go2signals

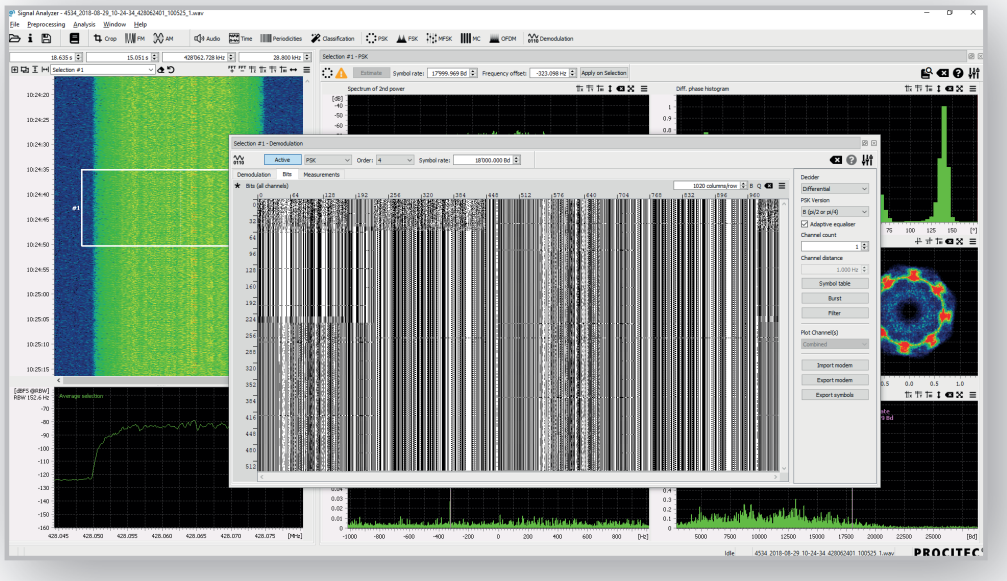
RELEASE NEWS
VERSION 24.1

PROCITEC®
HOUSE OF SIGNALS

SIGNAL ANALYZER ENHANCEMENTS

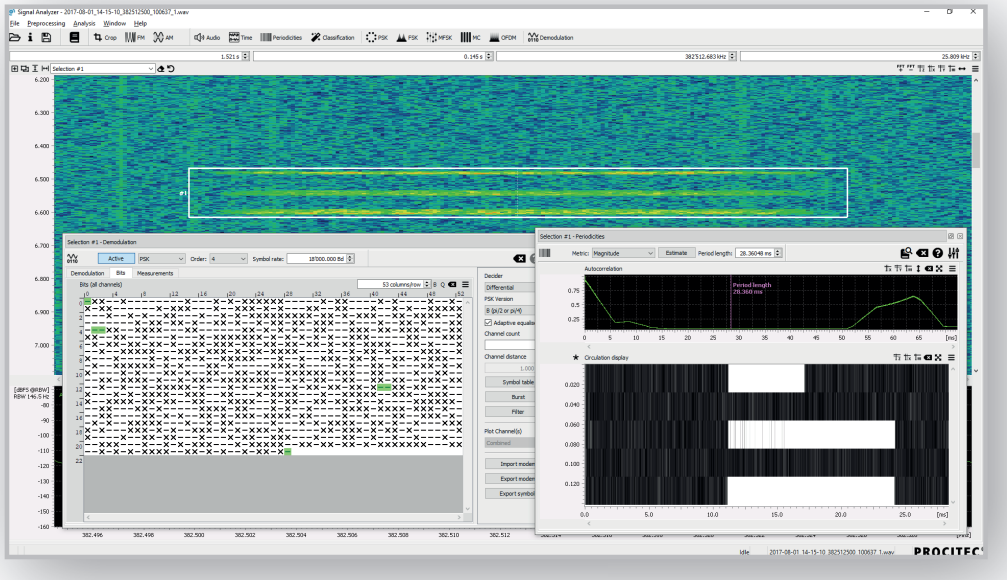
NEW: DEMODULATOR CAPABILITY

When processing a new or unidentified signal, the first step is to analyze its modulation parameters. Signal Analyzer provides all the necessary functions in one easy-to-use tool. With this result, the next step is demodulation to obtain the communication bitstream for further analysis.



