go2signals

PROCITEC®

HOUSE OF SIGNALS

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23.1 I 01/2023 (Subject to modification)

RELEASE NEWS
VERSION 23.1

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HOUSE OF SIGNALS

NEW PRODUCT: SIGNAL ANALYZER

With go2signals version 23.1 we release our new software product Signal Analyzer as part of our Analysis Suite product group. Signal Analyzer starts with manual and automated modulation analysis in a user-friendly supporting way that is second to none. The idea behind this is to support Spectrum Monitoring operators with an easier and faster way to process unknown signals and integrate them into go2signals' automated signal production tool chain.

go2signals

Analysis Suite

SIGNAL ANALYZER

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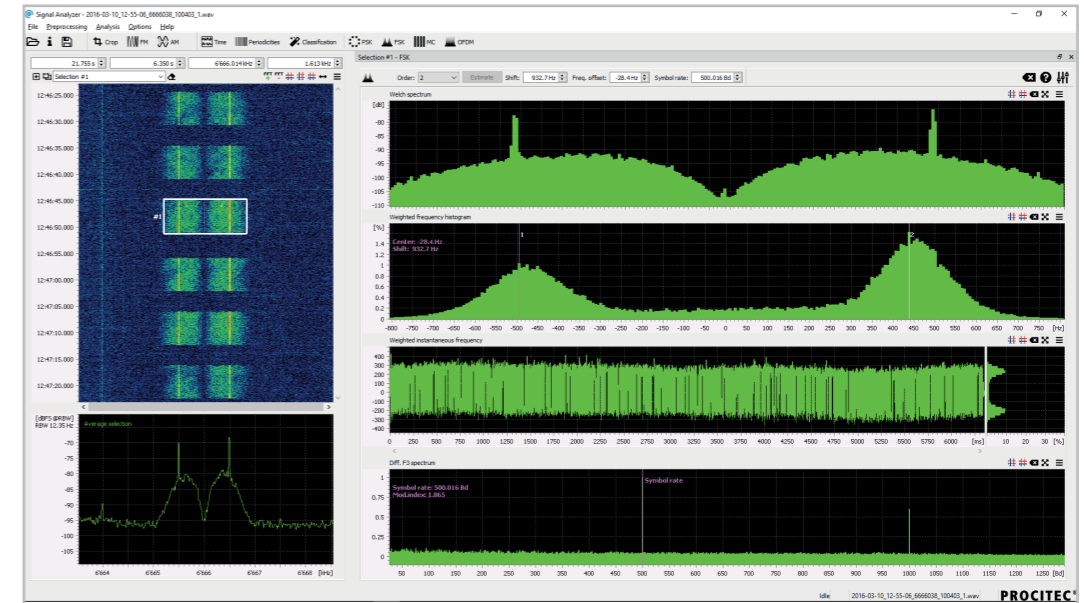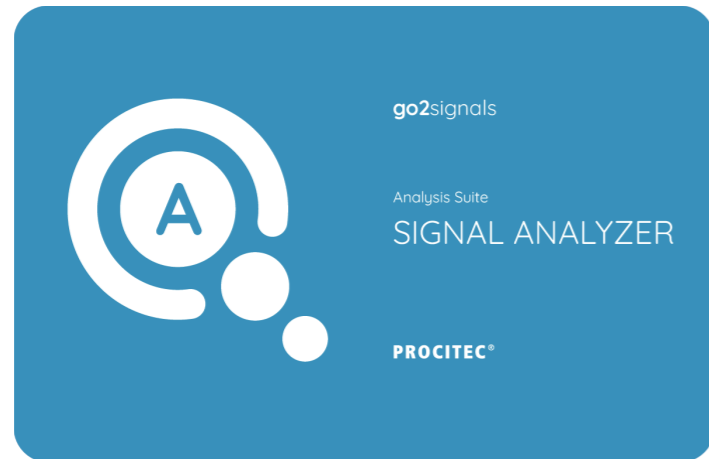
FSK Modulation Analysis set: Automated cursor result setting for symbol rate and shift

