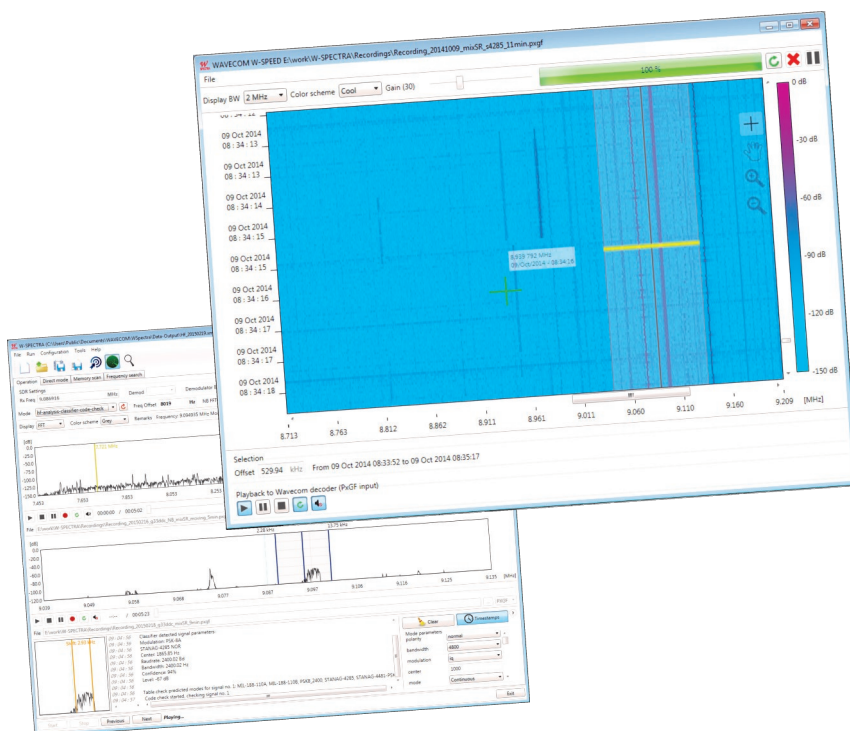


# WAVECOM® W-SPEED



W-SPEED is a wideband spectra display and editing tool. It displays a signal recording in a 2-dimensional sonagram with selectable bandwidth (250 kHz to 30 MHz). It provides various functionalities for detail view and investigation of a recording: zoom-in and spot display of a signal. W-SPEED can cut out an interesting signal anywhere in a sonagram and send it to a Wavecom decoder for further analysis and decoding.



## Spectra Editing (W-SPEED) — I

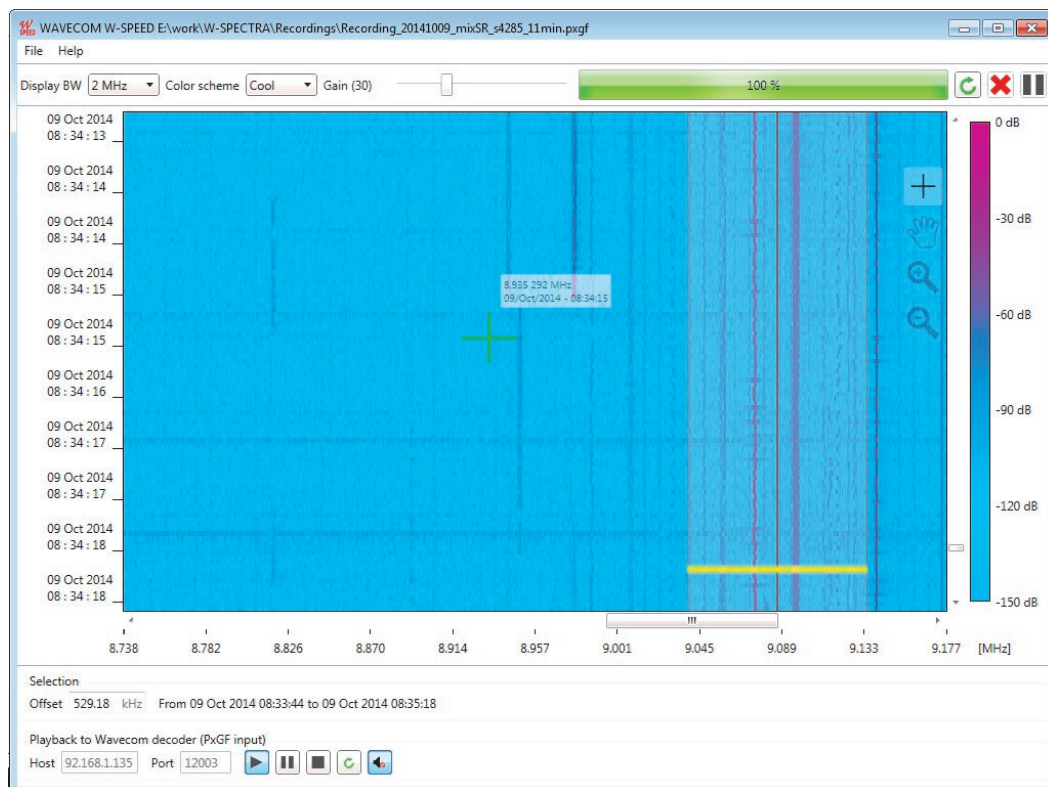
Doing a radio signal monitoring task a system usually performs real-time (online) automatic signal analysis, classification and decoding within a limited bandwidth (monitoring bandwidth). At the same time the system can make a signal recording of a much wider bandwidth (recording bandwidth). In this way, signals outside of the monitoring bandwidth will not be lost and can be analyzed later.