Example with pi/4-DQPSK analysis and demodulation showing results in its bit display

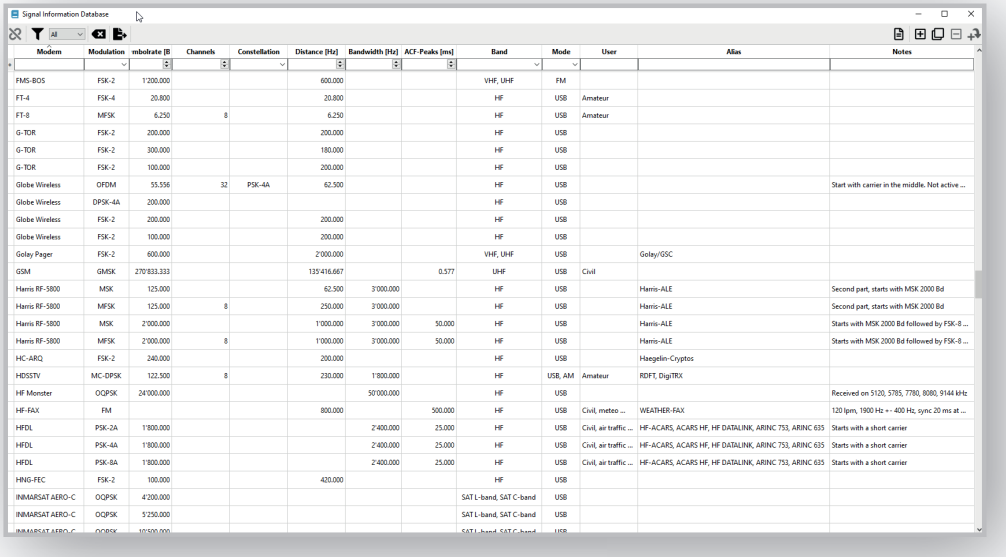
Signal Analyzer now includes the capability to **demodulate** the signal as part of the analysis. The demodulator incorporates PROCITEC's proven demodulators for FSK and PSK modulation types with a wide parameterizable working range and many outstanding features such as adaptive equalization and automatic FSK fading correction.



Example analysis and demodulation of short-duration & burst signals

IMPROVED: SIGNAL INFORMATION DATABASE

With the last release we introduced our new Signal Information Database. With this new version, the information has been updated further and the entries increased to 450 communication signals mainly used in the HF and VUHF frequency ranges and their different modes.



Modem	Modulation	mbolrate [B	Channels	Constellation	Distance [Hz]	Bandwidth [Hz]	ACF-Peaks [ms]	Band	Mode	User	Alias	Notes
FMS-BOS	FSK-2	1'200.000			600.000			VHF, UHF	FM			
FT-4	FSK-4	20.800			20.800			HF	USB	Amateur		
FT-8	MFSK	6.250	8		6.250			HF	USB	Amateur		
G-TOR	FSK-2	200.000			200.000			HF	USB			
G-TOR	FSK-2	300.000			180.000			HF	USB			
G-TOR	FSK-2	100.000			200.000			HF	USB			
Globe Wireless	OFDM	55.556	32	PSK-4A	62.500			HF	USB			Start with carrier in the middle. Not active ...
Globe Wireless	DPSK-4A	200.000						HF	USB			
Globe Wireless	FSK-2	200.000			200.000			HF	USB			
Globe Wireless	FSK-2	100.000			200.000			HF	USB			
Golay Pager	FSK-2	600.000			2'000.000			VHF, UHF	USB		Golay/GSC	
GSM	GMSK	270'833.333			135'416.667		0.577	UHF	USB	Civil		
Harris RF-5800	MSK	125.000			62.500	3'000.000		HF	USB		Harris-ALE	Second part, starts with MSK 2000 Bd
Harris RF-5800	MFSK	125.000	8		250.000	3'000.000		HF	USB		Harris-ALE	Second part, starts with MSK 2000 Bd
Harris RF-5800	MSK	2'000.000			1'000.000	3'000.000	50.000	HF	USB		Harris-ALE	Starts with MSK 2000 Bd followed by FSK-8 ...
Harris RF-5800	MFSK	2'000.000	8		1'000.000	3'000.000	50.000	HF	USB		Harris-ALE	Starts with MSK 2000 Bd followed by FSK-8 ...
HC-ARQ	FSK-2	240.000			200.000			HF	USB		Haegelin-Cryptos	
HDSSTV	MC-DPSK	122.500	8		230.000	1'800.000		HF	USB, AM	Amateur	RDFT, DigiTRX	
HF Monster	OQPSK	24'000.000				50'000.000		HF	USB			Received on 5120, 5785, 7780, 8080, 9144 kHz
HF-FAX	FM				800.000		500.000	HF	USB	Civil, meteo ...	WEATHER-FAX	120 lpm, 1900 Hz +- 400 Hz, sync 20 ms at ...
HFDL	PSK-2A	1'800.000				2'400.000	25.000	HF	USB	Civil, air traffic ...	HF-ACARS, ACARS HF, HF DATALINK, ARINC 753, ARINC 635	Starts with a short carrier
HFDL	PSK-4A	1'800.000				2'400.000	25.000	HF	USB	Civil, air traffic ...	HF-ACARS, ACARS HF, HF DATALINK, ARINC 753, ARINC 635	Starts with a short carrier
HFDL	PSK-8A	1'800.000				2'400.000	25.000	HF	USB	Civil, air traffic ...	HF-ACARS, ACARS HF, HF DATALINK, ARINC 753, ARINC 635	Starts with a short carrier
HNG-FEC	FSK-2	100.000			420.000			HF	USB			
INMARSAT AERO-C	OQPSK	4'200.000						SAT L-band, SAT C-band	USB			
INMARSAT AERO-C	OQPSK	5'250.000						SAT L-band, SAT C-band	USB			

