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Streaming Server V3.0.0

# W-CLOUD

by WAVECOM ELEKTRONIK AG



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# Welcome

Congratulations on your purchase of a WAVECOM decoder product. The product that you bought incorporates the latest technology in data decoding together with the latest software release available at the time of shipment.

Please check our website <http://www.wavecom.ch> for software updates.

Always check the latest documentation on the installation CD or on our website.

We thank you for choosing a WAVECOM decoder and look forward to working with you in the future.

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## Training

WAVECOM provides training on all our products and subjects in digital communication and signal processing. Training can be made at a customer selected location or at our offices in Switzerland.

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## Revisions

Version	Date	Changes
1.0.00	04-Aug-2012	Pre-release.
1.2.00	20-Dec-2012	First official release.
2.0.00	01-Jun-2013	W-CLOUD supports WinRADiO Virtual Sound Card (VSC). It streams the digital IQ signal directly.
2.0.01	18-Nov-2013	Run W-CLOUD server as user instead of administrator. Take out the "Save" button from the GUI. The settings file moved from ProgramFiles folder to ProgramData folder.
2.0.02	03-Jun-2014	W-CLOUD device driver updated to V7.1.0.
2.1.0	05-Nov-2014	W-CLOUD services runs only when W-CODE, W-PCI and W-PCIe services are not running on the same PC, otherwise there will be device conflicts. W-CLOUD "User Access Control" accepts connections from W-PCI, W-PCIe and W74PC.
3.0.0	03-Oct-2016	Implement power efficiency mode.

# W-CLOUD

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## Introduction

W-CLOUD is a TCP/IP-based application which enables uninterrupted and encrypted transfer of high-quality I/Q data from a remote Wavecom decoder device to a central site located W-CODE instance for final processing (signal analyze, classification and decoding). The application works over any WAN, internet, ethernet or wireless LAN connection with appropriate bandwidth and therefore allows reliable and input signal true decoding from any location in the world ([Figure 1](#)). Together with other Wavecom products W-CLOUD facilitates the construction of monitoring networks with a large-scale geographical coverage. W-CLOUD is a very tiny and stable application based on Windows Embedded Compact. It runs on Windows XP and Windows 7 as well.