OUR MAIN PRODUCT DESIGN PHILOSOPHY

- Make Modulation Analysis fast and easy
- Automate typical analysis steps for quick measurement
- Use prepared Analysis Windows, support all necessary analysis methods at once
- Combine practical experience of users and our experts
- Support experts, but also users who take their first steps in Modulation Analysis

MAIN FEATURES

- Works with I/Q samples from signal recordings (.wav) and included meta data
- Analysis of signal parts by selection in a waterfall display, multiple selections possible
- Integrated automatic Modulation Classifier with Modem Classification feature
- Predefined analysis sets for Time, Periodicity, PSK, FSK, Multi Channel and OFDM modulation analysis
- Preprocessing with integrated DDC, FM and AM demodulation
- Multiple analysis displays like Waterfall, Spectrum, Histogram, Autocorrelation, Constellation, Scatter, etc.
- Set of x-, y-, z-cursors in difference or harmonic measurement modes
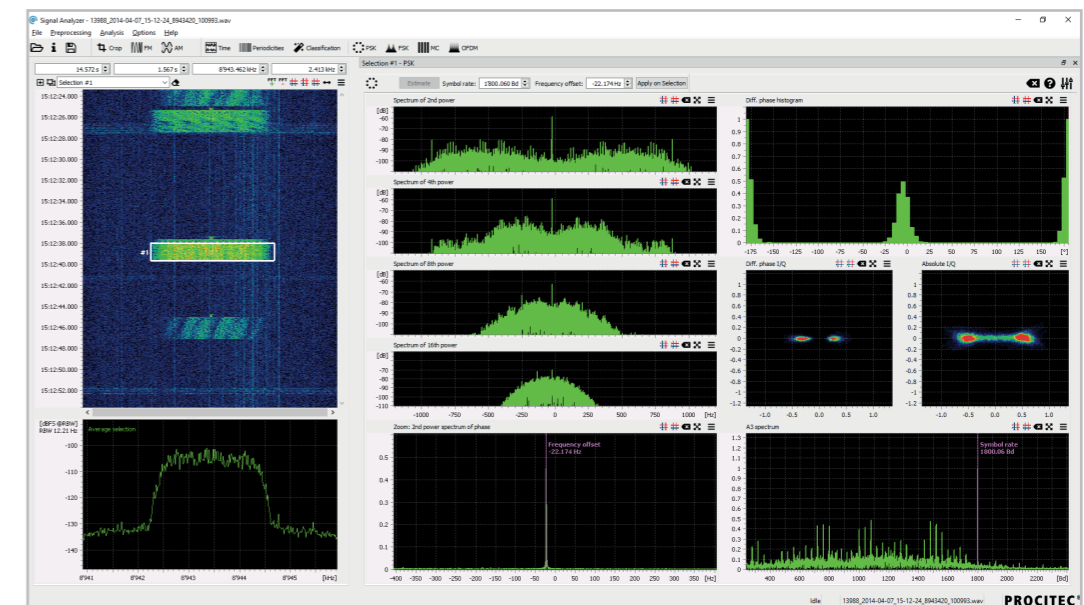
PSK Modulation Analysis set: Squared Spectrum (2-16th), Center Frequency recovery, Phase Histogram, Constellations and Symbol rate measurement

