

User Manual

OMR WAVE-UNIT

This device is based on the IEEE WAVE Standards

1000005542-Bed-02

Document number 100005542
Document type Bed
Document version 02
Document status released
Date of release 2010-04-21
Valid from
Software version -

Created by: Batko Manfred

Checked by: Povolny Robert

Approved by: Komarica Anto

Disclaimer and Limitation of Liability

The products described in this manual are provided “as is” and without any warranties of any kind, either express or implied. Kapsch TrafficCom disclaims all warranties, express or implied, including, but not limited to, warranties of title, legality or non-infringement or misappropriation of any intellectual property rights of third parties or implied warranties of merchantability or fitness for a particular purpose. Under no circumstances will Kapsch TrafficCom (including its affiliates, licensors, contractors, suppliers, assignees, subsidiaries, and the respective officers, directors, employees, shareholders, agents and representatives of each of them) be liable for any expenses, fees, claims, damages or losses in any way relating to or arising out of the products described in this manual. Applicable law may not allow certain warranty exclusions, so one or more of the above disclaimers may not apply to you.

Copyright © Kapsch TrafficCom AG 2010
Duplication as well as utilization of contents of this documentation are illegal without our explicit consent.

Table of Contents

	Page
Information about this document	5
Text conventions	5
Important text elements.....	5
Abbreviations.....	6
Warning to users in the United States	7
Regulatory Information	8
Software Licenses	9
Safety Instructions	9
Environmental Information	9
Visual Inspection	9
Maintenance Instructions	9
General Information	10
Definitions.....	10
Ordering Information	10
Installation	11
Reading OBUs	12
Product Specifications	13
Conformity	14
Standards	14

List of tables

Table 1 Abbreviations and definitions	6
Table 2 Article numbers for accessories	10
Table 3 Standards	14

Information about this document

Audience

This document is for professionals setting up and maintaining the equipment.

Professionals are persons, who have basic knowledge of software installation and computer equipment.

Preparations

This User Manual shall be carefully read before installation.

Text conventions

Visual aids and standard text formats in this manual help the reader to locate and identify information easily.

Typographical formats:

Table 1
Text formats and their meaning

Style	Used for
bold	Accentuations
<i>italics</i>	Labelling and cross-references
CAPITAL LETTERS	Acronyms

Note: Contains additional information on the topic.

Important text elements

This manual contains specific Caution and Warning statements. These shall be interpreted as follows:

Attention



Attention: This warning indicates that the device may be affected by Electrostatic Discharge. Appropriate precautions must be made to avoid damage to the device.

Caution



Caution: Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Warning



Warning: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Abbreviations

Table 1
Abbreviations and definitions

DSRC	Dedicated Short Range Communication
OBU	Onboard Unit (adjustable by user)
RF	Radio Frequency
WAVE	Wireless Access in Vehicular Environments

Warning to users in the United States

Local Regulations

The hardware referred to in this document allows selection of frequency bands and transmit power levels that may not comply with the regulatory body that governs spectrum policy where the hardware is being used.

Local Restrictions

This equipment is certified under 47 CFR Part 90M as a portable RSU. However, portable or hand-held RSUs are permitted to operate where they do not interfere with a site-licensed operation. There might be also local restrictions referred in 47 CFR Part §90.371, 47 CFR Part §90.383, 47 CFR Part §90.375.

Regulatory Information

Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Notice

Changes or modifications made to this equipment not expressly approved by Kapsch may void the FCC authorization to operate this equipment.

Class B digital device

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Radio frequency radiation exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm (8 inches) between the radiator and a human body. Failure to do so could result in bodily injury or death.

This transmitter must not be co-located or operate in conjunction with any other antenna or transmitter.

Software Licenses

This product may contain software portions including technologies used under third party license, and are copyrighted. Notices, Terms and Conditions pertaining to third party software are located at

http://www.kapsch.net/us/en/ktc/portfolio/products_and_components/Pages/default.aspx

Safety Instructions



Caution: During operation the WAVE-UNIT must not be held closer than 20cm (8 in) to the body and must not point to the body of another person.