The Signal Information Database captures around 450 entries of modems and modes

Of course, the users can extend the database with their own information. With the extensive filter functions, measured parameters can be easily matched against known signals to correlate them.

ANALYSIS SUITE

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

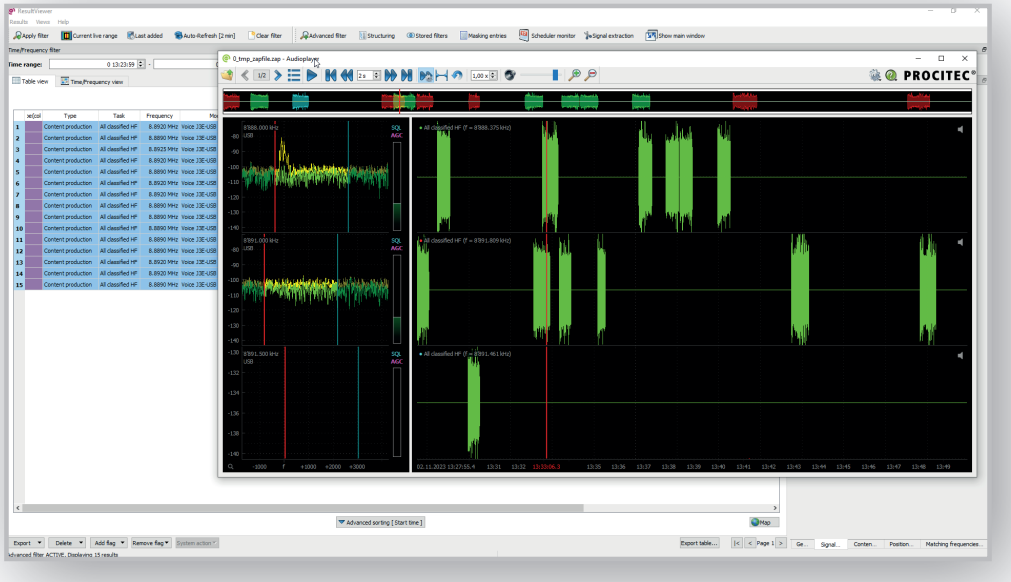
DECODERLIST

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

GO2MONITOR ENHANCEMENTS

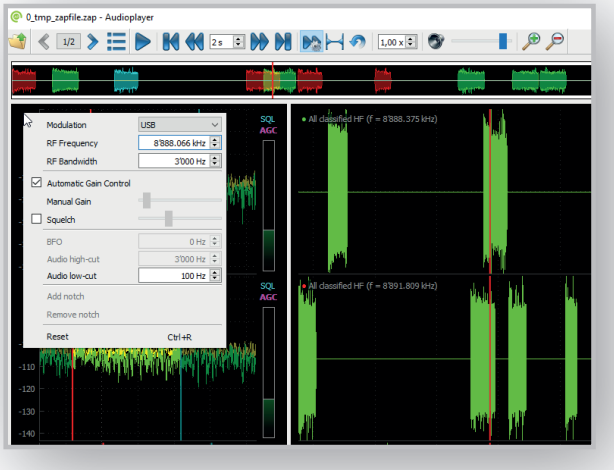
NEW: PREMIUM MULTI-TRACK AUDIO DEMODULATOR AND PLAYER

go2MONITOR now includes a premium multi-track audio demodulator and player application as a standard feature. This advanced tool offers a wide range of audio playback and navigation options. Users launch it from go2MONITORs ResultViewer to access one or multiple results and their associated IQ recordings.



