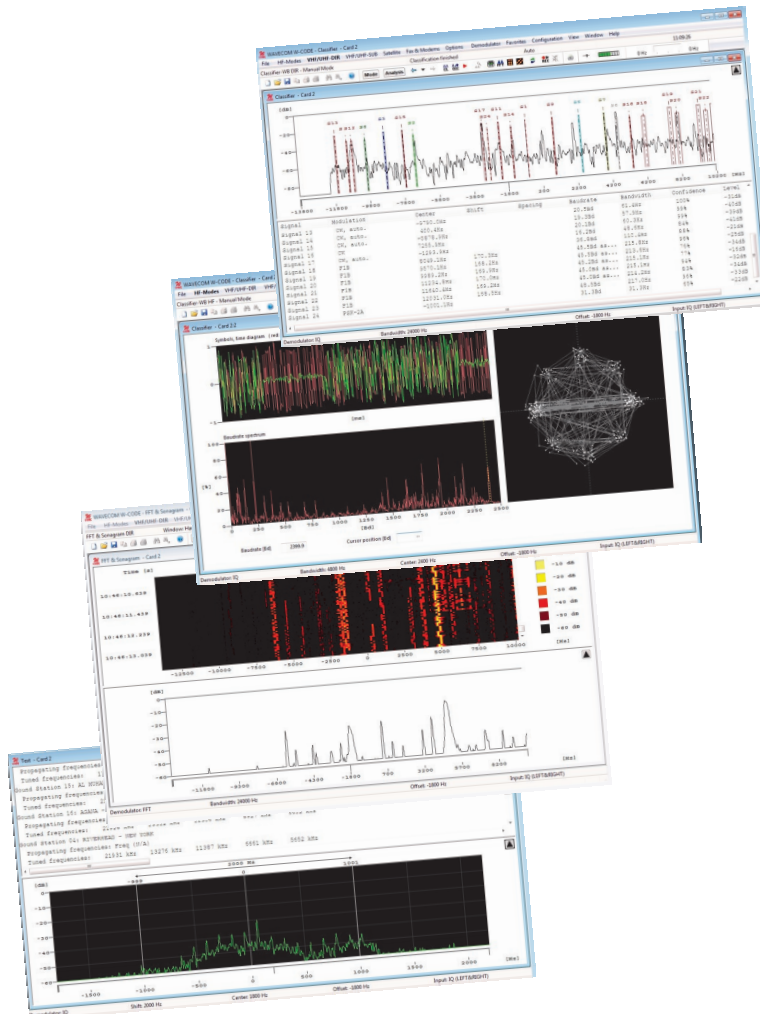


# WAVECOM® W-CODE

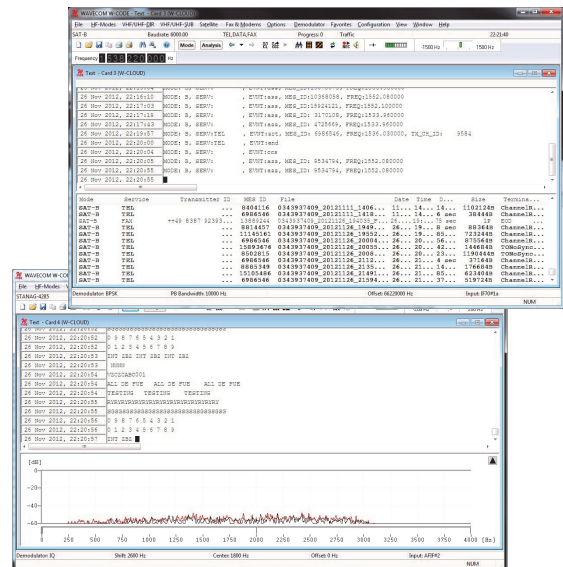


W-CODE provides all functions required to classify, analyze, record, decode and process radio data communications throughout the entire radio spectrum from ELF to SHF. W-CODE is the new standard decoder software for all Wavecom products.



## W-CODE Features and Facts

- ◆ W-CODE provides powerful signal analysis, signal processing and decoding
- ◆ Automatic classification, code check, demodulation and decoding to content level of known signals
- ◆ Signal overview using real-time FFT spectrum, waterfall displays and manual signal measurements
- ◆ Automatic code check of known signals and unknown, pre-defined signals
- ◆ Supports more than 226 HF, VHF, UHF and satellite decoder modes and protocols without additional, costly licensing
- ◆ Supports worldwide remote monitoring of radio transmissions in any frequency band, anywhere via Internet, Ethernet-LAN, Wireless-LAN or Leased Lines
- ◆ Supports W-CLOUD high-quality I/Q data streams from a remote receiver
- ◆ Supports SDR (Software Defined Radio) I/Q data or external digital input
- ◆ Supports TCP/IP input streams using IP-CONF, GEW PXGF, ANSI/VITA-49, Virtual Audio Cable (VAC), WiNRADiO digital Virtual Sound Card (VSC) and host native sound card input with sampling rates of up to 192 kHz
- ◆ Supports W-PCIe and W-PCI dual internal digital down converters (DDCs) up to 87.5 MHz
- ◆ Tested with a number of SDRs, e.g. WiNRADiO G39DDC, G33DDC, GEW GRXLAN, Perseus, RFSpace products, Rohde & Schwarz and MEDAV LR2
- ◆ Supports direct input and output of WAV files from integrated, digital Wavecom Media Player/Recorder.
- ◆ Decoded output can be saved to files or transferred to an external application using the XML based Remote Control Interface
- ◆ Multi-mode feature supporting up to eight concurrent W-CODE instances