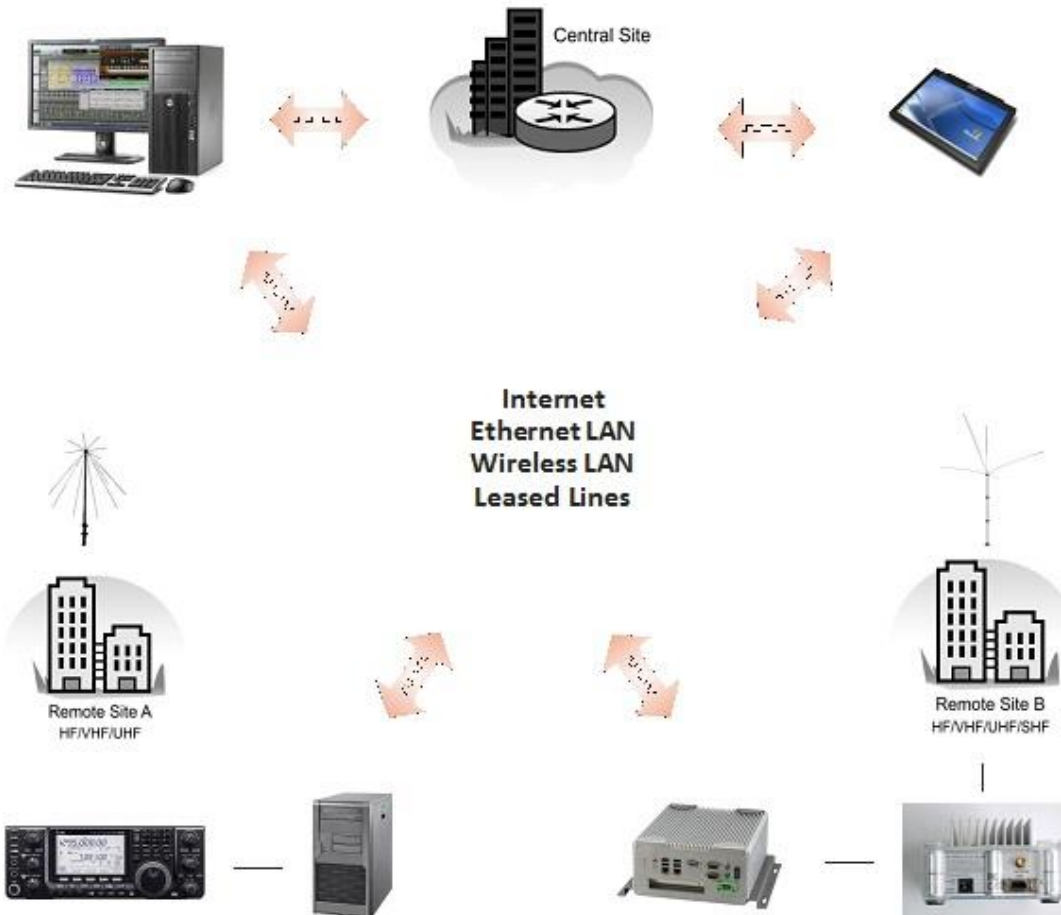


Figure 1 General connections of W-CLOUD decoding.

W-CLOUD is a small TCP/IP server streaming I/Q formatted signals from a W-PCIe, W-PCI card or a WiNRADiO VSC (virtual sound card) to a Wavecom decoder instance (e.g., W-CODE) over the network. It offers a full frequency range of transfers from AF to IF (50 Hz – 25 MHz) and 70 MHz IF with +/- 17.5 MHz bandwidth of the W-PCIe and W-PCI cards. When the device is a VSC, W-CLOUD streams the digital IQ signal directly. As an example, [Figure 2](#) shows how to decode a satellite signal using W-CLOUD (at remote site) and Wavecom decoder (e.g., W-CODE) (at central site). Usually W-CLOUD is installed at a site with all antennae and receivers under proper conditions for signal receiving. W-CODE is run by an operator at the main office site.