Multi-tracking and viewing audio channels from different emissions in the time domain

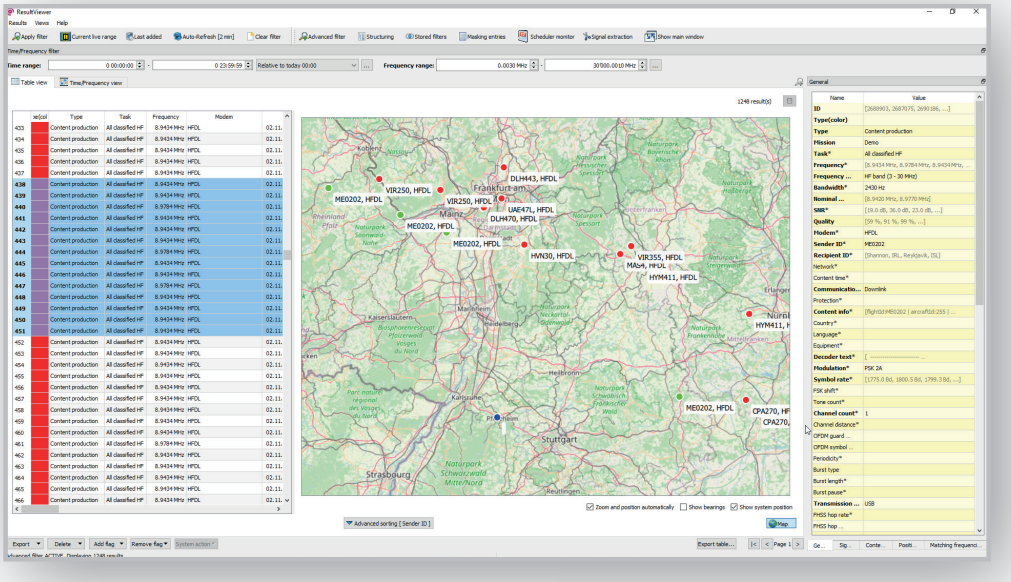
As default, the tracks are parametrized using available information about the emission from the result database. Additionally, each track can be manually set with its own demodulator parameters such as modulation, squelch, filter bandwidth, BFO-offset etc.



Audio demodulator settings

NEW: MAP DISPLAY COMPONENT

New map display component with new look and user interface. In addition to the built-in or custom offline maps, the users can also access maps from any available server which they have configured (e.g. global OpenStreetMap servers or local customer servers).