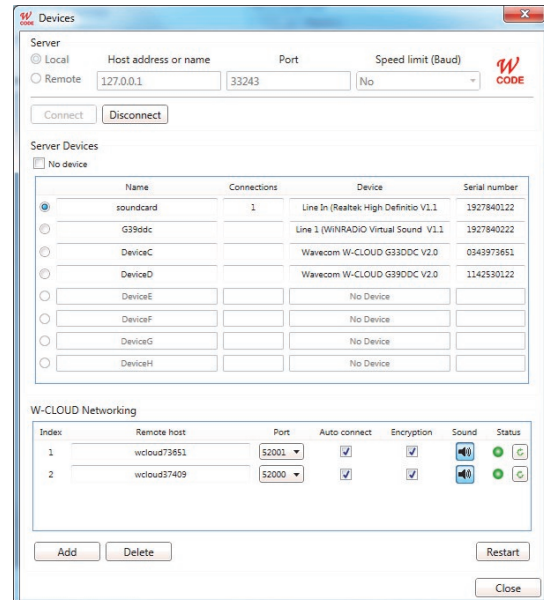


Worldwide monitoring with W-CODE and W-CLOUD

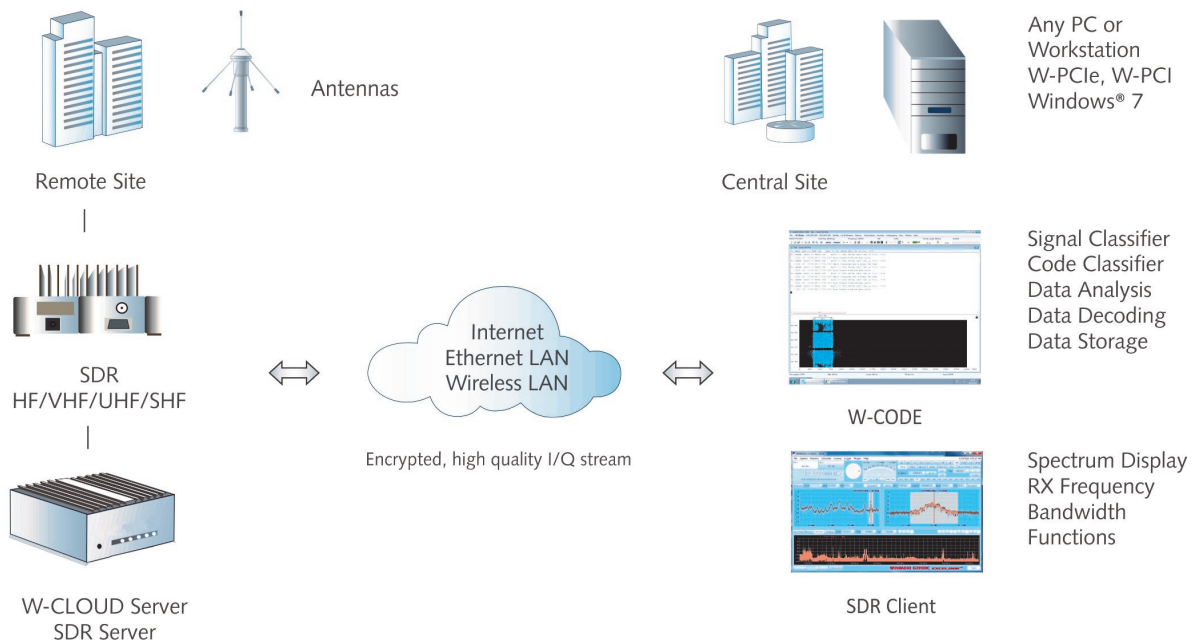
## Signal Sources and Devices

The *W-CODE Device Selector* supports a great number of input interfaces and devices, e.g. IF I/Q streams produced by many receivers, Virtual Audio Cables (VAC), TCP/IP interfaces, W-CLOUD I/Q streams and the DDC signals of W-PCIe, W-PCI and W-QPCIe. The number of supported interfaces is continuously growing. Using W-CODE prevents the locking to proprietary devices of software producers.

Today there is a demand for wideband storage which is met by directly connecting SDRs to low-cost hard disks. WinRADIo G33DDC and G39DDC will for instance store bandwidths up to 4 MHz. W-CODE offers storage of narrow bandwidth I/Q streams up to 96 kHz using its native Media Player/Recorder. Expensive external and exotic recording devices belong to the past.



