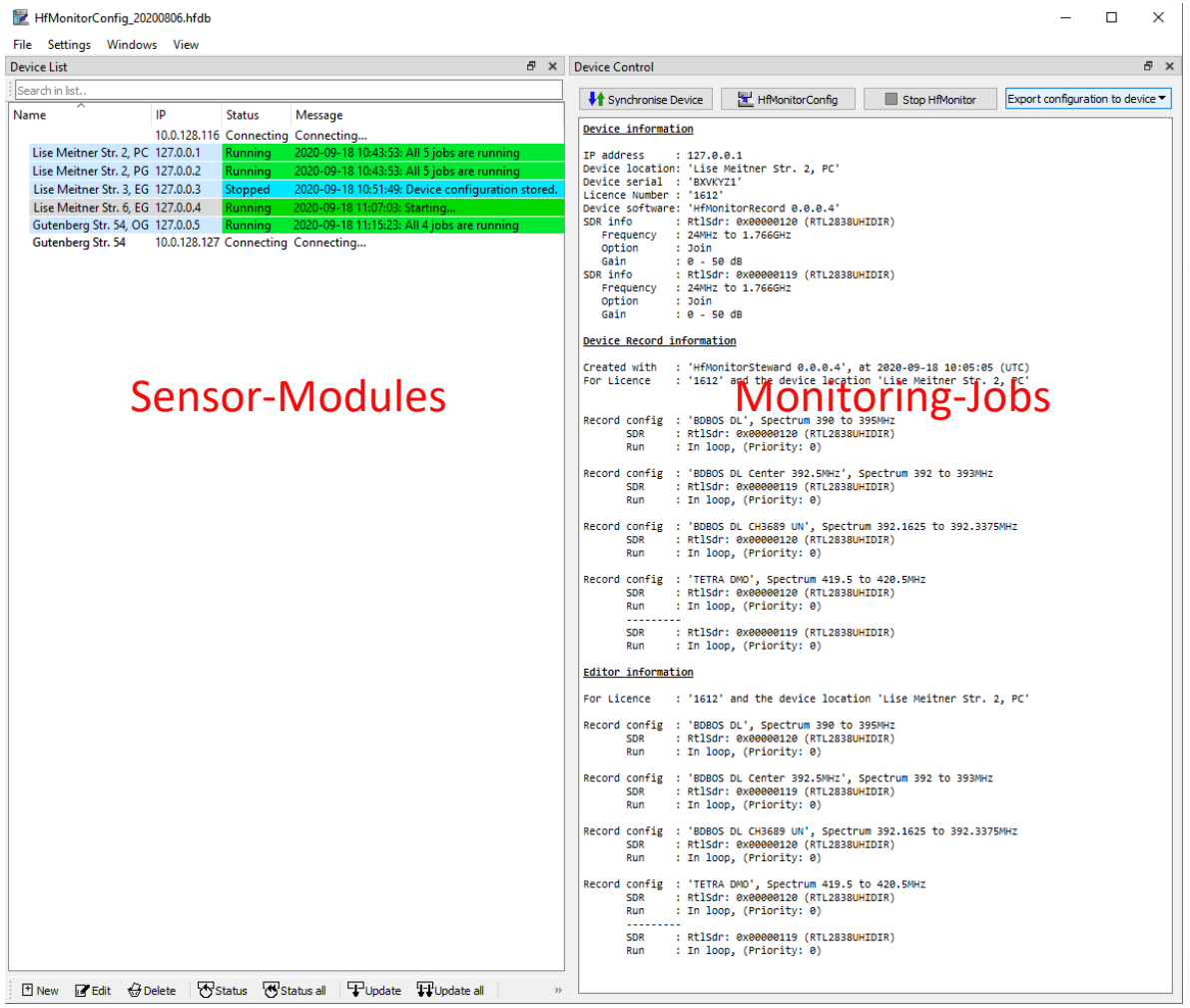
Control of the Sensor-Modules over the network:



# Function

Control of the Sensor-Modules by one program:

- List of configured Sensor-Modules with
  - Name
  - IP-Address
  - Status
  - Time and Date of last received message
  - Last received message
- Connected HF-Receiver and Monitoring-Jobs of the selected Sensor-Module

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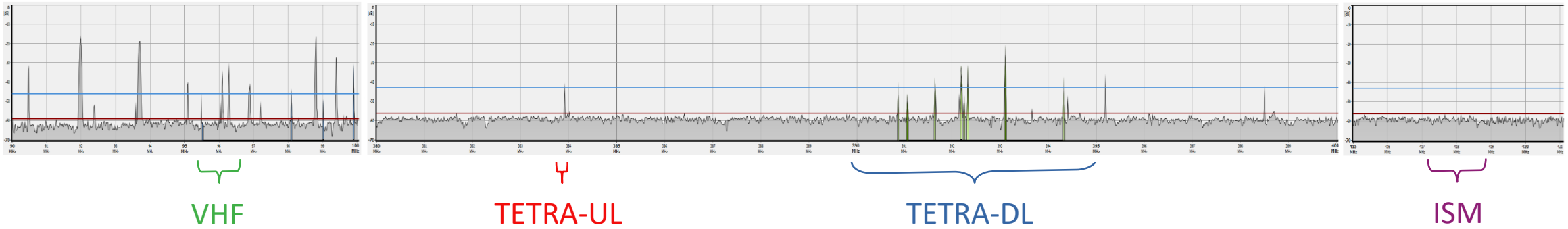
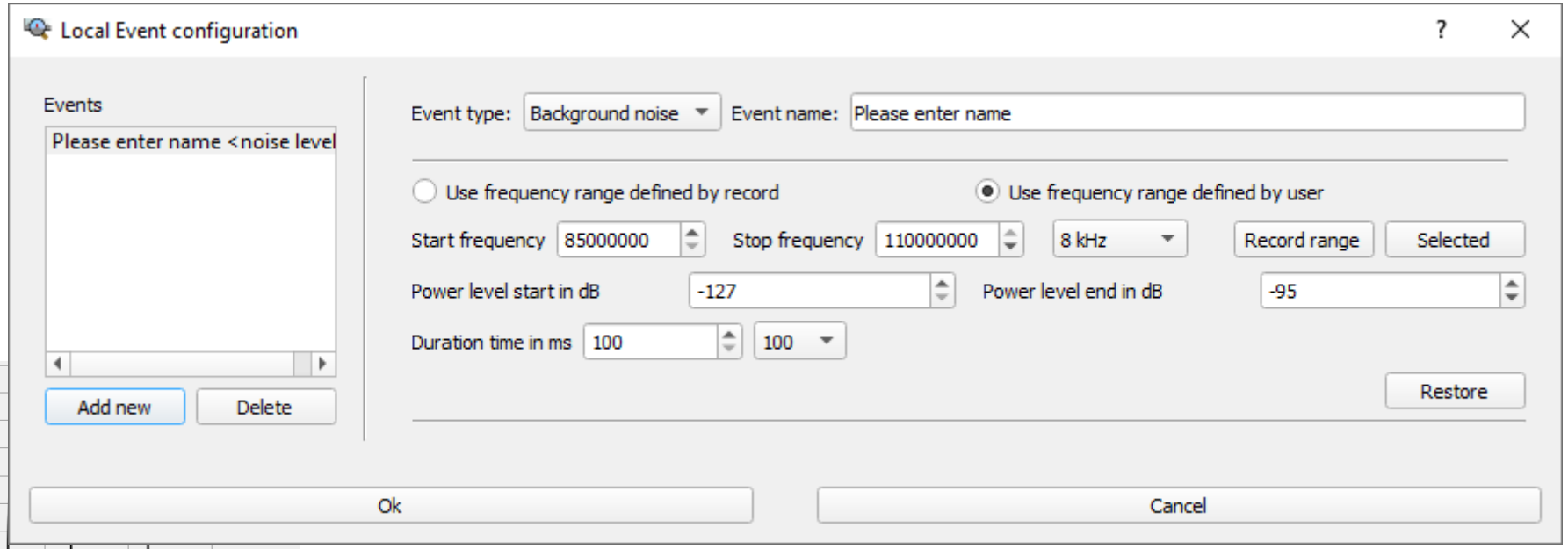
# Monitoring-Jobs