INTEGRATED MODULATION CLASSIFIER

Signal Analyzer includes the Modulation Classifier known from other go2signals products. This speeds up analysis by giving a first impression of the modulation or confirming users' measurements.
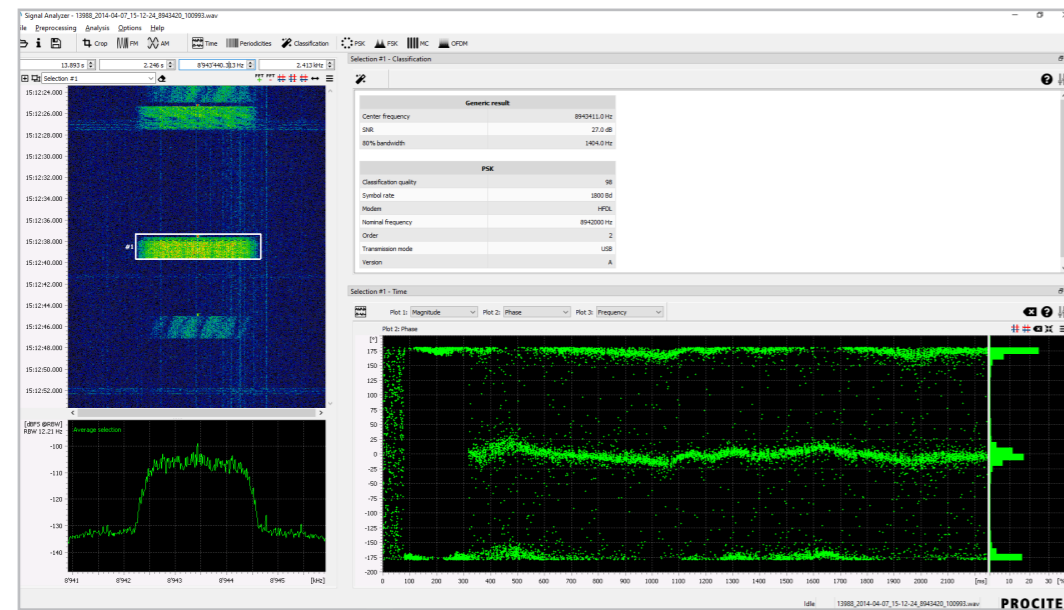
Automated Modulation Analysis: Integrated Modulation Classifier

PERIODICITY ANALYSIS

Many signals contain periodic signal behavior caused by synchronization sequences, training sequences, etc. in its data stream. This sequences are often unique, therefore a reliable method for recognizing signal types. Signal Analyzer offers a special analysis set:
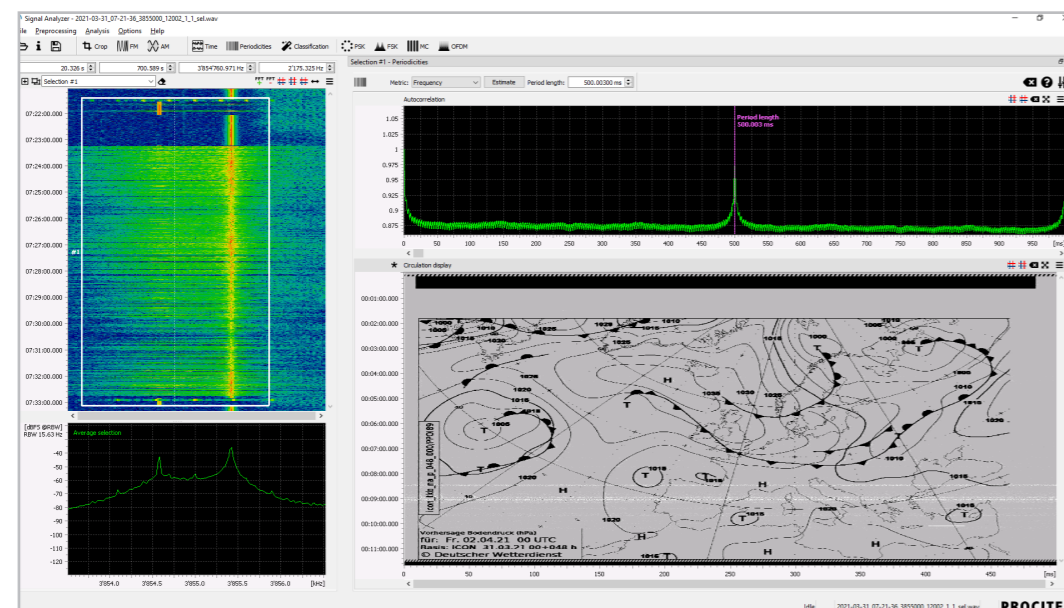

Periodicity Analysis: Can be used to show the content of a weather fax transmission

ANALYSIS OF COMPLEX SIGNALS

Even analysis of complex signals like OFDM (optional) is made easy by the adapted powerful features like:

- Tu/Ts duration measurement
- Scatter displays for amplitude and phase over time and carriers
- Multiple I/Q constellation diagrams
- Multicarrier phase correction
- Demodulation PSK2-PSK16, QAM4 and QAM16 with Bit display
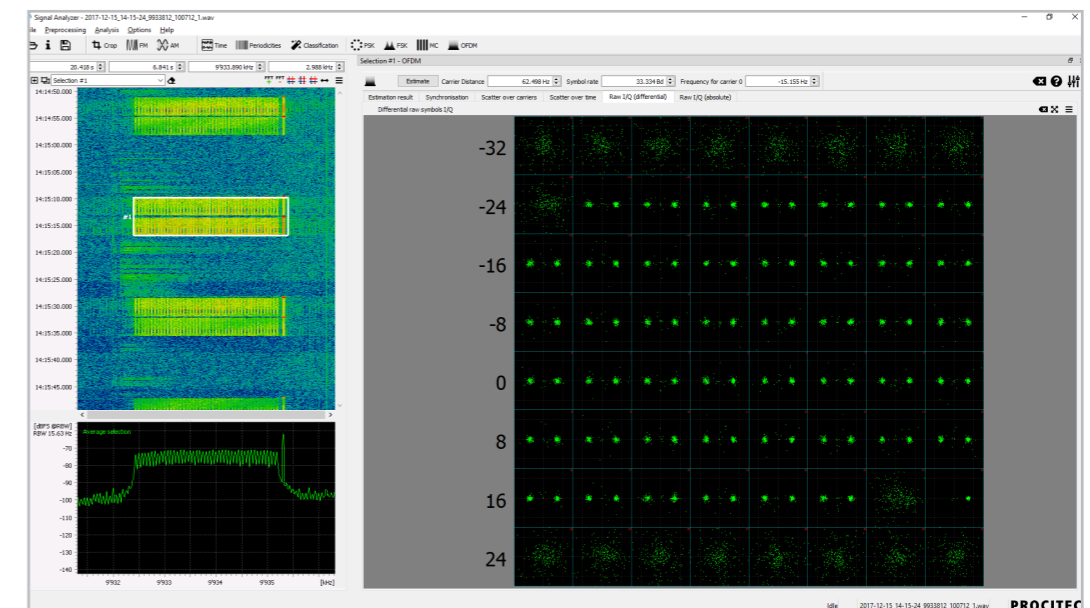
OFDM Modulation Analysis Multiple I/Q constellation diagrams

ANALYSIS SUITE

Technical Specifications Document
**www.procitec.com/go2signals-specifications-analysis**

DECODERLIST

List of all available Decoders
www.procitec.com/go2signals-decoderlist

NEW WINDOWS IN GO2MONITOR

The new window "Task overview" replaces the 2 windows "Missions statistics" and "Mission channels" giving a more detailed view to task parameters and results in automatic mode and advanced display filter possibilities.
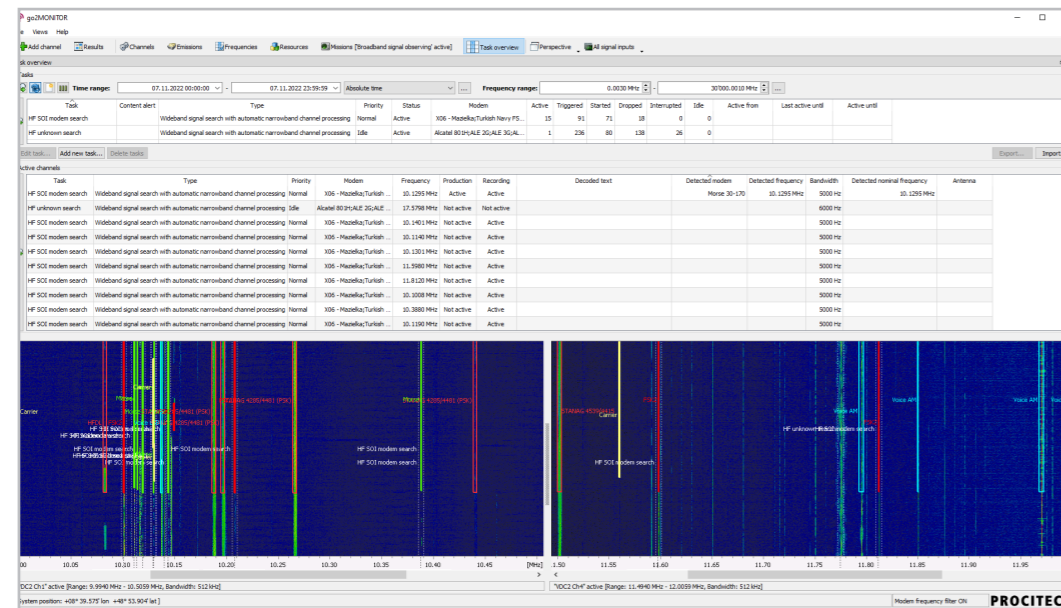
New window "Task overview" in go2MONITOR during automatic wideband processing