Quick and easy signal source settings

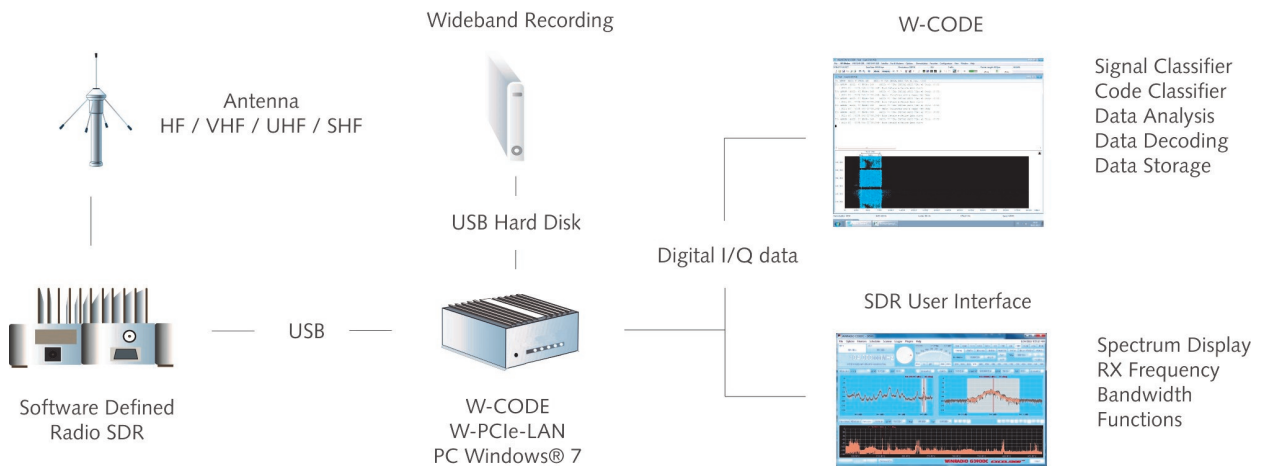


Example setup for remote signal acquisition using W-CLOUD and W-CODE

## Signal Sources and Devices

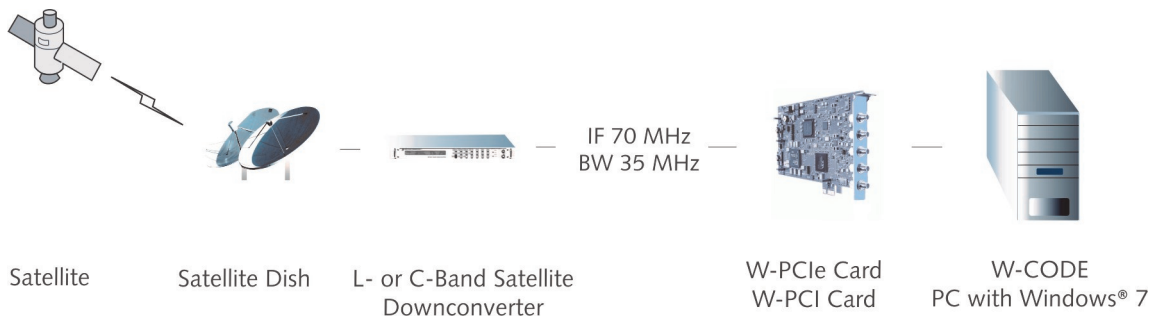
In this setup W-CODE and W-PCIe-LAN works together with a Software Defined Receiver (SDR) via its direct IF I/Q interface. It is also possible to use a universal Virtual Audio Cable (VAC) as interface. Additional hardware is not required for

this software only solution. The W-PCIe-LAN may even be replaced by a standard PC or workstation. Because data is digitally processed, any loss of quality is avoided.



Satellite communication decoding is also possible using W-CODE and W-PCIe or W-PCI. In this configuration the interface card acts as a dual

Direct Down Converter (DDC). The receiving frequency is automatically and directly controlled from W-CODE.



# W-CODE

Signal Analysis and Processing

W-CODE and W-PCIe or W-PCI supports all types of receivers with IFs from 8 kHz to 21.4 MHz and even wideband receivers with 70 MHz

IF. It is also possible to use a sound card as input device.

Standard Receiver  
HF, VHF, UHF, SHF



Wideband Receiver  
HF, VHF, UHF, SHF

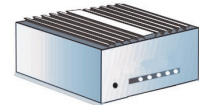


IF 8 kHz  
to  
IF 21.4 MHz  
or AF

IF 70 MHz  
+/- 15 MHz



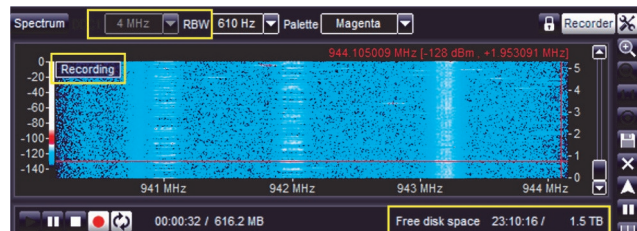
W-PCIe Card  
W-PCI Card



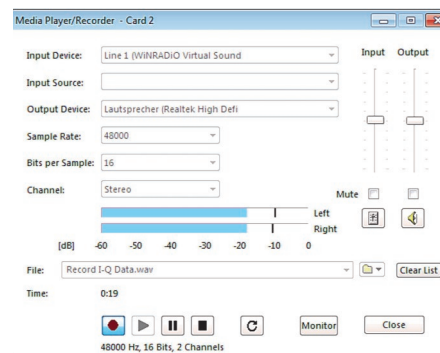
W-PCIe-LAN  
W-PCI-LAN  
W-CODE  
Windows®7

## Wideband and Narrowband Recording

Example setup including a WiNRADiO G39DDC SDR for *Wideband Recording* of up to 4 MHz on a 3-4 TB hard disk via a standard USB 2.0 interface. Any off-the-shelf hard disk will do whether it is internal or connected via USB, LAN or W-LAN.



The W-CODE *Media Player/Recorder* records and saves signals from the selected input to digital I/Q WAV files. During playback of WAV files the signal is sent unprocessed to W-CODE and an audio signal is available for simultaneous monitoring. The Media Player/Recorder complements the rich analysis functions available with W-CODE.



## Automatic Classification and Decoding

### Powerful classification unit

The automation of the signal classification process relieves the operator from manual evaluation, which otherwise requires considerable skill and experience.

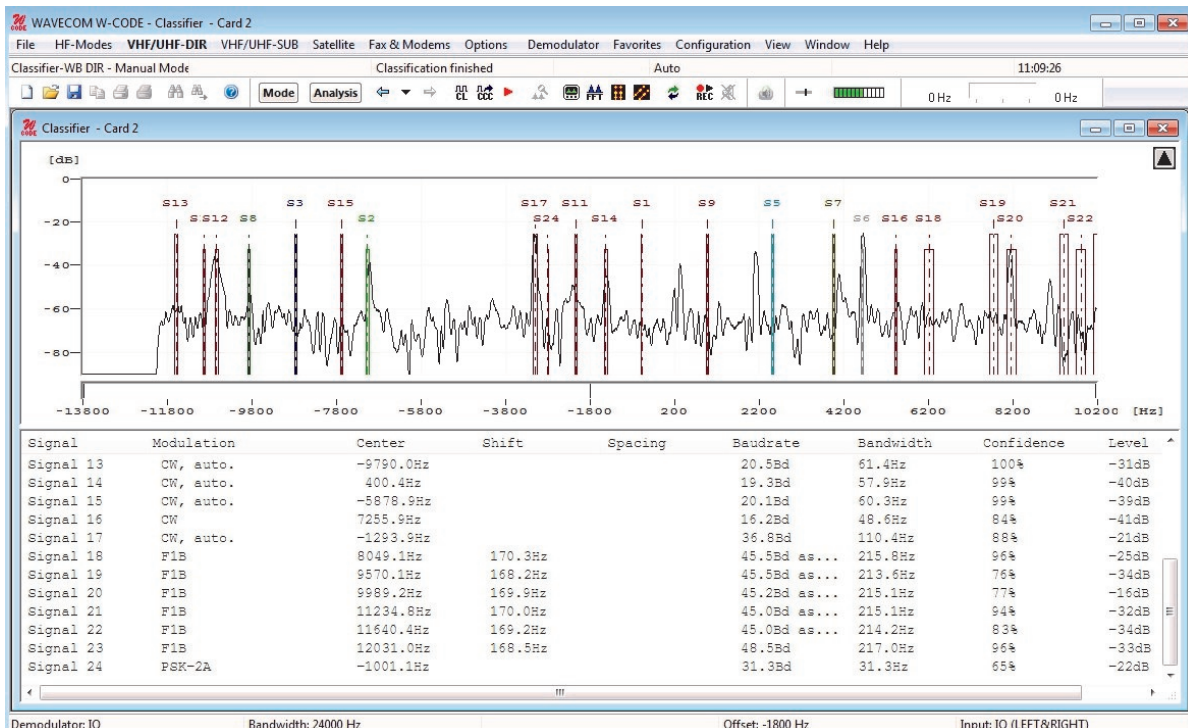
*W-Classifier supports these functions (W-Classifier-NB)*