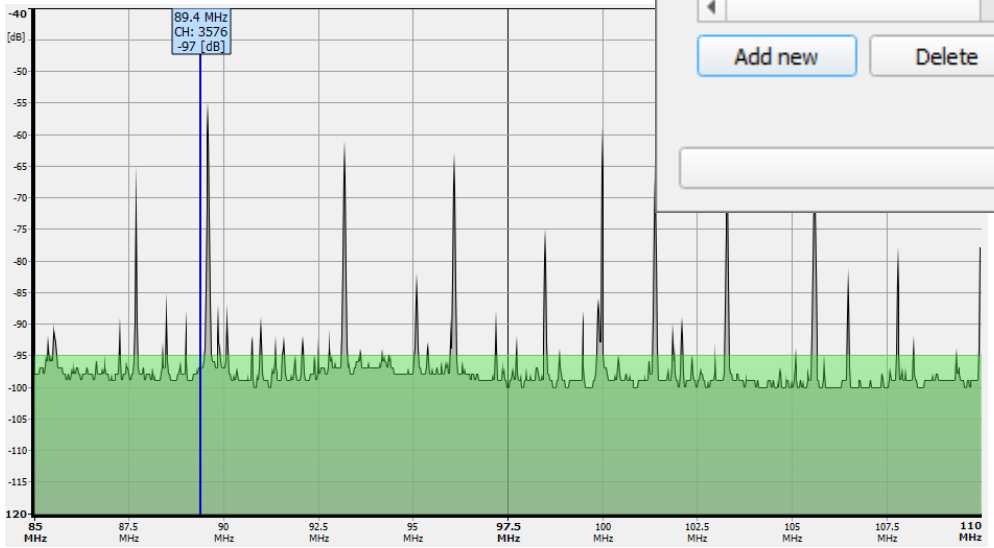
are programmed for several frequency ranges with different time intervalls and observation times:




# Events

Noisefloor surveillance of frequency range over time:

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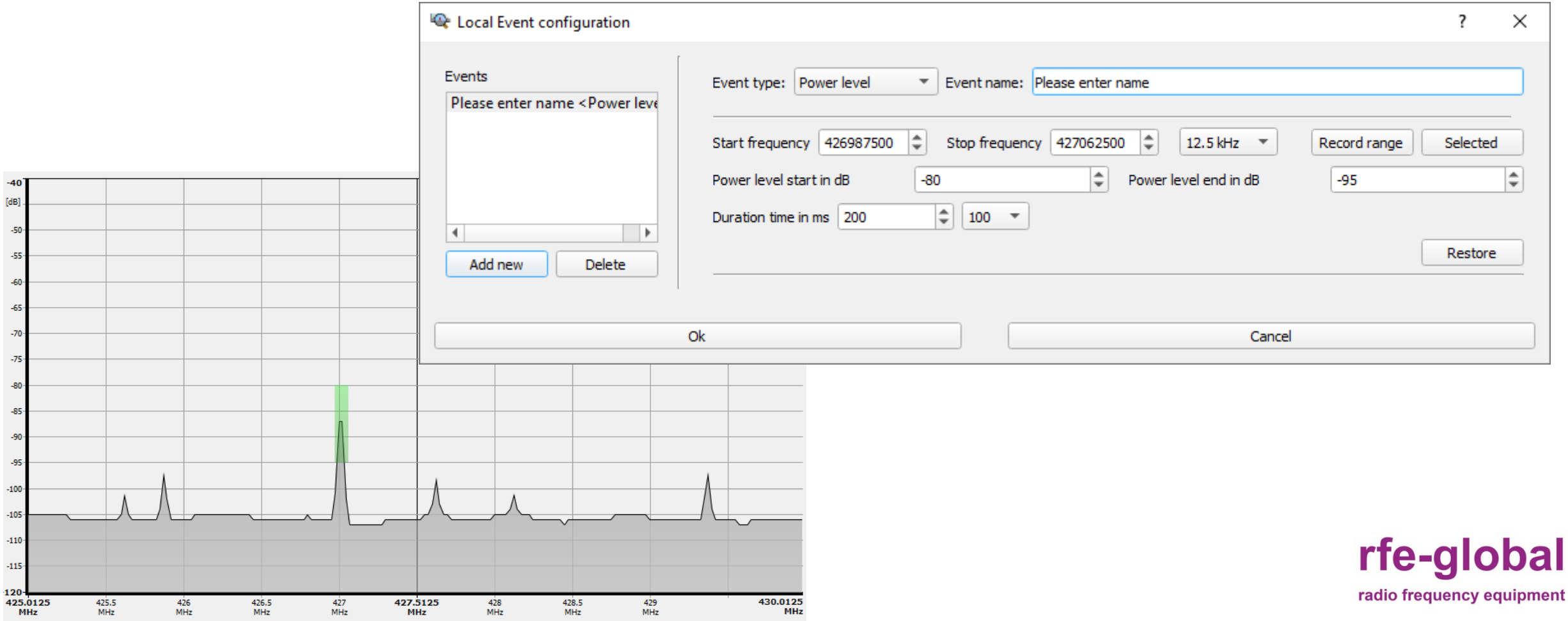
# Events