Second new window is called "Task channel watch". It gives the possibility to observe selected channels during automatic processing, see first results and listen to the signal (using available audio demodulators).

As example the operator sets up different FOI (Frequencies of Interest) for automatic processing and if something of interest happened, have a look into the current processing channel using the tasks channel watch window.
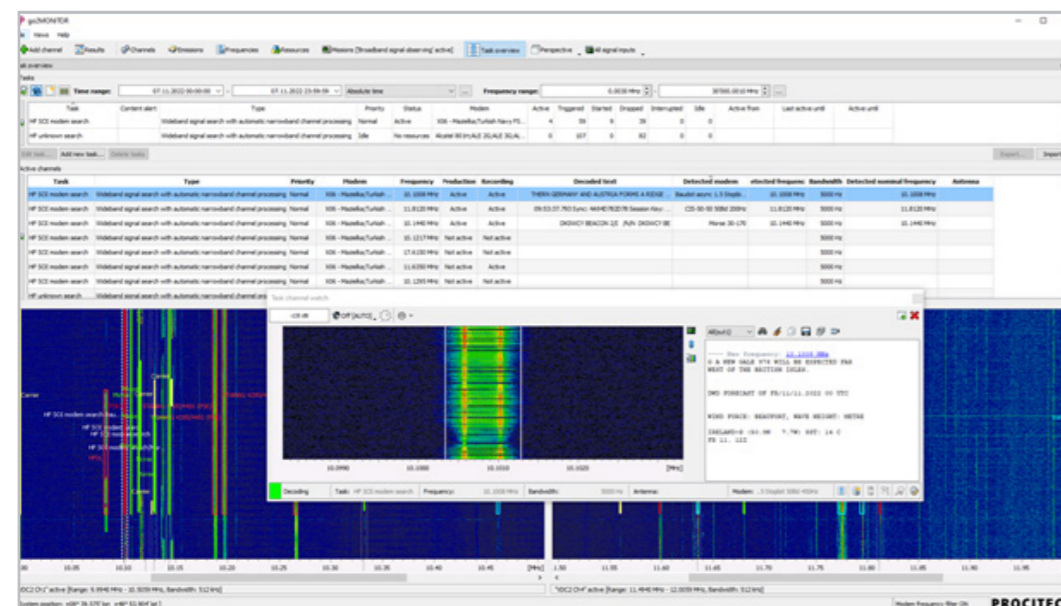

New window "Task channel watch" adds the possibility to observe selected channels during automatic processing

CLASSIFIER ENHANCEMENTS

For automatic monitoring, go2signals wideband classification is the advantageous feature to optimize the processing chain by using the modem and modulation parameters to filter out the signals of interest.

To support signals with very wide bandwidth, we have started to extend the upper symbol rate limit to 50 MBd for PSK classification with this release, others will follow.