- ◆ Modulation type
- ◆ Baud rate or symbol rate
- ◆ Signal center frequency
- ◆ Number of carriers
- ◆ Frequency shift

- ◆ Carrier spacing or distance
- ◆ CW-Morse detection
- ◆ 8 kHz bandwidth (W-Classifier-NB, WCL61PC)
- ◆ All signals within the classifier bandwidth are processed

*Additional functions for wideband classification (W-Classifier-WB)*

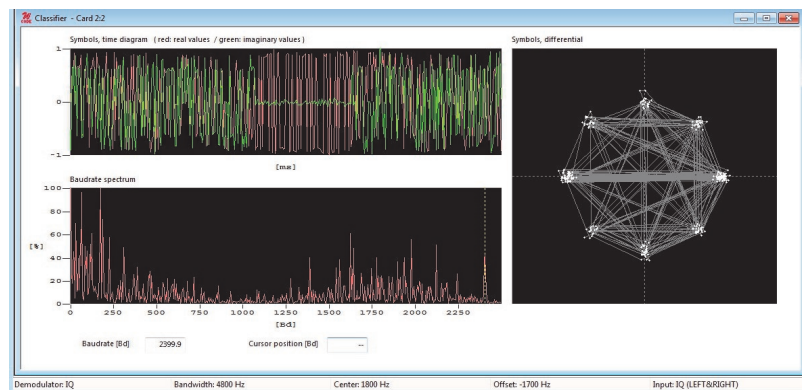
- ◆ Bandwidth up to 96 kHz
- ◆ Voice detection AM, FM, USB and LSB
- ◆ Baud rates up to 60 kBd



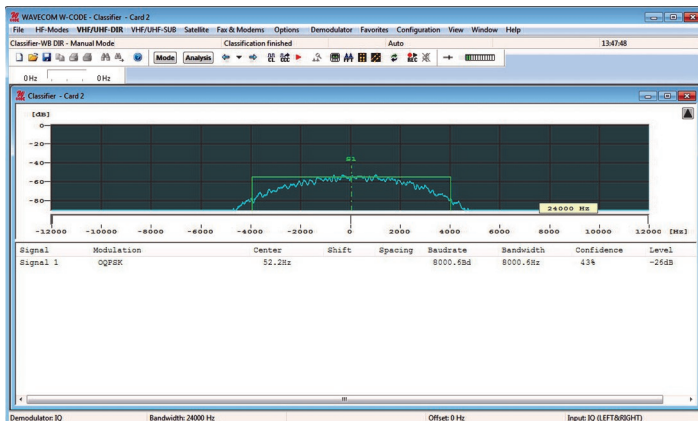
Wideband-Classifier display containing 24 identified signals

## Automatic Classification and Decoding

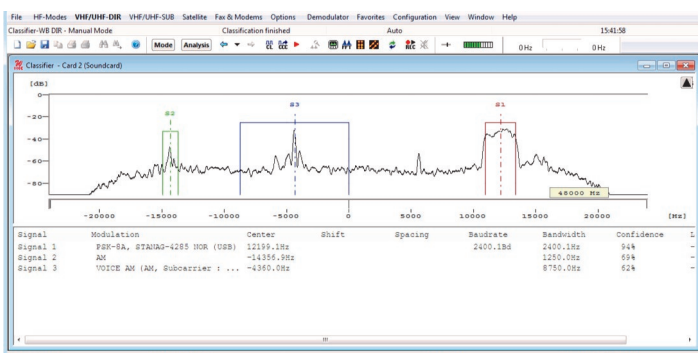
The Classifier also offers a number of signal analysis functions like symbol display, display of real and imaginary components of analyzed signals, baud rate spectrum and differential symbol display in a phase plane. Signal parameters may also be manually measured.



*Classifier with 2,400 Baud 8-PSK STANAG-4285 HF signal*



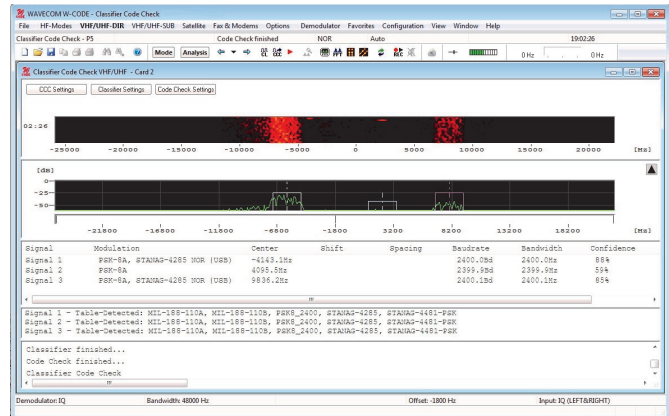
*Analysis of a 8,000 Baud GMSK TETRAPOL signal*



The monitored frequency band is displayed in a spectrum plane. After classification has completed, the classified signals are listed below the spectrum display.

## Automatic Classification and Decoding

The *Classifier-Code-Check CCC* is a versatile analysis tool for the classification of known and unknown signals and the determination of the mode in use. The CCC will attempt to process all signals within the bandwidth of the classifier. The classifier attempts to classify the input signals according to their modulation formats. The table check will check the signal against the entries of the selected mode list. The code check will attempt to synchronize against classified modes, finally the signal will be forwarded to a decoder for output.