Power detection of a certain frequency or frequency range:

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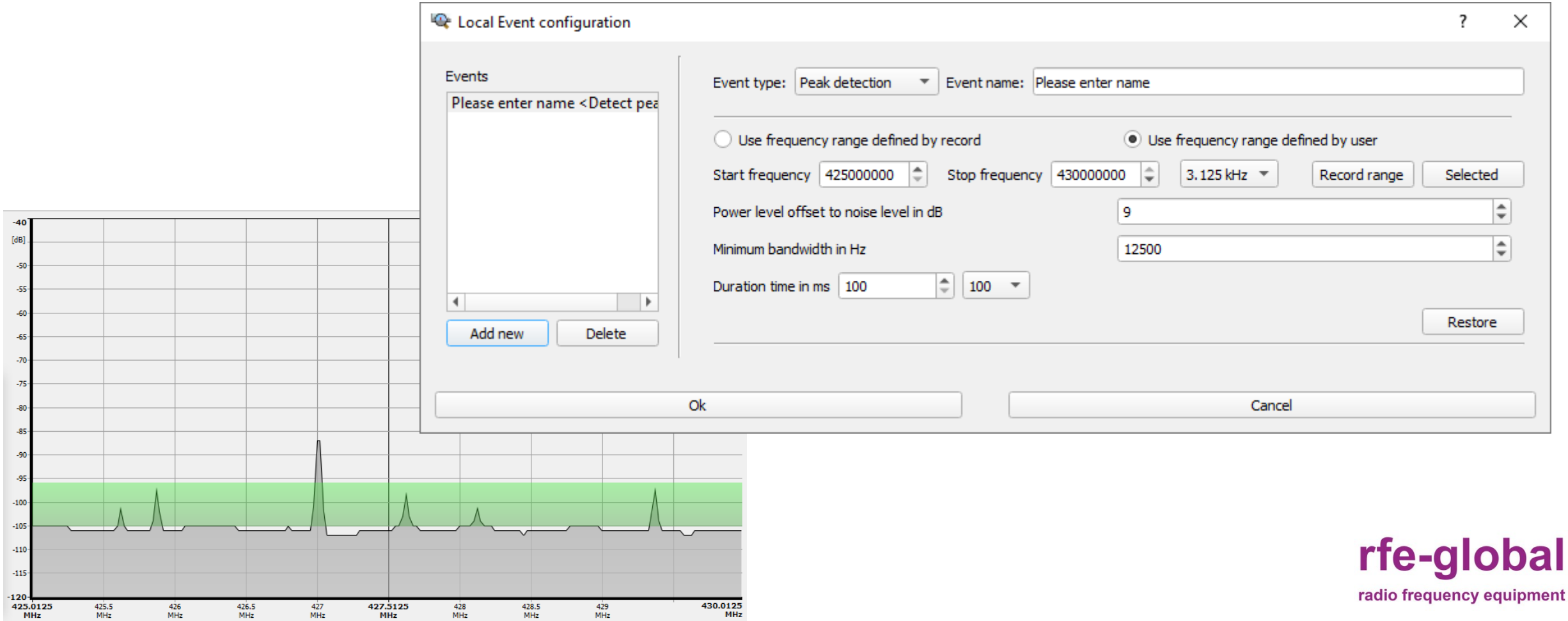
# Events

Peak detection over frequency range:

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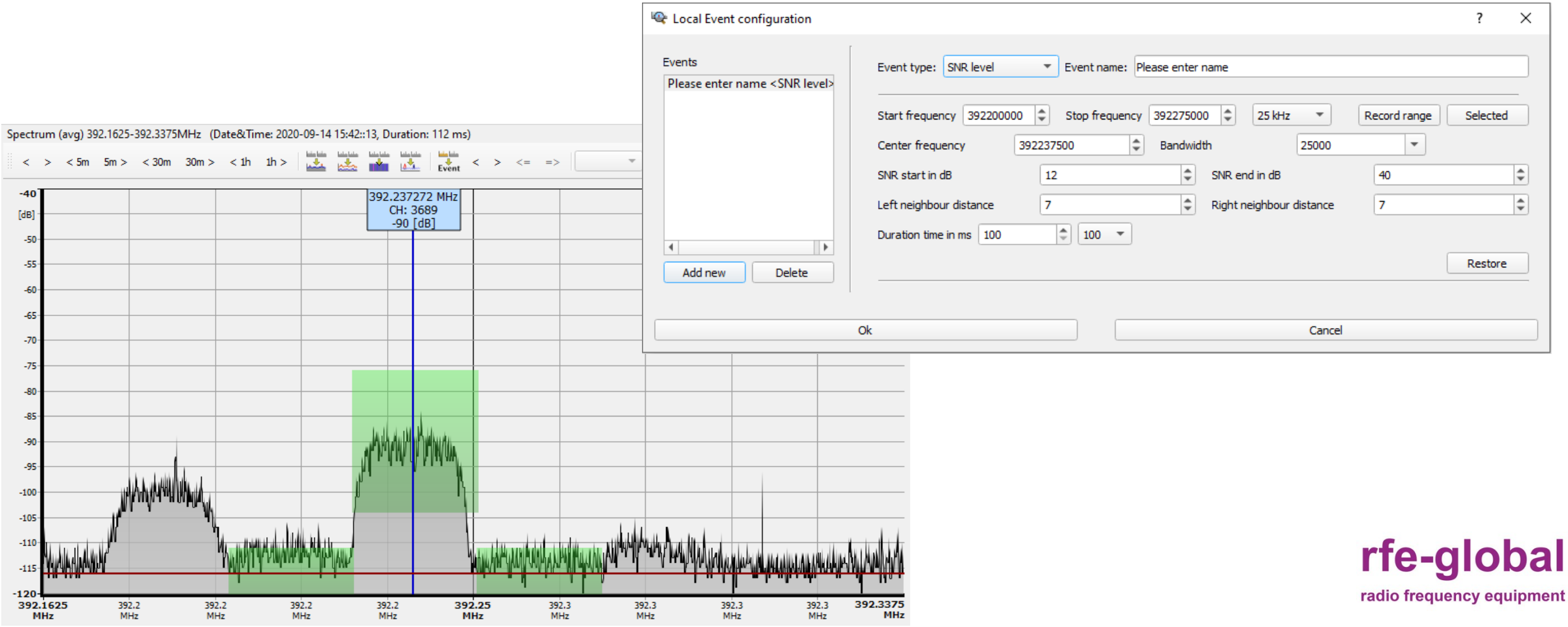
# Events