- Add new modem classifier for FLEX
- Enhance PSK classifier to signals with a symbol rate of up to 50 MBd
- Improvement of Tetrapol and Tetra Uplink detection
- Improvement regarding Link 11 false positive classifications
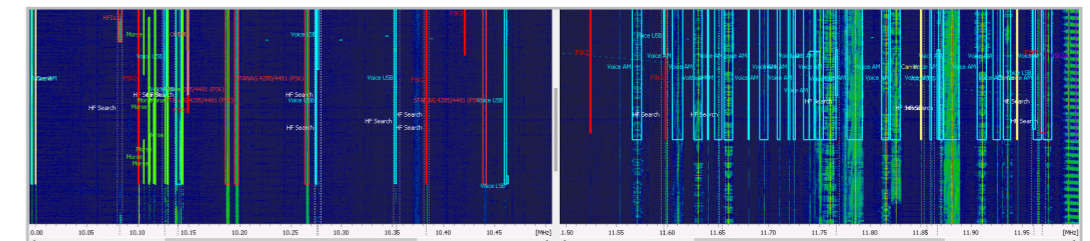
Every 4 sec the wideband classifier updates its results for the complete input band on both input channels

ADDITIONAL RECEIVER SUPPORT

Working on live signals with go2signals is easy to start, just connect to one of the supported receivers from our receiver list or to a receiver supporting VITA 49 interface. With every release we follow the market and add new receiver support.

- Add support for SignalHound BB60D receiver

- Various improvements in the Vita49 support implementation
  - Simplified VITA49 receiver templates
  - Automatically parse TSI and TSF types from input stream
  - Speed up the interface to extend maximum possible bandwidth

- Get the full supported input bandwidth of go2signals software with R&S receivers by using receivers effective bandwidth for license check instead of sampling rate

- UdpDestMonitoring function of the IZT receiver is now turned off by default in all IZT templates

- Multiple semicolon-separated custom SCPI commands for the initialization can now be specified for some R&S receivers during configuration

MONITORING SUITE
Technical Specifications Document
www.procitec.com/go2signals-specifications-monitoring

DECODERLIST
List of all available Decorders
www.procitec.com/go2signals-decoderlist

DECODER AND DEMODULATOR ENHANCEMENTS

With its decoder list go2signals supports more than 350 different modems from scratch. To stay current with the changing signal world we added as every release new features and additional decoders.

DEMODULATOR NEWS

- New demodulator type 'Hybrid' with submodem type 'Chinese Hybrid 8FSK-PSK'

- FSK2M:
  - Improved performance (speed)

- PSK/QAM:
  - Improved performance (speed)

- ExtModem interface:
  - Added SetLogger() method to API

DECODER NEWS

- CHN MIL Hybrid 8FSK-PSK
  - Implemented new demodulator to support automatic detection and frequency correction

- STANAG 5066:
  - Evaluation of source and destination SAP ID

- CODAN 3212 1 Channel HDR:
  - Added decoding of 4800, 6000 and 7200 bps modes (QAM)

- CODAN3212 1 Channel variants:
  - Removed 'PSK' from modem names in modem description files

- STANAG 4415:
  - Allow manual setting of alphabet

- STANAG 4539:
  - Allow manual setting of alphabet

- STANAG 4539 HDR
  - Added decoding of 6400, 8000, 9600 and 12800 bps modes (QAM)
  - Decoding of STANAG5066 layer (if present)
  - Allow manual setting of alphabet

- Morse:
  - Combine existing two modems in one modem file and enlarge range to 170 cpm

- VDL2:
  - Better initial synchronization with preamble

- STANAG/MIL decoders
  - Decoder parameter to set codec for ITA5-8N1 and ITA5-8N2 modes
  - Hex output on channel text16: use hex editor like output if possible