A *CCC Table Editor* allows extending, modifying or deleting records in the database used for mode look-up. An input template containing all important parameters is available for each modulation type. All parameters, the record name and the file name are user selectable.

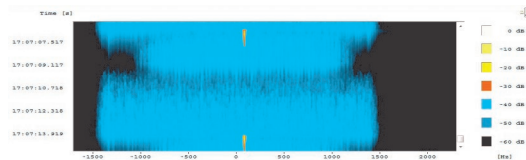
Name	Decoder	Modulation	Subcarrier	Band/Symbol	Shift	Bandwidth	No. of Tones	No. of Carriers	Spacing	Pilot Frequency	Codes
FSK_800_300	no-mode	FSK	800	300	*		2				
FSK_813_145	no-mode	FSK	813	145	*		2				
G-TOR	g-tor	FSK	100	170	*		2				2
G-TOR	g-tor	FSK	200	170	*		2				2
G-TOR	g-tor	FSK	300	200	*		2				2
G-TOR	g-tor	FSK	300	170	*		2				2
GW-FSK	gw-fsk	FSK	100	200	*		2				5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				12 (min. 13)	62.5		5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				14 (min. 15)	62.5		5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				16 (min. 17)	62.5		5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				20 (min. 19)	62.5		5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				22 (min. 21)	62.5		5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				24 (min. 23)	62.5		5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				26 (min. 25)	62.5		5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				28 (min. 27)	62.5		5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				30 (min. 29)	62.5		5
GW-OFDM	gw-ofdm	OFDM	PSK-4	62.5				32 (min. 31)	62.5		5
GW-PSK	gw-psk	PSK-4	200								5
GW-PSK	gw-psk	PSK-8	200								5
HC-ARQ	hc-arq	FSK	240	200	*		2				5
HELLBO	hellbo	FSK	245	400	*		2				1
HF-ACARS	hf-acars	PSK-2	1800								2
HF-ACARS	hf-acars	PSK-4	1800								2
HF-ACARS	hf-acars	PSK-8	1800								2

The *Signal Parameters Editor* allows the entry of an unlimited number of transmission modes, protocols and XML tables. Any table may be loaded from the Code-Check-Settings menu. Tables are divided according to frequency range, HF, VHF/UHF DIR, VHF/UHF SUB or satellite.

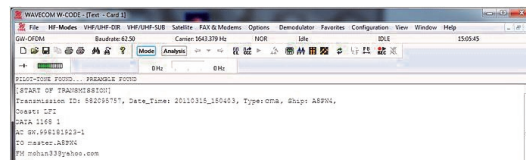


## Decoders and Demodulators

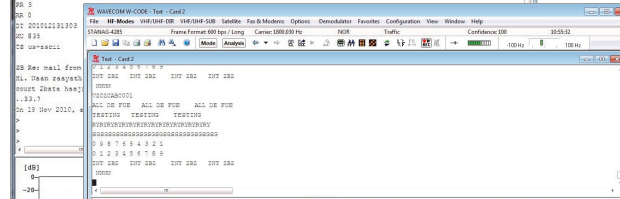
The implementation of complex systems for monitoring is only limited by the number of decoders and the performance of the hardware and software. A wide range of system default settings can be configured, e.g., input signal level, measuring interval, center frequency and demodulator type. W-CODE contains more than 226 transmission modes, all available as a default not requiring any additional license options.



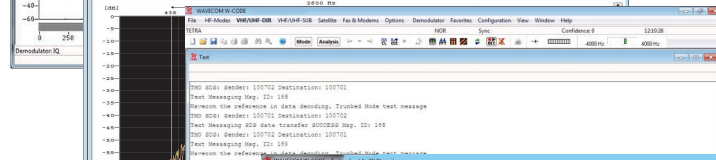
Decoded GW-OFDM from HF



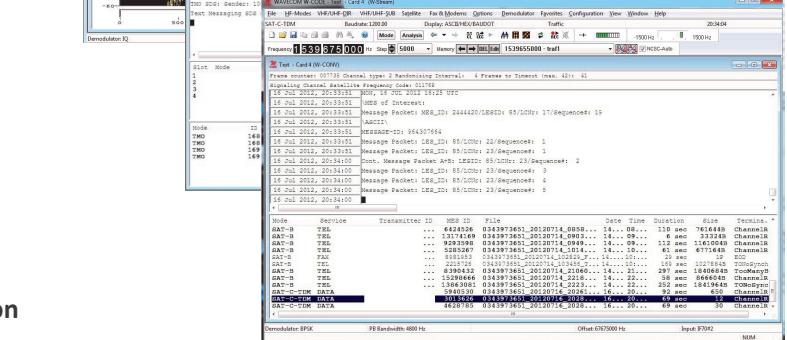
Decoded STANAG-4285 from HF



TETRA decoded from UHF



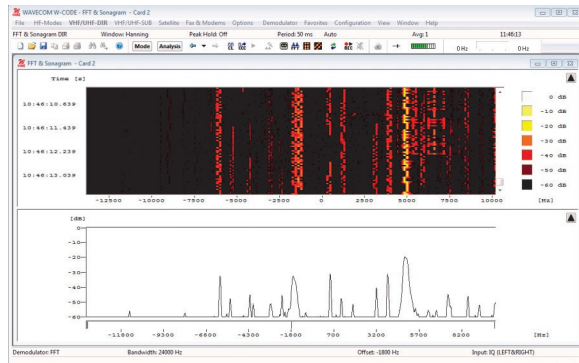
Decoded satellite SAT-C-TDM transmission



Live examples of decoding are available as flash movies at <http://www.wavecom.ch/product-presentation.php>

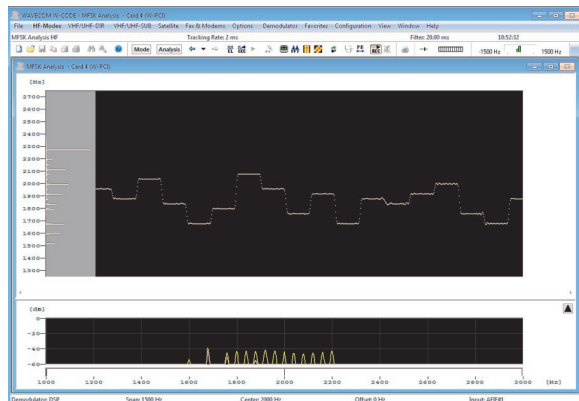
## Measurement and Analysis

The determination of signal characteristics is assisted by a large number of analysis and measurement functions. The numerous integrated analysis tools contain several different methods and viewing options for HF, VHF, UHF, SHF and satellite emissions. The GUI assists the operator in analyzing the important signal parameters. Dynamic zoom functions allow magnification of details in any selected window and the scroll buffering feature makes it possible to move backward and forward in time over the input signal.