SNR surveillance and Carrier surveillance with spectral mask:

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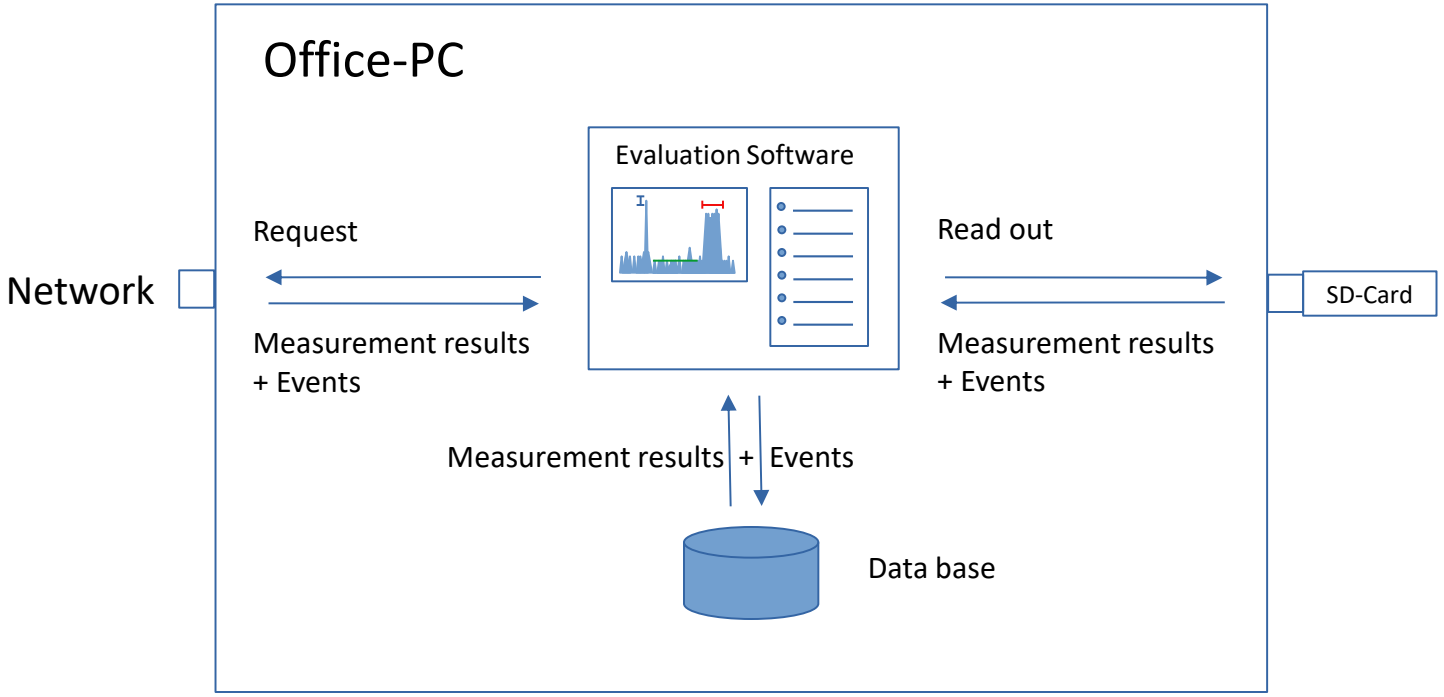
# Function

transfer of the Measurement results to the Evaluation Software:

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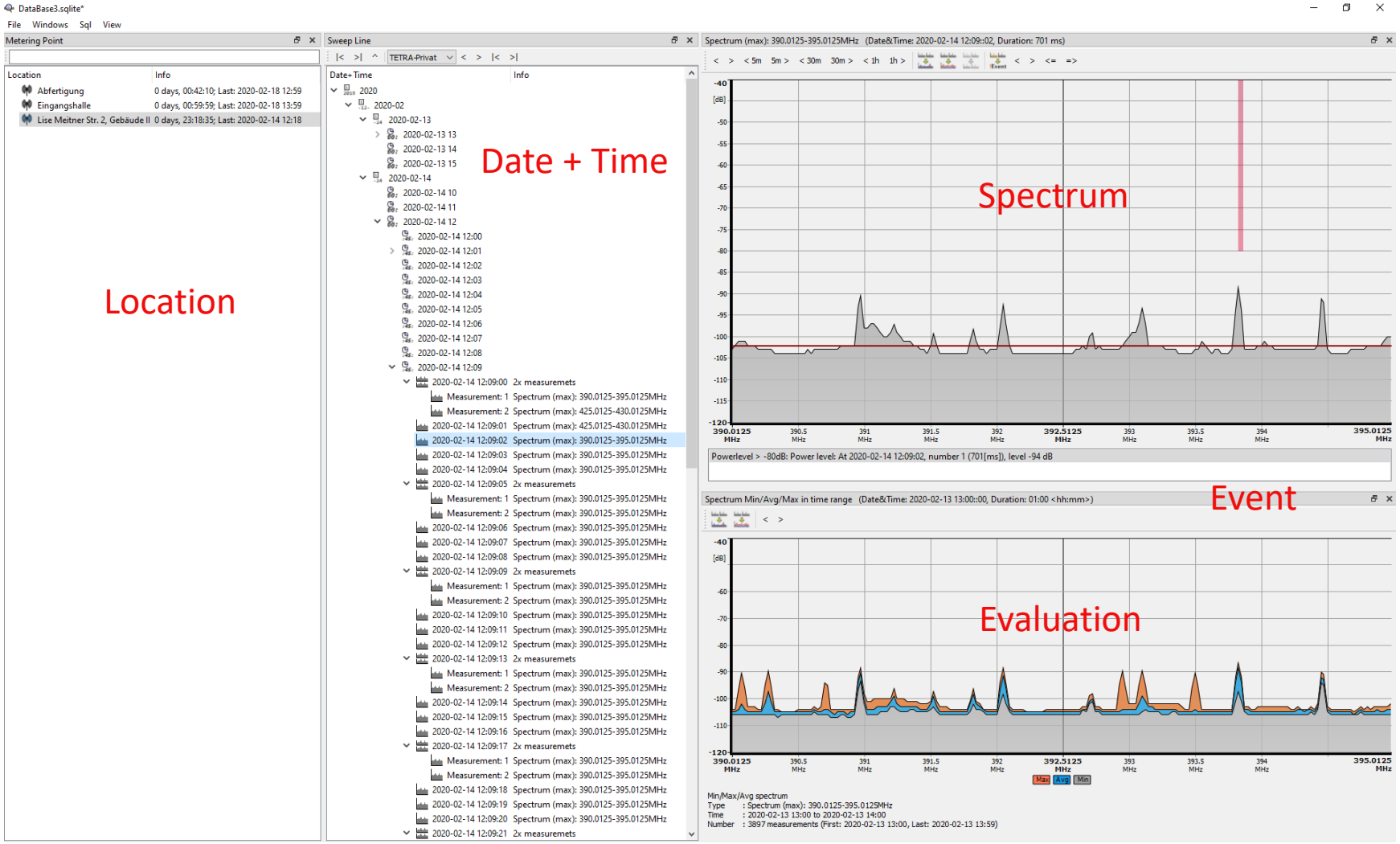
# Evaluation