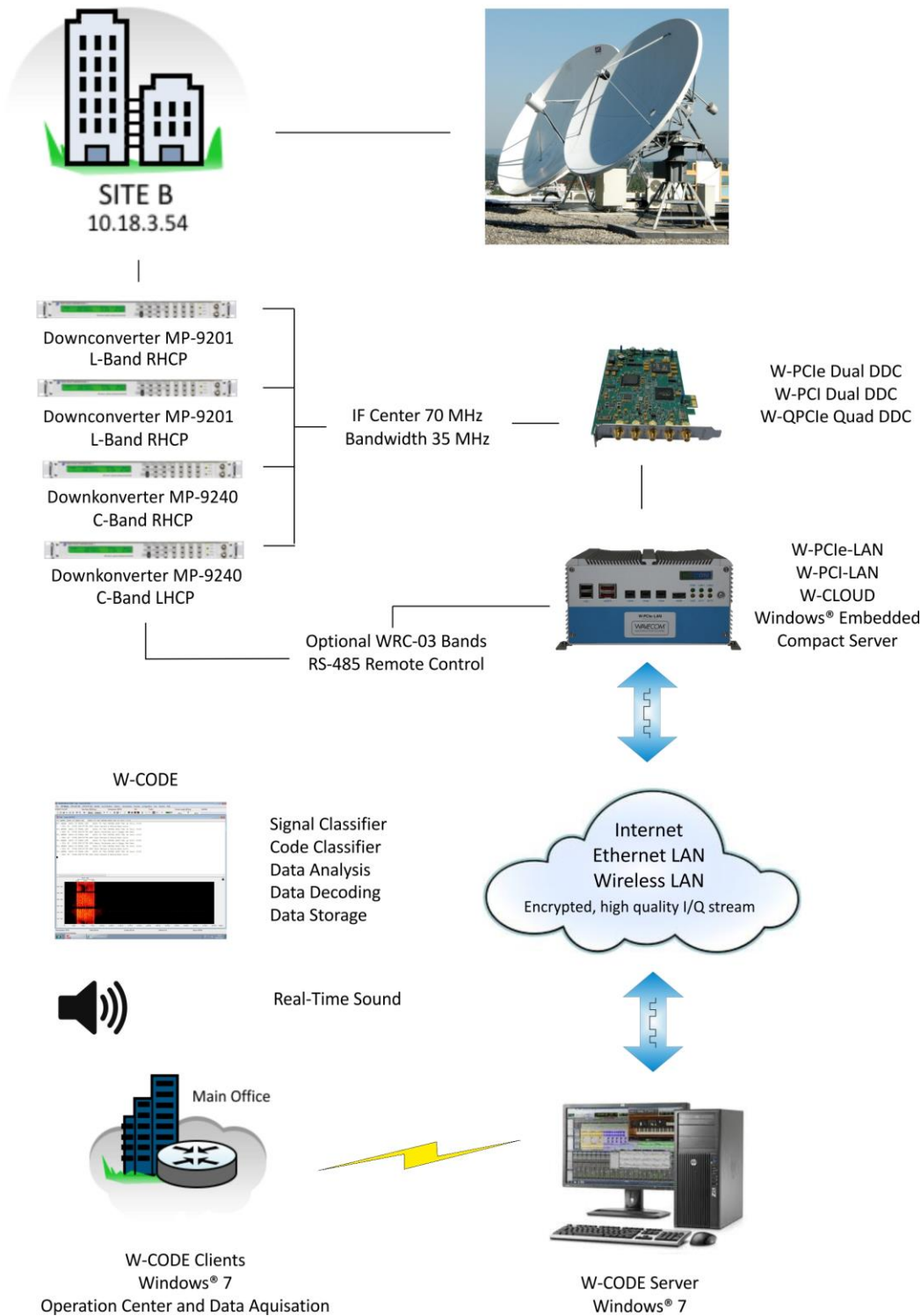


Figure 2 Decode satellite signal using W-CLOUD (at site B) and W-CODE (at main office).

## Software Installation and Operation

W-CLOUD is installed as a Windows service. It starts automatically after the installation and can be accessed and operated via the W-CLOUD tray icon.

A graphical user interface (GUI) starts by clicking at the tray icon "Server settings" ([Figure 3](#) and [Figure 4](#)).

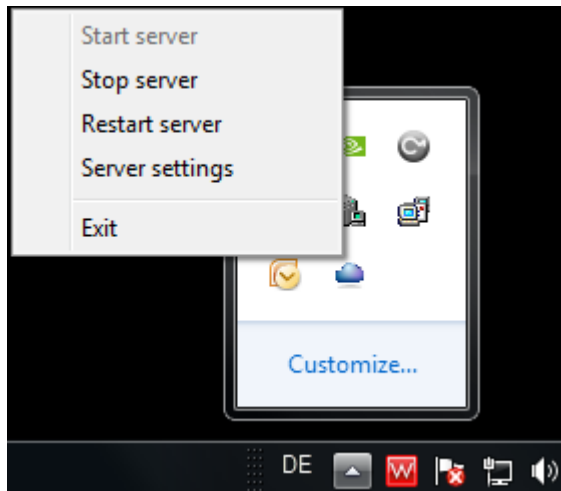


Figure 3 W-CLOUD tray icon.

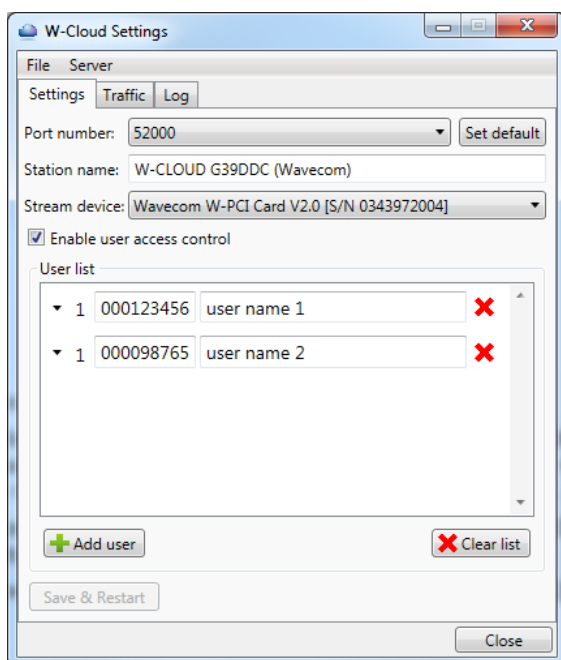


Figure 4 W-CLOUD GUI.