Sonogram and FFT spectrum display

<ul style="list-style-type: none"> <li>FFT</li> <li>Sonogram</li> <li>FFT &amp; Sonogram</li> <li>Waterfall</li> <li>Oscilloscope</li> </ul>
<ul style="list-style-type: none"> <li>FSK Analysis</li> <li>FSK Code Check</li> </ul>
<ul style="list-style-type: none"> <li>PSK Symbol Rate</li> <li>PSK Phase Plane</li> <li>PSK Code Check</li> <li>MIL-STANAG Code Check</li> </ul>
<ul style="list-style-type: none"> <li>MFSK Analysis</li> <li>MFSK Code Check</li> </ul>
<ul style="list-style-type: none"> <li>Classifier</li> <li>Classifier Code Check</li> </ul>
<ul style="list-style-type: none"> <li>Autocorrelation</li> <li>Bit Correlation</li> <li>Bit Length Analysis</li> </ul>
<ul style="list-style-type: none"> <li>Demodulated Bit Stream</li> </ul>



MFSK analysis with tone measurement, graphical display and FFT



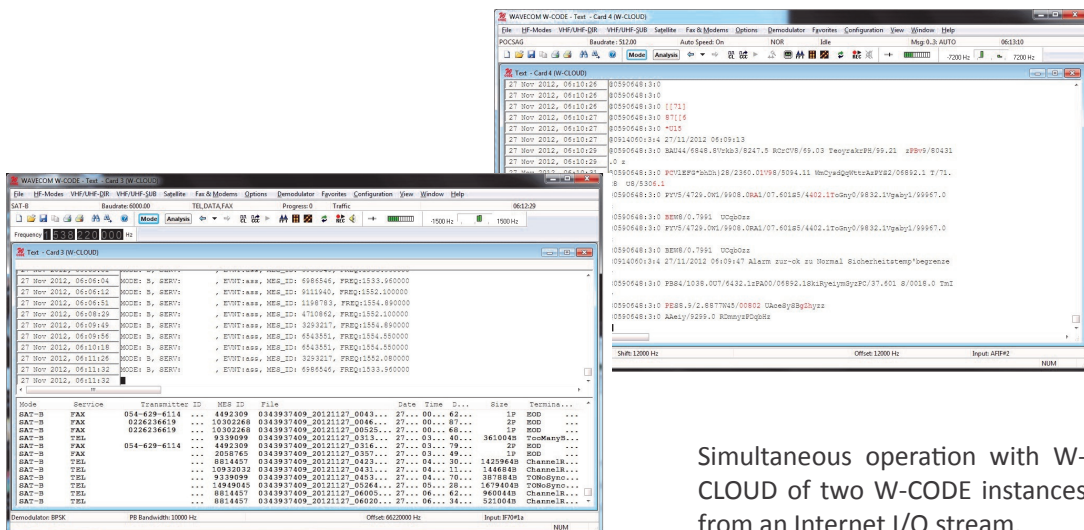
Signal correlating at 9600 bits

Some analysis tools

## Simultaneous Processing of Multiple Signals

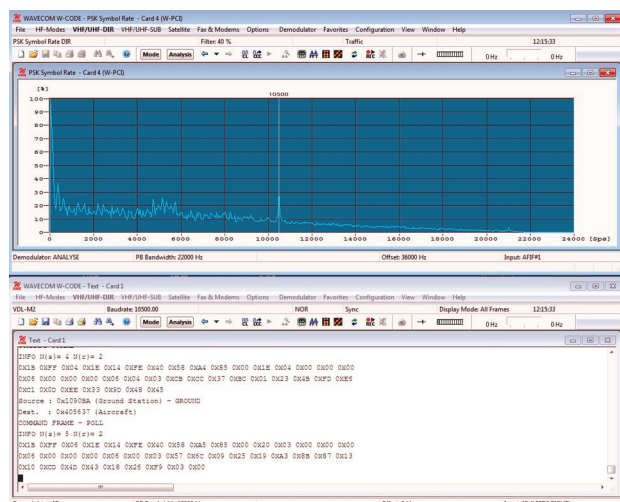
W-CODE allows up to eight concurrent instances and inputs on the same host PC/workstation. The instances are completely independent which facilitate their use. An advantageous "Workstation License" is available for such set-

ups. DDC or SDR may provide the input signal - additional hardware is not required. Notice: Beginning from software release V9.0.00, the input signal sources will be independently sharable between each W-CODE instance.



Simultaneous operation with W-CLOUD of two W-CODE instances from an Internet I/Q stream.

Simultaneous decoding and symbol rate analysis using two W-CODE instances. This setup can be further expanded as required. W-PCI and W-PCIe also allow two inputs with complete DDC functionality. Software Defined Radio SDR multi-input will be available from Software V9.0.00.