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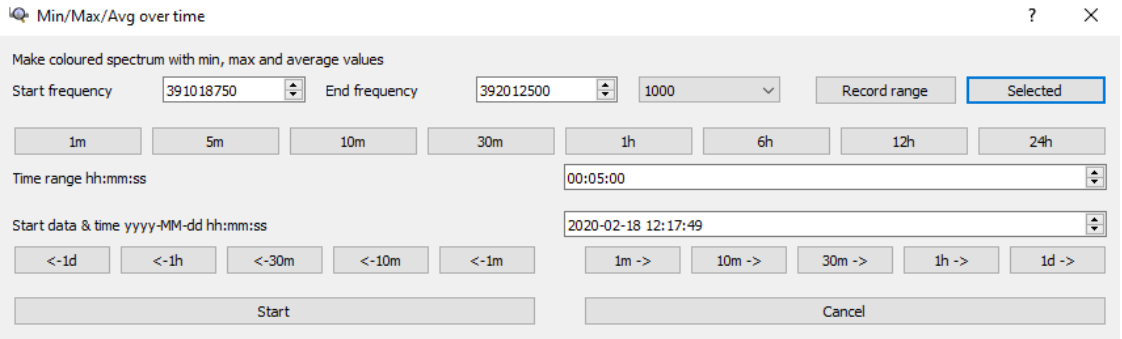
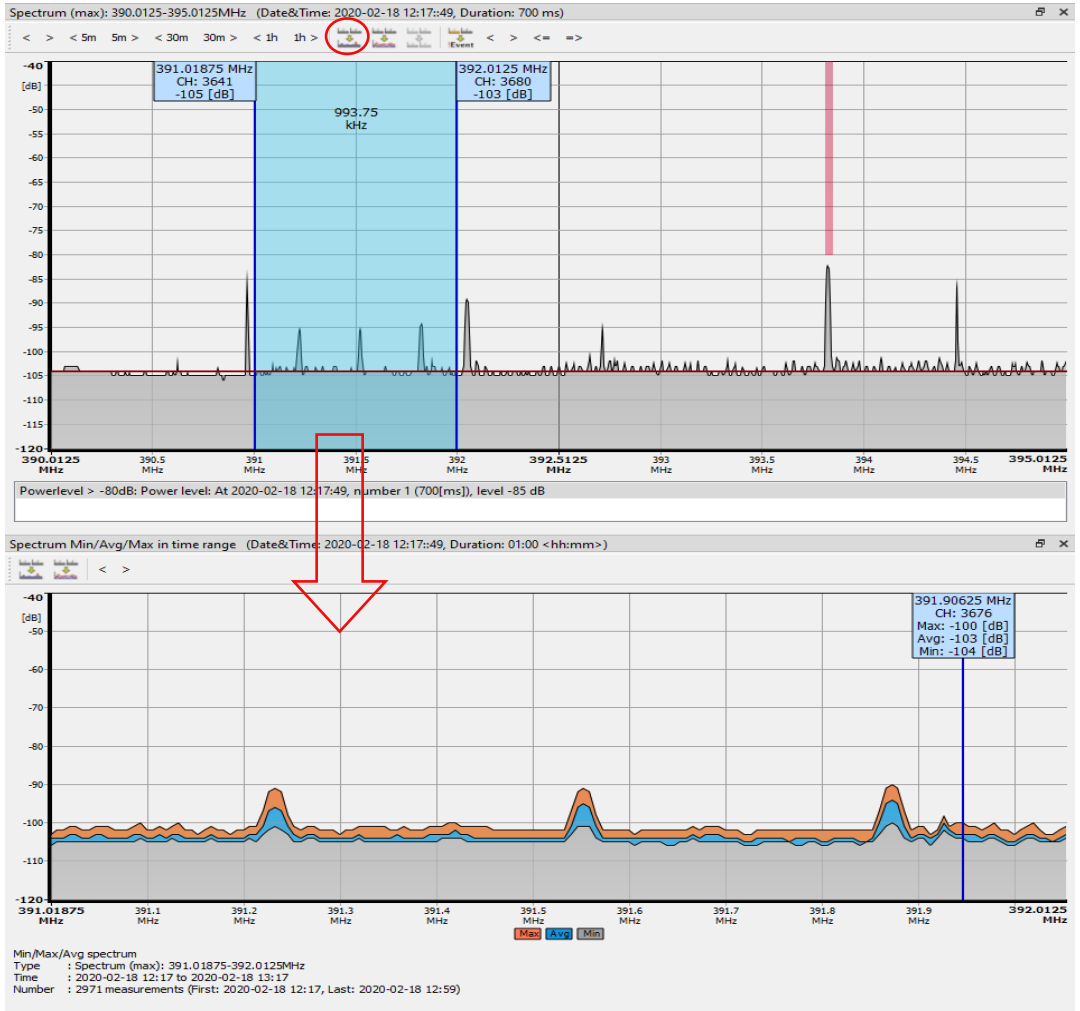
# Evaluation