PYDDL NEWS

pyDDL development environment based on Spyder
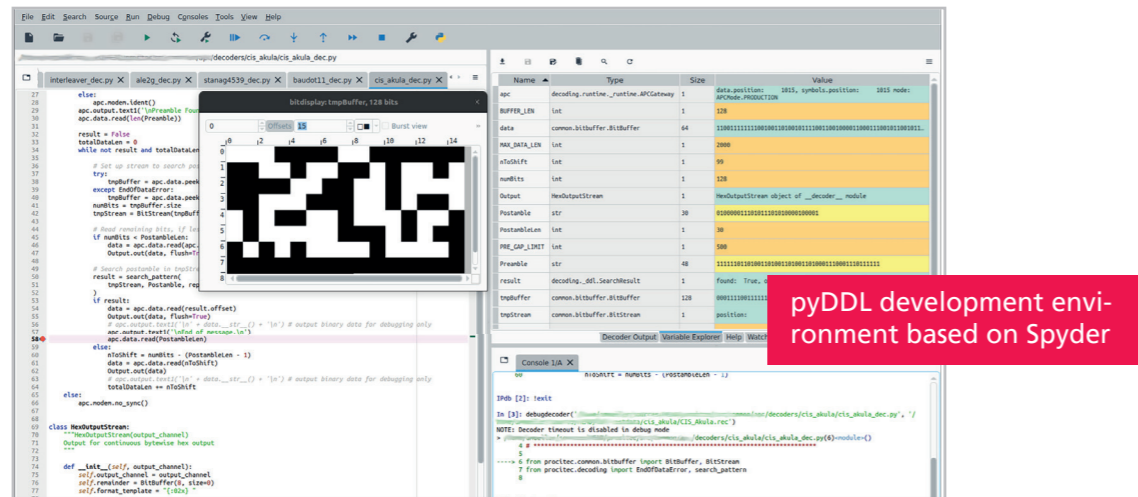
A special feature of go2signals is the possibility to develop own decoders and to integrate them easily into the used software products from the package. Therefore, a complete decoder devel-opment environment is integrated in go2DECODE Professional.

This release is one of the last steps in transferring the decoder development language from DDL to pyDDL, with the following release the transfers of all decoders will be completed.

ADDITIONAL PYDDL FEATURES

- Viterbi Decoder
  - The trellis can now be initialized with an undefined initial state.
  - Streaming mode: Added possibility to flush the decoder with either a defined or undefined final state.

UPDATED DECODERS TO PYDDL

- ARQ-6-90/98
- ARQ-E/E3 variants
- ARQ-N
- BULG-ASCII
- CODAN 3212 1 channel 75 bps
- CODAN 3212 1 channel
- CODAN 3212 1 channel HDR
- CV786
- Globewireless FSK/PSK
- Globewireless OFDM
- HC-ARQ
- LINK11
- MIL55529A
- MIL-STD-188-110A 16 Tone

- PACTOR 4
- PSK63-125 FEC
- PSK-AM
- STANAG 4415
- STANAG 4539
- STANAG 4539 HDR
- SWED-ARQ
- VDL3
- X06
- ZVEI
- universal detectors
  - BitPattern
  - BurstPause
  - Period
  - ValuePattern

ADDITIONAL NOTEWORTHY CHANGES

- New Wideband Signal Input type: Wideband Recording. It enables the usage of the signal from existing wideband recordings as an input for all manual and automatic operations. It includes various changes in the WB-Inputs GUI, Result Viewer and Automatic Wideband Monitoring

- New function, „Context matching…", enables automatic search for user-defined text patterns in decoder results, including result labeling, highlighting and alerting

- Keyboard Shortcut management improved to cover the whole GUI instead only ResultViewer. Additionally, some default keyboard shortcuts have been changed in order to solve conflicts with common shortcuts like Return, Ctrl+C, etc.

- Improved multi-selection combobox component to include filtering capabilities and better performance. This component is now used for Task, Mission, Antenna etc. selection in the GUI

- New field „Result comment" in Automatic Wideband Monitoring tasks can be used to specify a user-defined text which will be added to the comment field of all results generated by this task

- Custom Python-based functions can now be integrated in narrowband channel and displayed in its toolbar

- Database engine has been upgraded from PostgreSql v10.6 to v14.5

- Bulk file processing: Source signal file name is now included in the Source field of all results

- Changed Automatic Wideband Monitoring task wizard to integrate new functions and improve layout

- TCP Port usage optimized to use less ports in configurations with Operator-GUI

- Signal Input combobox in the narrowband channel now includes SignalServer ID as well

- Improved starting/stopping sequence of the system to reduce wait times

- Improved mission/task import function to import content matching lists and antennas if they are available in the target system

- Improved mission/task import function to allow importing data from older versions if all needed information are available

- Source IP-Address/Port for the narrowband signal is now visible in the context menu of the spectrogram in the narrowband channel view

- Performance improvements for filtering frequency lists with user columns

- Improved performance of the Decoder postprocessing function to be able to process hundreds of results per second

- Faster frequency stepping in the narrowband channel is now possible