Under the "Settings" tab there are following features:

- W-CLOUD starts a TCP/IP server listening at one of the port numbers between 52000 and 52009 for command (CmdPort). At the same time it listens at the port number  $\text{CmdPort} + 100$  for data (DataPort). That means when the CmdPort is 52000, the DataPort is set to 52100.
- A name can be given in the "Station name" field. This name will appear at the decoder side when it is connected to the W-CLOUD stream server.
- Under the "Stream device" pull-down list a device can be selected from which the IQ signal should be streamed out.
- The server can use a "user access control" list to grant access to certain users only. When the connecting application is W-CODE, users are identified by their CodeMeter license number. When the connecting application is Wavecom hardware decoder, e.g., W-PCI, W-PCIe or W74PC, users are identified by the hardware type: "090303079" for W-PCI; "083113080" for W-PCIe and "083113081" for W74PC.

The server can also lift this restriction by unchecking the "Enable user access control" and allows any connecting instance to access this W-CLOUD server.



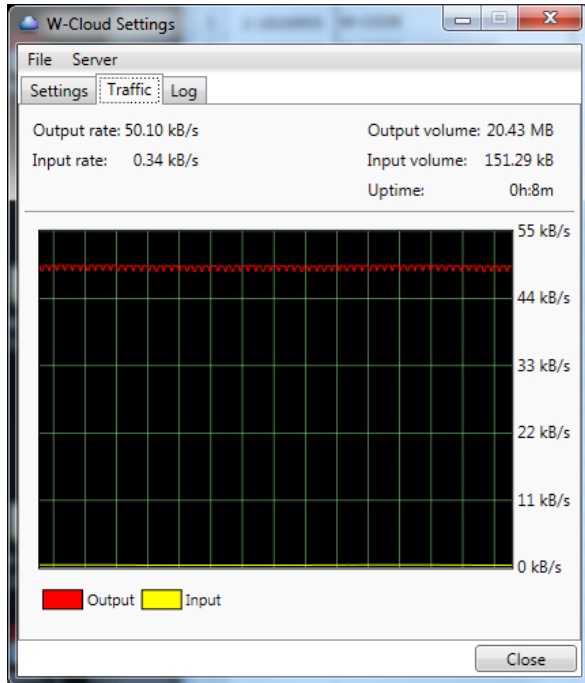


Figure 5 Traffic tab in the W-CLOUD GUI.

The “Traffic” tab in the W-CLOUD GUI ([Figure 5](#)) shows some important network statistics:

- Output and Input rates are the outbound and inbound TCP/IP rates respectively.
- Output and Input volumes are the total outbound and inbound TCP/IP traffic volumes respectively since the connection is up.
- Uptime displays the elapsed time since connection is up.

If a TCP/IP connection is closed ordinarily on request by the client (graceful shutdown), all counters and uptime are reset to zero. If a client keeps the connection, but there is no traffic volume on the line, W-CLOUD server will quit the connection actively after about 7 minutes and get ready for other connection requests. If a client (W-CODE) just crashes or the network is just broken the W-CLOUD server makes a self-restart and is ready for a new connection request.

## Network Configuration

W-CLOUD opens its listening port pair (5200x, 5210x) in the Windows firewall on the PC when it is installed. Usually a PC is inside a network and behind a router. To make this W-CLOUD server accessible by decoder clients (W-CODE) outside the network, i.e., at the other side of the router, the network administrator needs to make a port forwarding in the router. Routers vary hugely. [Figure 6](#) gives an example how to set the NAT (Network Access Translation) rule in a router. The router forwards the connection request to W-CLOUD (on port pair 52000 and 52100) from outside to the host computer with the address 192.168.1.34.