New map display component in ResultViewer

MONITORING SUITE

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

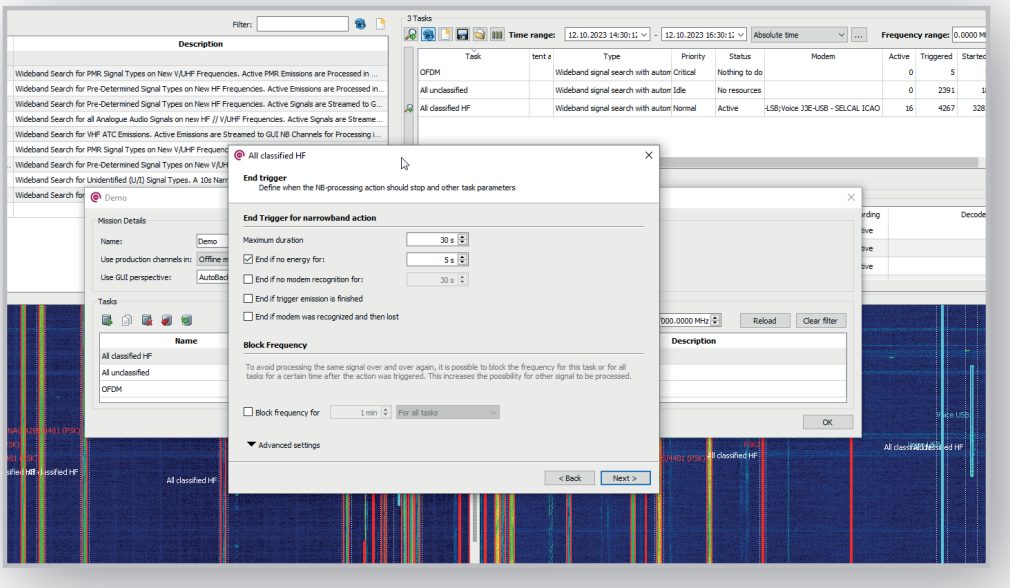
DECODERLIST

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

GO2MONITOR ENHANCEMENTS

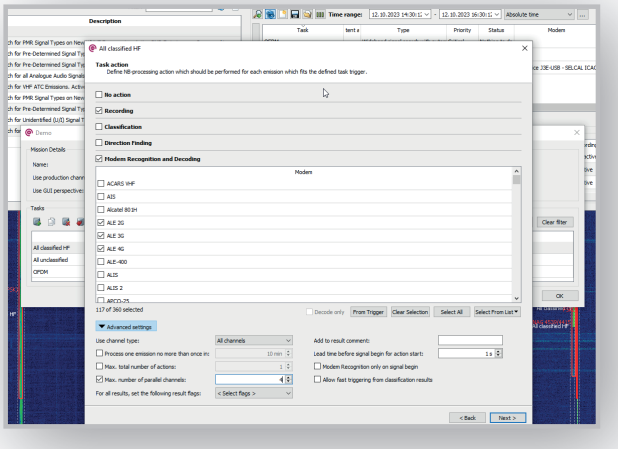
NEW: AUTOMATIC TASK OPTION

Various new automatic task options added to improve task actions stopping control. Task actions can now be additionally stopped based on wideband classification feedback („stop if emission finished“) or on decoder feedback („stop if no modem recognition“ or „stop if modem lost“).



Additional settings for conditional task completion

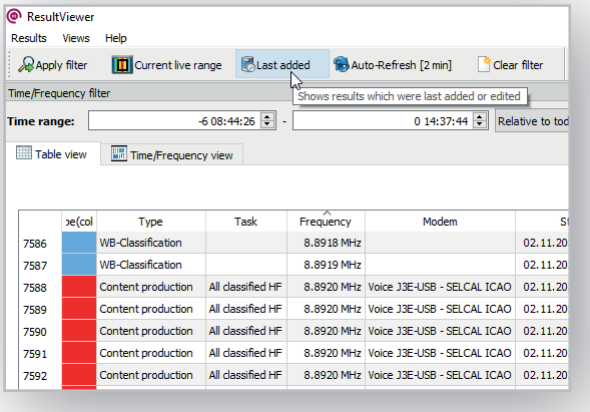
New automatic task option to limit the number of channels which are used by the task. With this simple parameter the operator can optimize resource usage between different task running in parallel.



Limit channel usage for a task

NEW: RESULTVIEWER WITH NEW FILTER FUNCTION

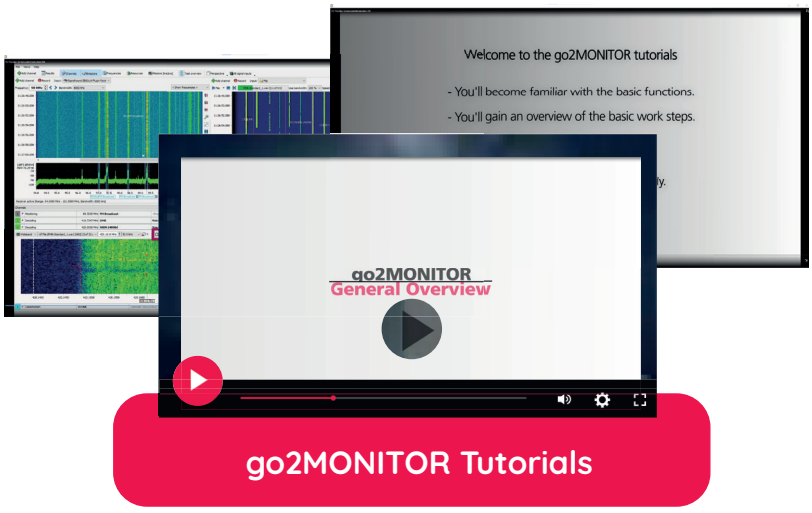
New filter function in ResultViewer to display all results recently added to the system, regardless of their signal time or frequency („Last added“).