W-SPEED (Spectra Editing) provides various functionalities to analyze the whole wideband spectrum after the online monitoring. The main features of W-SPEED are:

- ◆ It displays an IQ recording in a 2-dimensional sonagram (frequency and time domains). The

user can select the display bandwidth among 250 kHz, 500 kHz, 1 MHz, 1.5 MHz, 2 MHz, 4 MHz, 8 MHz, 10 MHz, 12 MHz, 16 MHz, 24 MHz and 30 MHz. The X-axis is labeled with the absolute receiver frequency when it is not changed through the whole recording; otherwise it is labeled with the relative frequency of +/- the half of the selected display bandwidth. The Y-axis is labeled with the recording timestamp.

- ◆ A spot display (a cross cursor) shows the absolute receiver frequency and the recording timestamp anywhere in the sonagram.

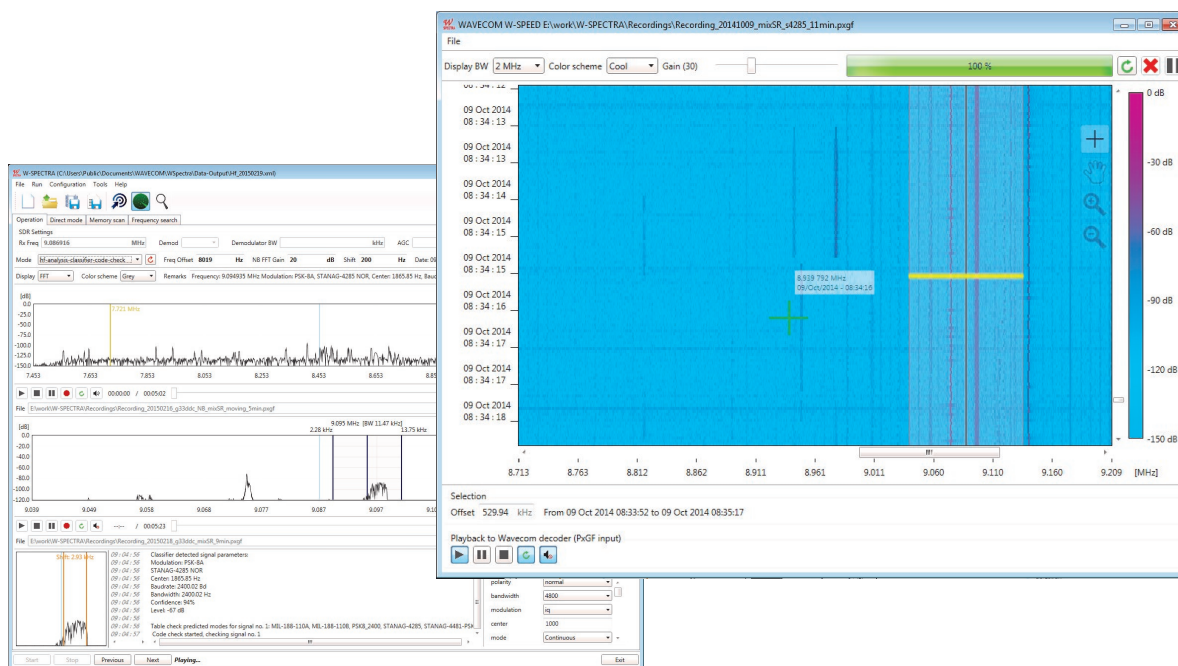


*Display a recording in the Spectra Editing Tool (W-SPEED). The X and Y-axis are labeled with the absolute Rx frequency and the recording timestamp, respectively. Spot display, zoom-in function and free navigation of the entire sonagram*

## Spectra Editing (W-SPEED) — II

With W-SPEED the user can perform detail analysis and investigation on interesting signals.