- selection of frequency range




- Min/Max/Average in frequency range

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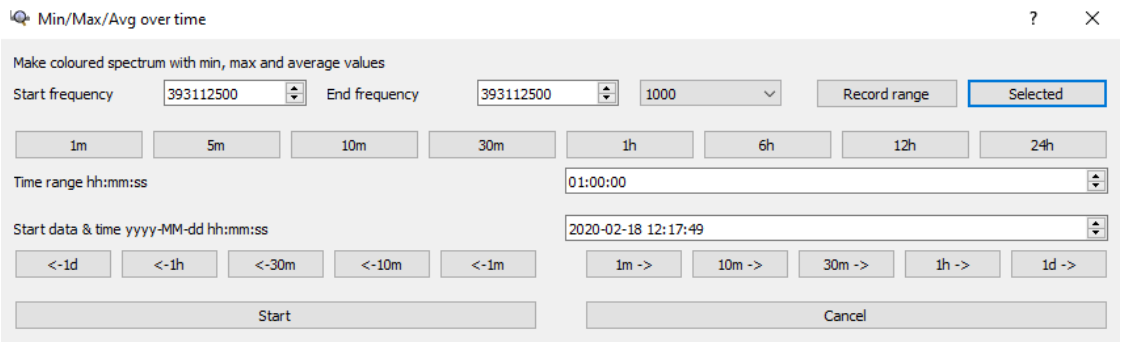
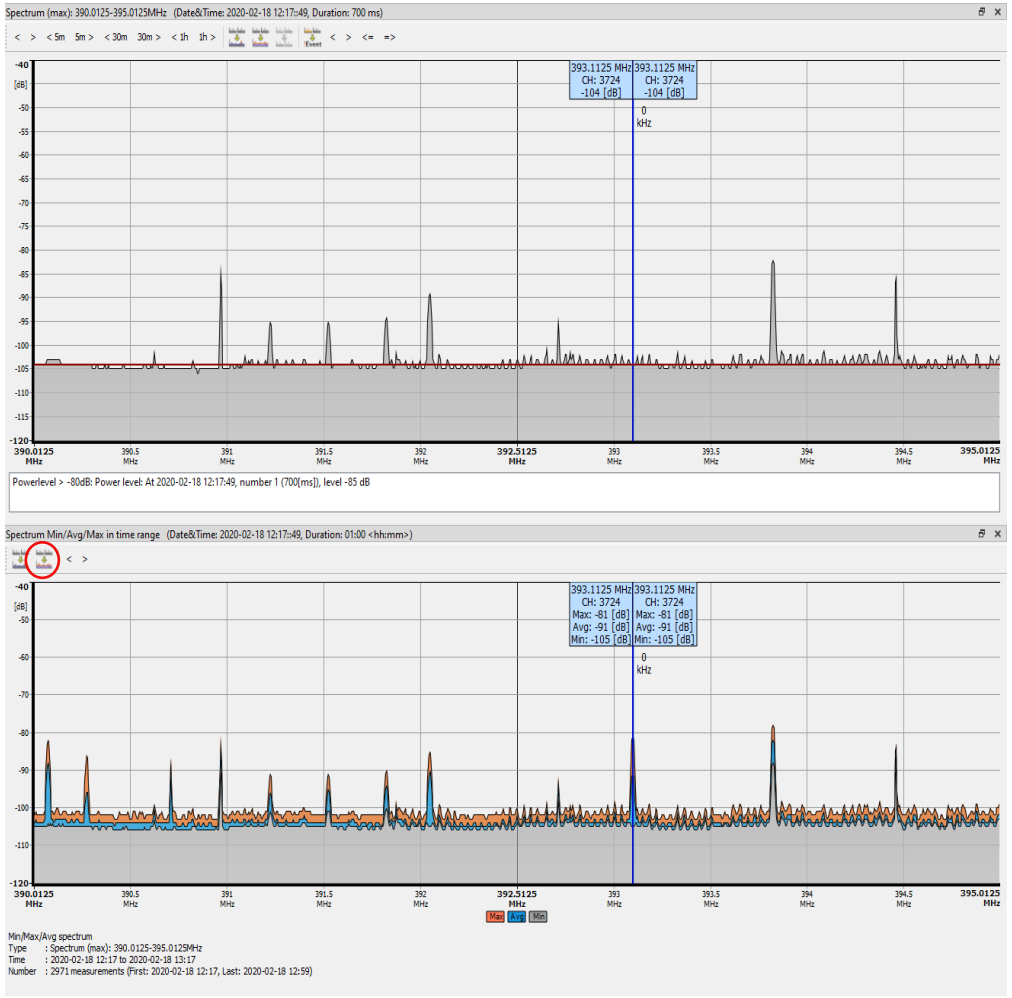
# Evaluation