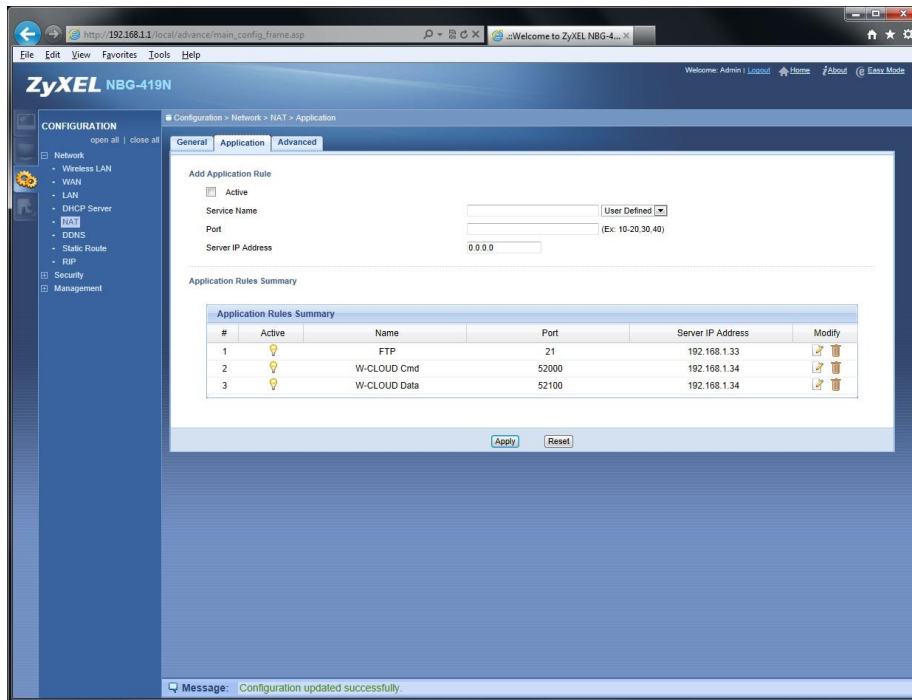


Figure 6 Port forwarding in a router to make W-CLOUD accessible outside of the network.

## W-CLOUD and Other Applications

Besides the built-in sound devices, W-CLOUD supports Wavecom W-PCI and W-PCIe cards. The cards should run in W-CLOUD in an exclusive way, i.e., no other Wavecom applications using these two cards should run. Make sure to stop

- W-CODE decoder server, via the tray icon "WAVECOM Server - W-CODE",
- W-PCI decoder server, via the tray icon "WAVECOM Server - W-PCI",
- W-PCIe decoder server, via the tray icon "WAVECOM Server - W-PCIe",
- W-REC recorder application and
- W-SPECTRA application.

When W-CLOUD captures the inserted W-PCI or W-PCIe cards, they can be used by the Wavecom decoders W-CODE, W-PCI, W-PCIe and W74PC by entering W-CLOUD as the localhost (127.0.0.1) in the "Device Selector" GUI ([Figure 7](#)).

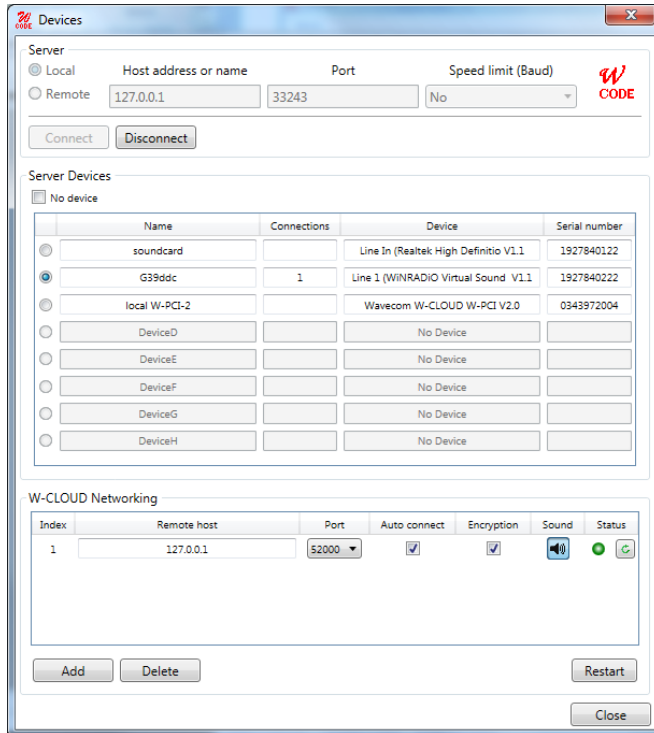


Figure 7 W-CODE Device Selector GUI.