Show last added results

NEW: GO2MONITOR TUTORIALS

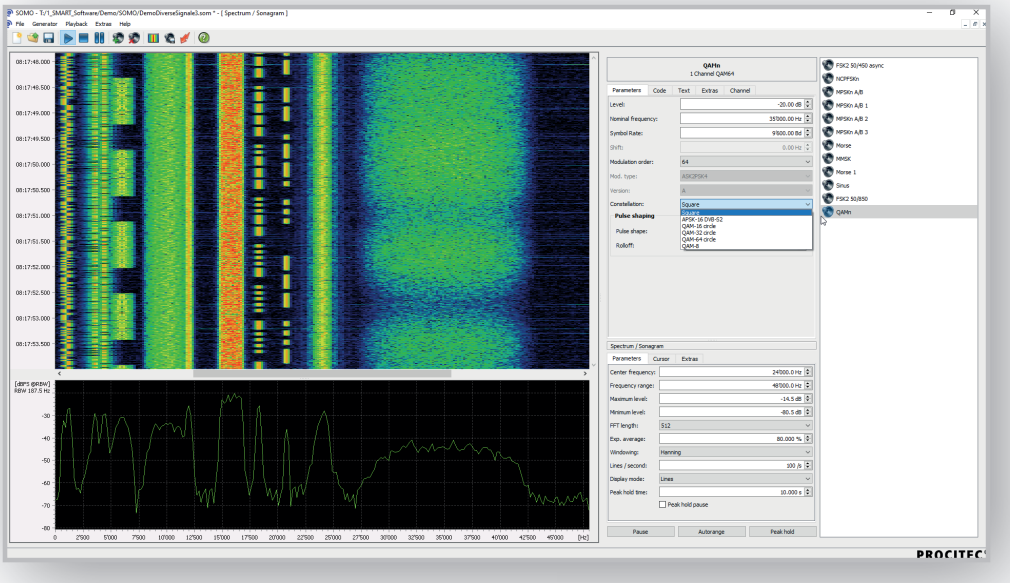
At the request of our customers, we are currently creating tutorials to provide an even quicker, easier introduction to the operation of go2MONITOR. Initially, there will be six tutorials, from installation and first steps to manual and automatic processing and evaluation of the results obtained. These tutorials will be available in Q1/2024.



SOMO ENHANCEMENTS

Testing, simulation and training are the main areas of application for SOMO. The software generates a wide range of signaling modulation types with freely configurable parameters and channel simulations.

With the new release, additional constellations for the modulation type QAM have been integrated.



Simulating a frequency sub-band with multiple modulated signals, each transmitting different data

CLASSIFIER ENHANCEMENTS

Initiated in previous releases, we have extended the bandwidth of our classifier for more and more modulation types to signals with up to 50 MBd Symbol Rate.

Release changes:

- Enhance classification of ASK2/4 signals up to 50 kBd
- Enhance classification of OQPSK signals up to 50 MBd

DECODER AND DEMODULATOR ENHANCEMENTS

With each new release, we add new demodulator and decoder features to our go2signals products to keep pace with the evolving world of signals. The goal is to obtain as much information as possible from all signals received.