- From frequency domain …



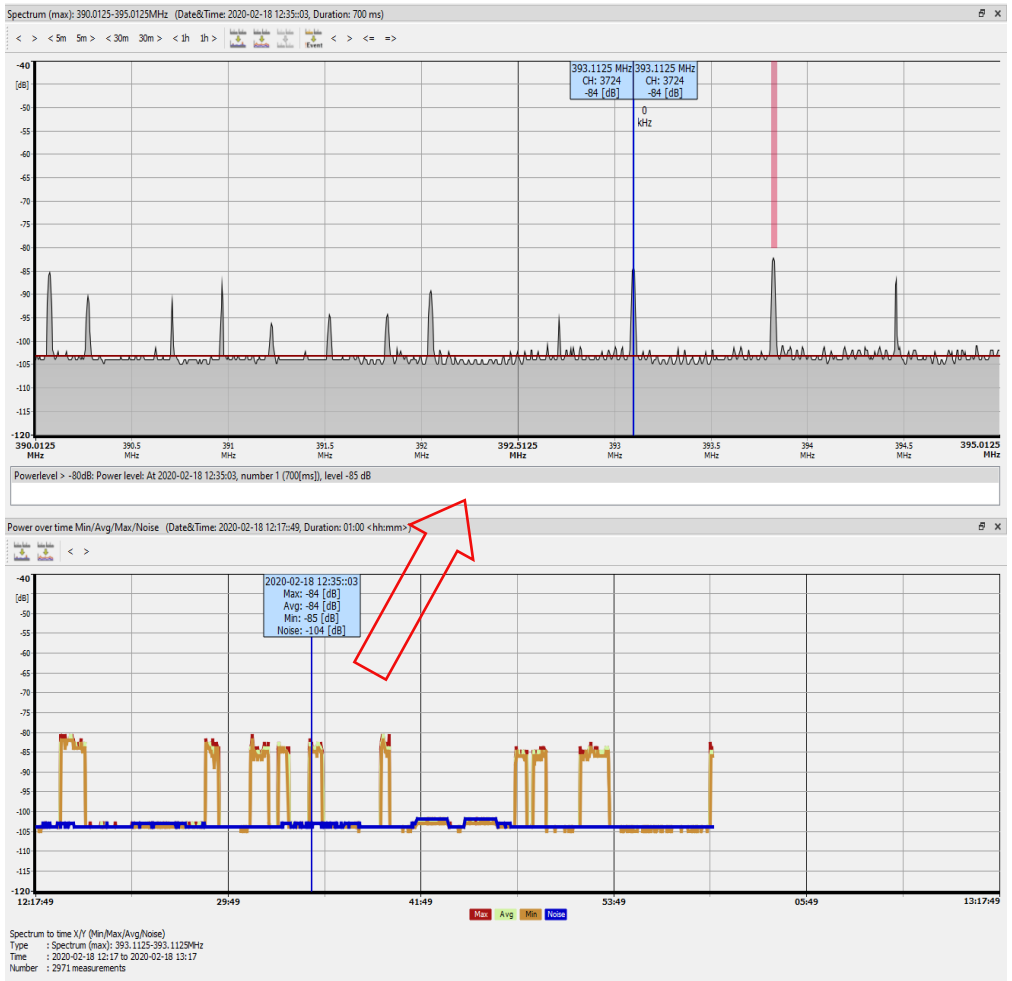




- to the time domain

# Evaluation

- spectrum display of the lower window selected point of time

- Display of the signal power over time in the lower window

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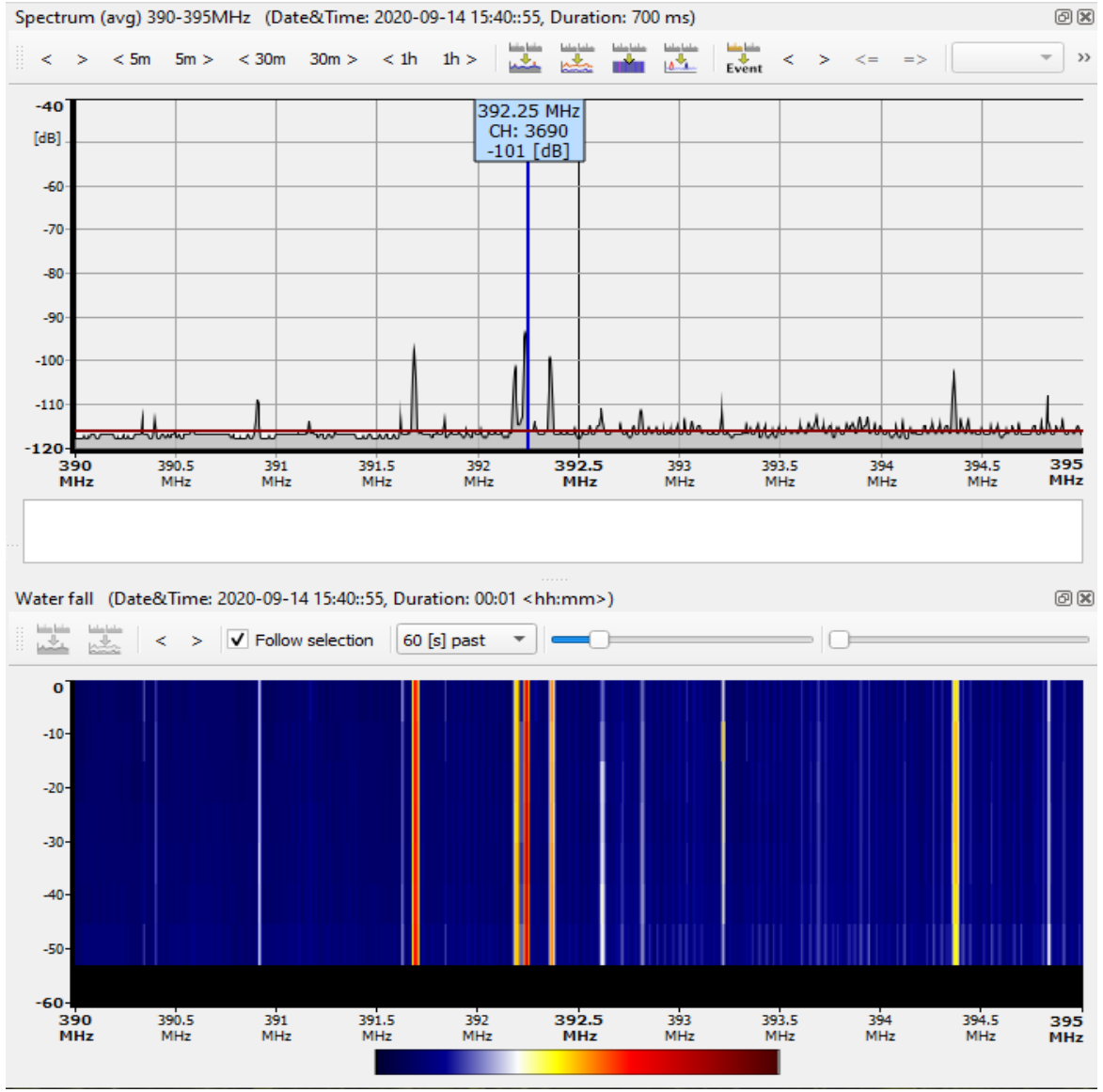
# Evaluation




- Spectrum Waterfall diagram of the past or future based on the actual selected point of time