- ◆ Zoom-in (max. 32 x) displays the sonagram with the max. resolution of 60 Hz each FFT point (pixel), at the display bandwidth of 250 kHz.
- ◆ Two dimensional free navigation and positioning over the entire sonagram.
- ◆ The user can choose an interesting signal by marking it with a rectangular stripe (96 kHz width) in time and frequency domains.
- ◆ The user can playback the isolated signal to W-SPECTRA or other Wavecom decoders for afterwards classification and decoding.
- ◆ The playback displays the instantaneous side information (receiver frequency and recording timestamp) in the recording.
- ◆ During the playback W-SPEED outputs the signal to the speaker for acoustic monitoring purpose.



*Use W-SPEED to cut out an interesting signal for detail processing in W-SPECTRA*

## Recording Splitter Tool

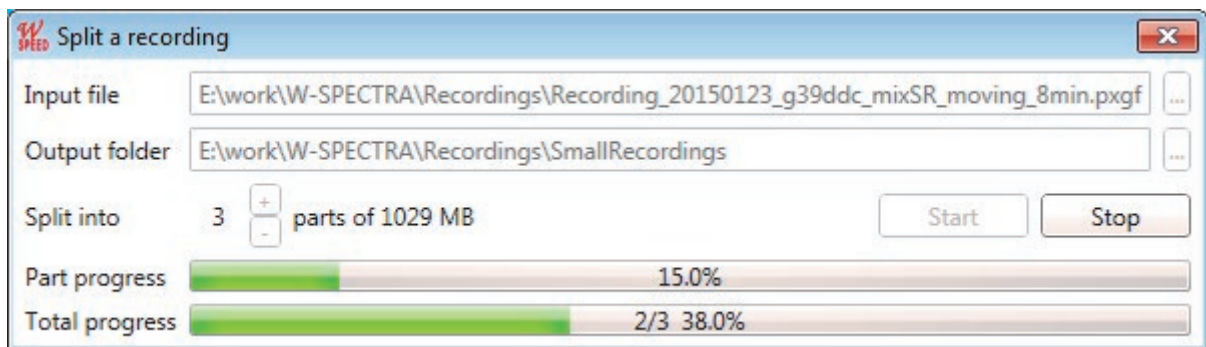
Nowadays wideband recordings can get huge. For example, the wideband recording made by W-SPECTRA is 2 MHz wide, in I/Q, each I and Q parts are 16 bits. This makes a one-minute recording 0.5 GB; one hour 30 GB and for 24 hours the recording will be 720 GB. Although the capacity of modern storage media can easily accommodate these huge files, it may be inconvenient to view and analyze a huge recording at one time.

Using the Recording Splitter Tool (from W-SPEED under the File menu or from W-SPECTRA under the Tools menu) a big recording file can be divided into part recordings of reasonable size.

Because the recording format PXGF allows intrinsic side-information (meta-data is recorded periodically throughout the whole file), the recordings after split can be processed by W-SPECTRA and W-SPEED as the original file.

The scheme of file splitting is:

- ◆ A recording bigger than 10 GB can be split into max. 10 equal size files;
- ◆ A recording between 9 GB and 10 GB can be split into max. 9 equal size files;
- ◆ The minimum size of a recording which can be split is 2 GB. It can be split into max. 2 files.



*A recording splitter tool divides a big PXGF recording into several equal size recordings*

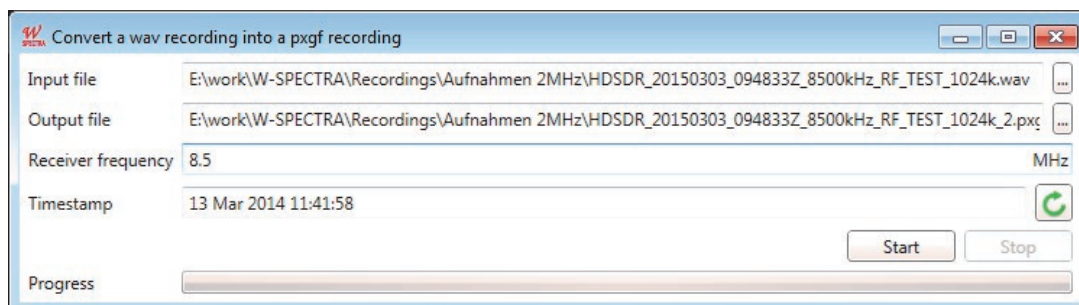
## Convert a Recording Tool

Usually a recording is made in WAV format. With the “Convert a recording” tool the user can convert his WAV recordings into PXGF format. Before conversion the user can set:

- ◆ Receiver frequency and
- ◆ Timestamp

so that these meta-data (side-information) can be implanted into the PXGF recording.