## Conditions of Sale

### General

These general conditions of sales are binding if no other conditions have been declared as applicable in the offer or the confirmation of WAVECOM ELEKTRONIK AG.

Customer orders are binding only if WAVECOM ELEKTRONIK AG has confirmed them in writing.

These general conditions of sales shipping are valid from the 1st of January 2001.

### Prices

The list prices are net, and exclude VAT, shipping and packing costs, unless otherwise arranged. WAVECOM ELEKTRONIK AG reserves the right to adapt the prices to offset concrete cost increases (for example, salaries, material costs, exchange rate fluctuations).

### Delivery time

The delivery time is specified in the confirmation of order/contract. The delivery time may be extended due to unforeseen circumstances such as acts of God (epidemic, earthquake, etc), war, as well as delivery delays from our material suppliers.

### Dispatch

The method of dispatch may be selected by the customer. Without any shipping instructions from the customer, we reserve us the right to arrange the dispatch by any forwarder/courier of our choice. Any complaints regarding damage, delays or loss must be forwarded to WAVECOM ELEKTRONIK AG in written form within 48h from the receipt of the goods. Complaints of suspected bad packing must be forwarded to WAVECOM on the date of receipt.

### Return of goods

The return of defect goods requires written approval of WAVECOM ELEKTRONIK AG before the dispatch. For a return during the warranty period, the costs of the shipping the item(s) back to the customer will be paid by WAVECOM ELEKTRONIK AG. The charges for the shipping the item(s) to WAVECOM ELEKTRONIK

AG must be paid by the customer. For goods returned after the warranty period, the shipping costs for both ways must be fully paid by the customer.

## Payments

Customer order can only be accepted against advance payment by bank or post, Letter of Credit, check or credit card. For Letter of credit payments, we charge a general administration fee of a minimum of CHF 500.00.

## Reservation of ownership

The delivered goods remain the property of WAVECOM ELEKTRONIK AG until the invoice total is fully paid.

## Cancellation

Cancellations of orders must be made in writing and have to be confirmed by WAVECOM ELEKTRONIK AG. Any additional administrative costs already incurred by WAVECOM ELEKTRONIK AG, must be paid by the customer.

## Changes of order quantities

Changes in the quantities of an order already placed may result in a change of the applicable discount. The unit cost may be adjusted to reflect this change.

## Legal domicile

Legal Domicile is Buelach. The buyer declares that for any legal claim against WAVECOM ELEKTRONIK AG, he waives his legal domicile, and hereby accepts the legal domicile of Buelach. This contract is based on Swiss law.

## Warranty

Despite careful testing of our equipment, component or functional failures may occur. WAVECOM ELEKTRONIK AG grants a warranty for a period of 12 months from date of delivery. Defective components will be replaced or repaired free of charge. No liability is taken for any other claims which may arise due to consequential damage arising from the use of this product. Damage resulting from non-authorized modifications to this equipment by third parties is hereby disclaimed.

Shipping costs for equipment returned to WAVECOM ELEKTRONIK AG will be paid by the customer. In case of repairs within the warranty period, WAVECOM ELEKTRONIK AG will carry the costs of return shipping to the customer.

## Obligation

The products of WAVECOM ELEKTRONIK AG are sold on the basis of technical specifications valid at the time of sale. WAVECOM ELEKTRONIK AG has no obligations to upgrade or modify equipment already sold.

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## Laws and regulations

Before using our equipment, take note of the laws and regulations of telecommunications authorities in your country. It is the responsibility of the users of the equipment to determine whether the reception of the transmissions which may be decoded, is permitted or not. The manufacturer or vendor is not liable for violations of law of copyright or telecommunication regulations.

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## Manufacturer Address

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Web: [www.wavecom.ch](http://www.wavecom.ch)

### WAVECOM distributor

Please check our distributor list on the Internet at [www.wavecom.ch](http://www.wavecom.ch)

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## Documentation

W-PCI, W-PCIE, W-CODE Manual V8.2.00  
WAVECOM ELEKTRONIK AG

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