Intelligent RF Spectrum Recorder ODEN 3001

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Configure the system and press start. All new signals will now automatically be recorded.

Intelligent RF Spectrum Recorder

ODEN 3001 is the first **intelligent** RF spectrum recorder within Novator Solutions wideband record and playback offering with 26.5GHz frequency range and 765MHz real-time bandwidth. ODEN 3001 **automatically** captures **individual** interfering signals or rare & unknown events of interest for later analysis and spectrum characterization. It reduces the amount of data to be recorded to the signals of interest which simplifies data handling and reduces the associated cost.

ODEN 3001:

- Frequency range: 16kHz – 14GHz/26.5GHz
- Instantaneous bandwidth: 765MHz
- High resolution frequency mask trigger (FMT)
- 1024 individual digital downconverters (DDC)
- Acquisition rules: Full region/channels/no region
- Recording editor: FMT, acquisition regions & rules
- Live FFT and Spectrogram views
- Storage: 4TB-184TB enterprise grade SSD memory
- Software replay & hardware playback options

Intelligent RF Spectrum Recording

ODEN 3001 combines a frequency mask trigger (FMT), 1024 individual digital downconverters (DDC) with acquisition regions & rules to record all channels simultaneously into separate files. The DDCs in combination with a frequency mask trigger on its own already reduces the amount of data to be recorded substantially. The addition of acquisition regions & acquisition rules gives the operator a new level of freedom to configure sub frequency bands within the real-time bandwidth of interest. The operator also controls how much data in the time & frequency domain are recorded when trigger conditions are met. A large ring buffer ensures that both wideband and narrowband signals are recorded from the beginning when they appear in the spectrum.

Thanks to the combination of proven techniques with acquisition regions & rules automated recording has become easier while reducing the overall system cost.

User-friendly Graphical User Interface

The GUI ensures intuitive configuration and monitoring of the recording process. It comes with a real-time spectrum monitor with spectrum & spectrogram views. The frequency mask editor enables the user to configure, load and save trigger masks as well as acquisition regions & rules. All recorded signals are stored in separate data files. A list view makes it easy to select, save & export recorded data.

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Intelligent Recording Features

The intelligent recording features frequency mask trigger, multichannel DDCs together with acquisition regions & rules are explained below.

Frequency Mask Trigger (FMT)

A high resolution frequency mask can be configured per FFT bin. The mask is processed on a dedicated FPGA for deterministic performance. The mask has a configurable hysteresis and start and stop trigger which can be set to different levels. With the hysteresis function it is possible to configure the time a signal must be over the trigger level before it is triggered, making it possible to effectively filter out disturbances in the spectrum.

Multichannel DDCs

ODEN 3001 comes with 128 DDCs with configurable bandwidth and automatic gain control settings. For an IBW of up to 200MHz a 1024 DDC option is available. The aggregated instantaneous signal bandwidth for all DDCs combined is 125MHz to 250MHz depending on the configuration. All triggered signals are recorded simultaneously.

Acquisition Rules

Following acquisition rules can be independently configured per region:

- Record full band: When triggered, the full configured real-time bandwidth is recorded.
- Record acquisition region: When a trigger within the region occurs, the complete configured acquisition region is recorded.
- Record narrowband channels: Narrowband channels centered around the detected signals are recorded with a pre-defined bandwidth per acquisition region.

Acquisition Regions

The full instantaneous bandwidth can be divided into multiple regions where each region can process the triggered mask with its own set of acquisition rules. This makes it possible to monitor a wide frequency band containing signals with varying bandwidth. It reduces the amount of the data to be recorded to the optimal size without missing important data.

Recordings

Each recorded signal will be stored in a separate file. The files are postprocessed and indexed which makes it intuitive to search for the signals of interest. The filtered files can be exported to other file formats and offloaded to back-storage systems for further analysis.
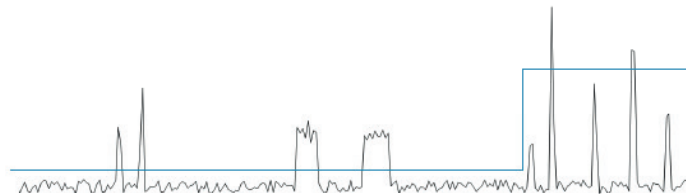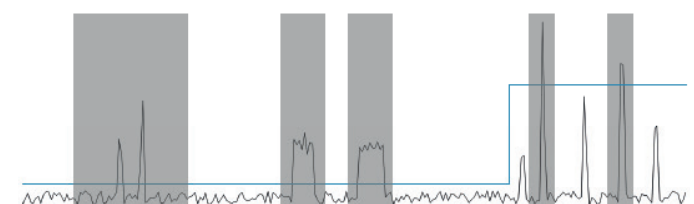

Figure 1: Frequency mask trigger (FMT)

Figure 2: Individual DDC per triggered signal

Figure 3: Acquisition regions to look for triggers

Customized Solutions

On request we are happy to provide customized solutions. The modular architecture combined with our business model help you to get the best possible recording system fulfilling your requirements while keeping the price at an affordable level.