The tool converts a WAV recording when its sampling rate is between 48 kHz and 15 MHz and bits per sample are 8, 16, 24 or 32 bits.



*A tool converts a WAV recording into PXGF format with on-the-fly meta data (receiver frequency and timestamp)*

### Typical Parameters of an Online Monitoring System (W-SPECTRA as an Example)

Monitoring bandwidth	96 kHz around the receiver frequency (Rx Freq)
Recording bandwidth	2 MHz around the receiver frequency
Recording format	PXGF format, 2 MHz bandwidth, I / Q recording, each 16 bits and various side-information (meta-data e.g., Rx Freq, timestamp) recorded on-the-fly
File size for 1 minute	0.5 Gigabyte
File size for 1 hour	30 Gigabytes
File size for 1 day (24 hours)	720 Gigabytes



## Spectra Editing Tool (W-SPEED)

Sonagram display bandwidth	250 kHz, 500 kHz, 1 MHz, 1.5 MHz, 2 MHz, 4 MHz, 8 MHz, 10 MHz, 12 MHz, 16 MHz, 24 MHz and 30 MHz. Default 2 MHz
Axis label	X-axis labeled with the absolute receiver (Rx) frequency when it is not changed in the whole recording, otherwise it is labeled with the relative frequency +/- half of the display bandwidth Y-axis labeled with the recording timestamp
Spot display	Instantaneous display of the Rx frequency and recording timestamp when a cross cursor is moved over the entire sonagram
Zoom-in	Maximum zoom-in of 32 times makes the max. visible frequency resolution of 60 Hz.
Free navigation	Two-dimensional free navigation and positioning over the entire sonagram
Select a signal and process	Mark a 96 kHz wide stripe over an interesting signal and send it to W-SPECTRA or other Wavecom decoders for detail processing

## Recording Splitter Tool

- ◆ Split a PXGF recording into max. 10 equal size recording files
- ◆ The minimum size of recordings after split is 1 GB
- ◆ The minimum size of a recording which can be split is 2 GB

## Convert a Recording

- ◆ Convert a WAV recording into PXGF format
- ◆ Implant meta-data „receiver frequency“ and „timestamp“ into the PXGF file
- ◆ The sampling rate of the WAV recording should be between 48 kHz and 25 MHz

# W-SPEED

Wideband Spectrum Display, Analyze and Editing Tool

**WAVECOM**  
NACHRICHTENTECHNIK

Since more than thirty years Wavecom Elektronik AG has developed, manufactured and distributed high quality devices and software for the decoding and retrieval of information from wireless data communication in all frequency bands. The nature

of the data communication may be arbitrary, but commonly contains text, images and voice. The company is internationally established within this industry and maintains a longstanding, world-wide network of distributors and business partners.

## Product Information

Products	<a href="http://www.wavecom.ch/product-summary.php">http://www.wavecom.ch/product-summary.php</a>
Datasheets	<a href="http://www.wavecom.ch/brochures.php">http://www.wavecom.ch/brochures.php</a>
Specifications	<a href="http://www.wavecom.ch/product-specifications.php">http://www.wavecom.ch/product-specifications.php</a>
Documentation	<a href="http://www.wavecom.ch/manuals.php">http://www.wavecom.ch/manuals.php</a>
Online help	<a href="http://www.wavecom.ch/content/ext/DecoderOnlineHelp/default.htm">http://www.wavecom.ch/content/ext/DecoderOnlineHelp/default.htm</a>
Software warranty	One year free releases and bug fixes, update by DVD
Hardware warranty	Two years hardware warranty
Prices	<a href="http://www.wavecom.ch/contact-us.php">http://www.wavecom.ch/contact-us.php</a>

## System Requirements and Ordering Information

	<i>Minimum</i>	<i>Recommended</i>
CPU	Core i7 3.2 GHz	Core i7-6700 3.4 GHz
Memory	12 GB RAM	16 - 32 GB RAM
OS	Windows 7 32-bit or 64-bit	Windows 10 32-bit or 64-bit

Product Code	Description
WSPEED	Wideband spectrum editing tool

## Distributors and Regional Contacts

You will find a list of distributors and regional contacts at <http://www.wavecom.ch/distributors.php>

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