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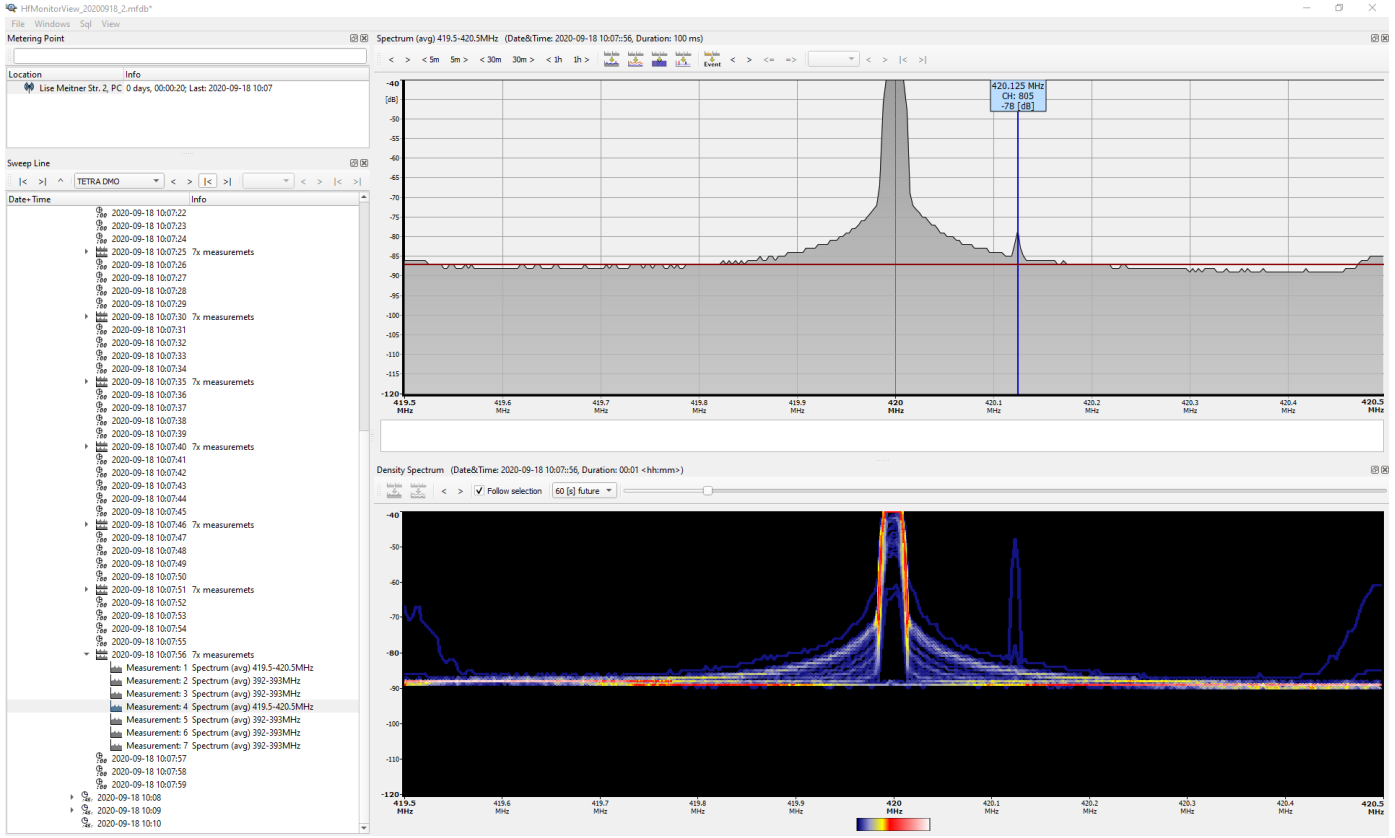
# Evaluation

- Density Spectrum diagram of a adjustable time period displaying the data of the past or future based on the actual selected point of time

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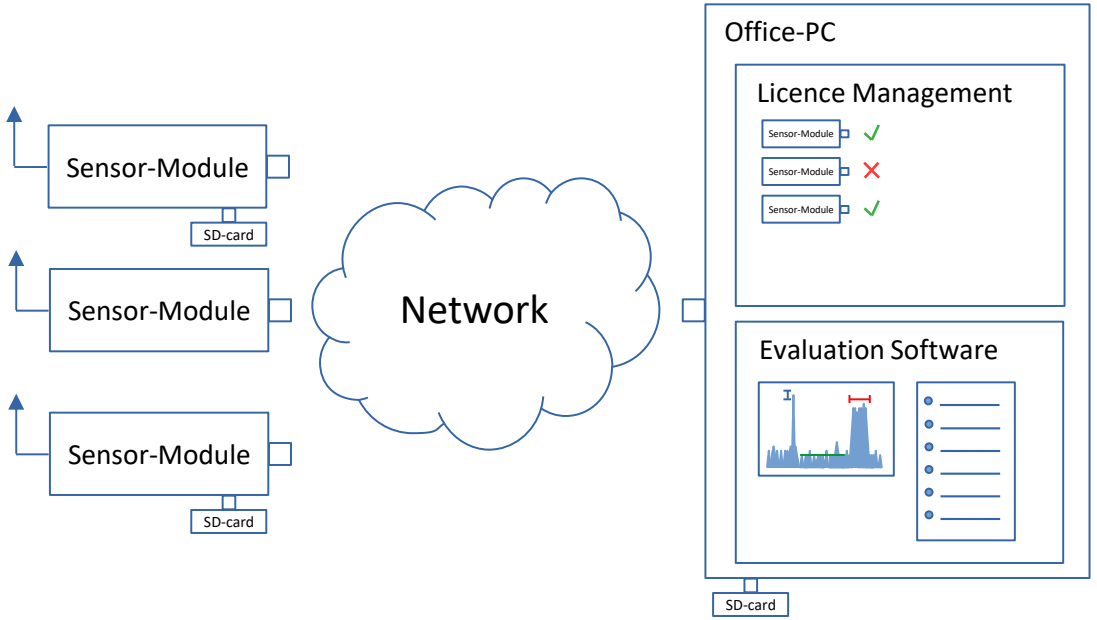
# For the benefit of the customer

- HF-Monitoring designed for 24/7 monitoring of frequency ranges
- with automatic and configurable signal processing and Event generation
- with low hardware cost
- Flexible, adjustable, scalable
- And so on…

# You have questions?




… or suggestions? Don‘t hesitate to contact us!

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