### HF - Protocols

ALE-400
ALF-RDS
ALIS
ALIS-2
ARQ6-90
ARQ6-98
ARQ-E
ARQ-E3
ARQ-M2-242
ARQ-M2-342
ARQ-M4-242
ARQ-M4-342
ARQ-N
ASCII
AUM-13
AUTOSPEC
BAUDOT
BR-6028 (ITA-2 and ITA-5)
BULG-ASCII
CHN 4+4
CHU
CIS-11
CIS-12 (HEX output)
CIS-14
CIS-36
CIS-36-50
CIS-50-50
CLOVER-2 (ARQ, all CRCs)
CLOVER-2000 (ARQ, all CRCs)
CLOVER-2500
CODAN-SELCAL
CODAN-9001
COQUELET-8
COQUELET-13
COQUELET-80
CV-786
CW-MORSE
DCS SELCAL
DGPS
DUP-ARQ
DUP-ARQ-2
DUP-FEC-2
EFR

FEC-A
FELDHELL
FM-HELL
GMDSS/DSC-HF
G-TOR
GW-FSK
GW-OFDM
GW-PSK
HC-ARQ
HF-ACARS (HF-DL)
HNG-FEC
ICAO-SELCAL (ANNEX 10)
LINK-11 (CLEW)
MD-674
MFSK-16
MFSK-20
MFSK-8
MIL-188-110-16TONE (-110A/B App. A)
MIL-188-110-39TONE (-110A/B App. B)
MIL-188-110A Serial Tones, 75-4800 bps
MIL-188-110A-MOD
MIL-188-110B (App. C) STANAG 4539
MIL-188-110B 3200-12800 bps
MIL-188-141A (ALE)
MIL-188-141B (BW0, BW1, BW4 data)
MIL-188-141B (BW2, BW3 ID)
MIL-M-55529 NB/WB
OLIVIA
PACKET-300/600
PACTOR (all CRCs)
PACTOR-FEC (all CRCs)
PACTOR-II (all CRCs)
PACTOR-II-AUTO (all CRCs)
PACTOR-II-FEC (all CRCs)
PACTOR-III (all CRCs)
PICCOLO-MK12
PICCOLO-MK6
POL-ARQ
PRESS-FAX

PSK-10
PSK-125 (BPSK, QPSK) with FLARC
PSK-125F
PSK-220F
PSK-250 (BPSK, QPSK) with FLARC
PSK-31 (BPSK, QPSK)
PSK-31-FEC
PSK-63 (BPSK, QPSK) with FLARC
PSK-63F
PSK-AM
ROBUST-PACKET
RUM-FEC
SI-ARQ
SI-AUTO
SI-FEC
SITOR-ARQ
SITOR-AUTO
SITOR-FEC
SP-14
SPREAD-11, 21, 51
SSTV Automatic
SSTV Martin 1, 2, 3, 4
SSTV Robot 8s, 12s, 24s ,36s
SSTV SC-1 16, 32s
SSTV SC-1 8s, 16s, 32s
SSTV Scottie 1, 2, 3, 4
SSTV Wraase SC-1 24s - 96s
SSTV Wraase SC-2 20s - 180s
STANAG 4285 75-3600 bps
STANAG 4415 75 bps (NATO ROBUST)
STANAG 4481-FSK (KG-84)
STANAG 4481-PSK
STANAG 4529 75-1800 bps
STANAG 4539 3200-12800 bps
STANAG 5065-FSK
SWED-ARQ
THROB
THROBX
TWINPLEX
VISEL
WEATHER-FAX

## VHF/UHF - Protocols

ACARS
AIS
APCO-25 (P25)
ASCII
ATIS (Selcal digital)
BIIS
CCIR-1 (Selcal analog)
CCIR-2 (Selcal analog)
CCIR-7 (Selcal analog)
CCITT (Selcal analog)
CTCSS
DCS-SELCAL
DGPS
DMR (with live voice)
dPMR (with live voice)
DTMF (Selcal analog)

DZVEI (Selcal analog)
EEA (Selcal analog)
EIA (Selcal analog)
ERMES
EURO (Selcal analog)
FLEX
FMS-BOS (Selcal digital)
GMDSS/DSC-VHF
GOLAY/GSC
MOBITEX-1200 (with OVLS)
MOBITEX-8000
MODAT (Selcal analog)
MPT-1327 (with ITA-5)
NATEL (Selcal analog)
NMT-450
NWR-SAME

NXDN (with live voice)
PACKET-1200
PACKET-9600
PCCIR (Selcal analog)
PDZVEI (Selcal analog)
POCSAG
PZVEI (Selcal analog)
SKYPER (POCSAG)
TETRA (with live voice)
VDEW (Selcal analog)
VDL-M2
X.25
ZVEI-1 (Selcal analog)
ZVEI-2 (Selcal analog)
ZVEI-3 (Selcal analog)
ZVEI-VDEW (Selcal digital)

## SATELLITE - Protocols

AMSAT-P3-D
INMARSAT-AERO-P (L-band)
INMARSAT-AERO-C (L-band)
INMARSAT-AERO-R (C-band)
INMARSAT-AERO-T (C-band)
INMARSAT-B-C-TFC (return)
INMARSAT-B-Data (forward)
INMARSAT-B-FAX (forward)
INMARSAT-B-HSD (forward, high speed data)

INMARSAT-B-TEL (forward, with live voice)
INMARSAT-B-TELEX-MM (forward)
INMARSAT-B-TELEX-SM (forward)
INMARSAT-C-EGC (Enhanced Group Call)
INMARSAT-C-TDM
INMARSAT-C-TDM-EGC
INMARSAT-C-TDMA
INMARSAT-M-DATA (forward)
INMARSAT-M-FAX (forward)

INMARSAT-M-TEL (forward, with live voice)
INMARSAT-mM-DATA (forward)
INMARSAT-mM-FAX (forward)
INMARSAT-mM-TEL (forward)
INMARSAT-mM-HSD (High Speed Data)
INMARSAT-mM-C-HSD (C band High Speed Data)
NOAA-GEO SAT
ORBCOMM

## FAX-G3 and MODEM - Protocols

FAX-G3 T4 / T6 / JPEG / JBIG T.30 protocol with ECMM
FAX-G3-V.17
FAX-G3-V.27ter
FAX-G3-V.29
FAX-G3-V.34hdx

BELL103
BELL212A
V.21
V.22 / V.22bis
V.23

V.26 / V.26bis
V.32 / V.32bis
V.34 / V.34bis
V.90
V.92

## Alphabets

Chinese (7-bit ASCII)	ITA-2 Swedish	Morse Arabic
HEX	ITA-2 TASS Cyrillic	Morse Cyrillic
ITA-1 Latin	ITA-2 Third Shift Cyrillic	Morse Greek
ITA-2 Baghdad70 Arabic	ITA-2 Third Shift Greek	Morse Hebrew
ITA-2 Baghdad80 Arabic	ITA-5 Bulgarian	Morse Latin
ITA-2 Cyrillic	ITA-5 Danish-Norwegian	Morse Scandinavian
ITA-2 Danish-Norwegian	ITA-5 French	Morse Spanish
ITA-2 Hebrew	ITA-5 German	User defined 5-bit alphabets based on UNICODE
ITA-2 Latin	ITA-5 Swedish	
ITA-2 Latin Transparent	ITA-5 US	