DEMODULATOR NEWS

- Morse F1A: now suitable for search mode
- PSK: improved burst detection of signals starting with PSK2

DECODER NEWS

- New decoder added
  - CHN BPSK 2400 Bd
  - CHN MIL 64 FSK
  - CHN pi/2 BPSK 2400 Bd
  - CIS DataLink 1200/800 MS2
  - FLARM
  - Fax Group 3
  - FreeDV
  - ZVEI-VDEW
- DMR: added tooltips for decoder parameters regarding decryption
- Morse: added modems A2A and F2A for morse in combination with primary modulation
- APCO25: updated MFID table entries
- NXDN: decryption of DES encrypted voice with known key
- Decoding of Motorola Location Request Response Protocol (LRRP) in some decoders
  - Tetra
  - DMR
- Decoding of OHMA messages (acars) in several decoders
  - HFDL
  - VDL2
  - ACARS
  - Inmarsat AERO P/R/T
- Detection of EOM sequence
  - CODAN 3212 1 Channel
  - CODAN 3212 1 Channel 75bps
  - CODAN 3212 1 Channel HDR
  - STANAG 4285
  - STANAG 4415
  - STANAG 4539
  - STANAG 4539 HDR

Older communications devices using protocols which are assumed to be obsolete are occasionally sourced (most often online from resellers of previously used equipment) and reactivated by unintended 3rd-parties to suit their unorthodox communications needs. Therefore, we intentionally retain these older protocols' decoders and simply mark them as ‚obsolete' in our go2signals listings. Enduring access to these ‚obsolete' decoders enables our customers to react immediately in such cases.

DECODER AND DEMODULATOR ENHANCEMENTS

NEW DECODER DETECTION FEATURES:

- Maritime Mesh Network Traffic Management
- CHN MIL Datalink 30 Tone
- Harris RF-5800 SelCal

NEW DECODER DEVELOPMENT LANGUAGE (PYDDL) FEATURES:

- ProductionMemory
  - report_file(path): accepts now paths with backslashes
  - open(): relaxed constraints for file extension lengths (1-10) and allowed double extension
  - copy(path): new function to copy an arbitrary file to production memory
- search_polynom: new function to search for bit sequences generated from a known LFSR
- SymbolStream/BitStream: new properties symbol_rate/bit_rate to query the current demodulator measured symbol rate or bit rate

RECEIVER SUPPORT

The go2signals software works seamlessly with many hardware receivers and direction finders from different vendors on the market (see technical specification monitoring suite on www.procitec.com), including the support of VITA49 and ExtIO standardized interfaces. With this release, we added the following new features:

- Support of IZT R507x receiver family
- New VITA49 templates for automatic streaming format detection
- New tool vrt2stream to provide reading of VITA49 files and streaming

IZT R5071 receiver

ADDITIONAL NOTEWORTHY CHANGES

- Added support for Ubuntu Linux OS
- New remote control interface enabling the control of all Automatic Wideband Monitoring (AMT) functions, e.g. creating, editing or deleting missions and tasks
- New shortcut-based functions to move fast through wideband spectrogram (Ctrl+Left/Right) and to open the signal under the mouse in the Channel 1 (Ctrl+Down)
- New context menu function to open narrowband signal file directly from ResultViewer in the narrowband channel as file input
- User can now freely choose how many rows should be displayed maximally in the table view of the ResultViewer (was fixed to 1000 rows in the previous version)
- Enabling/Disabling multiple tasks at once in TaskOverview is now possible
- New functions in TaskOverview to change time range of multiple tasks at once
- Emission structure display in narrowband channel now includes a widget for frame length setting in pixels too
- Current audio demodulator settings are displayed below the spectrogram in the narrow band channel
- New context menu option in TaskOverview to open manual narrowband channel on the frequency of one task based channel
- Various performance optimizations, especially for large configurations with dozens of clients and hundreds of channels. Messaging has been optimized to provide significantly better throughput, Scheduler can now run more simultaneous actions with more output, Loop-Recording can now process much more recordings etc.
- Autorange function in WB/NB-spectrograms is now a checkable option, i.e. can be turned on or off. If turned off, it will never change user settings for min/max level.
- Simple context sensitive help available by using F1 shortcut
- Multiselect-Combobox usability improved: typing the text while the combobox has focus, will immediately open its dropdown and the filter function
- Display options on a Result-Detail, Signal-Tab in ResultViewer are now saved and reused after restarting the GUI
- NB-channel now saves the last audio demodulation bandwidth into its configuration too
- Decoder parametrization: New functions to copy/paste the content of parameter tables (for example Morse Alphabet)
- Number of displayed tasks or channels is now visible in the TaskOverview above each table
- Changed text in the antenna combobox: 'No antenna' instead of 'Off'

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