## Demodulators

AM for METEOSAT and NOAA-GEOSAT FAX transmissions	FFSK, 10-12000 Baud, Shift 50 Hz-16 kHz
BPSK, 10-12000 symbols/s	FSK, 10-2400 Baud, Shift 50 Hz-3.5 kHz Center frequency 0.5 kHz-3.5 kHz
CTCSS	GFSK, 10-12000 Baud, Shift 50 Hz-16 kHz
CW Morse, 10-500 WPM, Center frequency 0.5 kHz-3.5 kHz, Bandwidth 100 Hz-1.2 kHz, AFC On/Off	Mark-Space FSK, 10-300 Baud, Shift 50 Hz-3.5 kHz Center frequency 0.5 kHz-3.5 kHz
DPSK, DBPSK, DQPSK, D8PSK, D16PSK, 10-12000 symbols/s	MFSK, Tone length 4-1000 ms, max. 64 Tones Shift 50 Hz-3.5 kHz
DTMF	OFDM, 12-32 carriers, DQPSK, 62.5 symbols/s
DXPSK, dual carrier adaptive modulation, 2DPSK-D16PSK, 100 Baud	OQPSK, 10-12000 symbols/s
FAX-G3-V.17, FAX-G3-V.27ter, FAX-G3-V.29 FAX-G3-V.34hdx	QPSK, 10-12000 symbols/s
BELL103, BELL212A, V.21, V.22/V22bis, V.23 V.26/V26bis, V.32/V32bis, V.34, V.90, V.92	Software AM demodulator for VHF/UHF SUB IF inputs
	Software FM demodulator for VHF/UHF SUB IF inputs

## Classifier Code Check (CCC) with look-up table and XML-editor for all modulation variants

Process Steps	P1	Only classification is performed, but no decoding
	P2	Classification and table check are performed, but no decoding
	P3	Classification, table check and code check are performed, but no decoding
	P4	Classification and table check are performed and finally the signal is decoded if a mode with an associated, valid detector was found
	P5	Classification, table check and code check are performed and finally the signal is decoded if a mode with an associated, valid detector was found

### Analysis Functions

Autocorrelation up to 200.000 bits
Automatic analysis and decoding software for all data and FAX-G3 modulation types
Automatic CRC recognition of all PACTOR-II and PACTOR-II-FEC systems
Automatic message type detection (ITA-2, ITA-5 and sync/async), LSB/MSB for STANAG and MIL-STD modes
Bit correlation analysis. Raw FSK analysis - graphical display of demodulated data on a raster time line. For visual recognition of character and block lengths
Bit length analysis. Graphical display of demodulated data, with automatic calculation of bit length and bit pattern display
Code check for PSK, FSK, MFSK and MIL-STANAG modes
Manual measurement of the frequency shift(s) with movable cursors
Oscilloscope, real time, resolution up to 200 us/div

MFSK analysis graphical display of MFSK tone spectrum with histogram
Phase plane analysis HF BPSK, QPSK, OQPSK, DPSK and I/Q 10-2400 Baud
Phase plane analysis VHF/UHF-DIR BPSK, DPSK, QPSK and OQPSK 100-12000 Baud
Phase plane analysis VHF/UHF-SUB BPSK, QPSK, OQPSK, DPSK and I/Q 50-4000 Baud
Real-time FFT, averaging: 1-64 values, bandwidth 0.5, 1, 2, 4, 24, 48 kHz and 96 kHz and adjustable cursors, 20 frames/sec
Sonagram and FFT tuning display
Sonagram, real-time display with cursor functions and history (full scrolling)
Sound card calibration tool
Graphical data display for selcal signal analysis
Waterfall, real-time display with cursor functions

### Overall Software Characteristics

◆ Media Player/Recorder, recording and playback of signals
◆ ALARM MONITOR, automatically detected text-string saving to HD or network SMS output
◆ Automatic insertion of time stamps
◆ Synchronized PSK and FSK raw bitstream available through remote control interface
◆ File formats TXT, JPG, BMP, Unicode, WAVECOM (with timestamps)
◆ PSK, FSK and MFSK baudrate history display with full graphical recall, averaging and cursor functions
◆ FSK shift history display with graphical recall, averaging and cursor functions
◆ Configurable message type for most MIL-STD and STANAG codes
◆ Pass-band filters in most modes
◆ Pass-band tuning in FFT display in most modes

◆ SERIAL LINK, serial data output to PC serial interface COM 1 - 16
◆ STANAG5066 parser in MIL-STD and STANAG codes
◆ TCP/IP direct data (IQ and PCM) interface for streaming and for digital receivers (PXGF, IP-CONF, VITA-49)
◆ TCP/IP remote control with Wavecom GUI, full functionality over LAN or Internet (encrypted and speed optimized)
◆ Unlimited scroll-back buffers for text and graphics
◆ Up to 8 decoders may be installed in one host PC
◆ WiNRadio VSC and Virtual Audio Cable (VAC) support
◆ Sound card input, 8-bit and 16-bit, 8 kHz to 192 kHz, stereo and mono left/right
◆ USB-license-dongle
◆ WAV files playback and decoding, loop mode
◆ XML Remote Control Interface API for C++ and C#, XML over TCP/IP

Since 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 com-

munication 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/decoder-online-help/default.htm">http://www.wavecom.ch/content/ext/decoder-online-help/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

	<i>Minimum</i>	<i>Recommended</i>
CPU	P4 Dual-Core 2.4 GHz	Core i5 or Core i7 2.8 GHz
Memory	2 GB RAM	4 - 8 GB RAM
OS	Windows XP	Windows 7 32-bit or Windows 7 64-bit

### Distributors and Regional Contacts

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