Environmental Information

Recycling

The equipment consists of material that can be recycled. Please follow the local regulations regarding the disposal of packaging material and waste electronic equipment.

Environmental requirements

This device is designed for outdoor and indoor use.

Visual Inspection

After unpacking please check the equipment for possible damages. If the content is incomplete or damaged please contact your local Kapsch office.

Maintenance Instructions



Caution: Regular inspection of the equipment is mandatory and shall be in accordance with local safety regulations. Check for damage before using the equipment.

General Information

Definitions

PDA

The PDA is a handheld unit, which shall be used with the OMR-WAVE-UNIT. It has to be compatible with the GOTIVE H42 device.

WAVE UNIT

The OMR-WAVE-UNIT is a module for the GOTIVE H42 and compatible devices, which is compliant to the WAVE standard.

Reader

The reader consists of a PDA device and an OMR-WAVE-UNIT

Reading Range

The reading range is defined as the maximum distance from the reader to the OBU, in which reliable WAVE communication is possible.

Ordering Information

Table 2
Article numbers for accessories

Kapsch article number	Description
34018470010	GOTIVE H42
4027070000	OMR-9734 (GOTIVE H42 + OMR-WAVE-UNIT)

Installation

Mount the WAVE unit

Adjust the lug of WAVE-UNIT in the appropriate slot the PDA and press the WAVE module down until it locks with the PDA. Check for correct fit.



Remove the WAVE unit

Press the button on the WAVE-UNIT and pull the WAVE-UNIT off.



Charging

The PDA can be charged without removing the WAVE-UNIT module. Plug in cable in jack on the side of the WAVE-UNIT.



Warning: The WAVE-UNIT does not include any charging control mechanisms for the PDA. To prevent damage to the device or injury to humans contact the PDA manufacture for detailed instructions about charging.

Reading OBUs



The typical reading range is up to 3m (10feet) and depends on these parameters:

- OBU's mounting angle on windshields
- Offset angle to bore sight between reader unit and OBU

Note: When reading a specific OBU make sure that no other OBU's are in the communication range of the reader to prevent reading the wrong OBU. To reduce the risk of reading wrong OBUs choose the distance between the reader and the OBU as close as possible, but not closer than 0.5m(20in).

Product Specifications

Mechanical data	4in x 3in x 1.5in 108mmx 68mm x 37mm [LxWxH]
Electrical data	USB powered device Power consumption (operating mode) max. 2.5W
Environmental conditions	Temperature (operation) -10°C ... +55°C 14°F ... +131°F Storage temperature -30°C ... +60°C -22°F ... +140°F Ambient humidity 5 to 95% non condensing
Interface	USB 2.0 full speed USB powered device
RF Interfaces	Frequency range 5.850GHz - 5.925GHz Channels 172,174,176,178,180,182,184 Data Rates 3MBit/s – 27MBit/s
Compliance	47 CFR Part 90 M 47 CFR Part 15 B UL-60950-1, 2 nd edition UL-60950-22, 2 nd edition CSA C22.2 No. 60950-1-07, 2 nd edition UL: E323290



Conformity

Standards

Table 3
Standards

Ref.	Standard	Description
[1]	ASTM E2213 - 03	Standard Specification for Telecommunications and Information Exchange Between Roadside and Vehicle Systems — 5 GHz Band Dedicated Short Range Communications (DSRC) Medium Access Control (MAC) and Physical Layer (PHY) Specifications
[2]	IEEE 802.11™a-2007	IEEE Standard for Information technology— Telecommunications and information exchange between systems— Local and metropolitan area networks— Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications
[3]	IEEE 802.11™p	IEEE Standard for Information technology— Telecommunications and information exchange between systems— Local and metropolitan area networks— Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications Amendment 7: Wireless Access in Vehicular Environments
[4]	IEEE 1609.4™	Draft Standard for Wireless Access in Vehicular Environments (WAVE) - Multi-channel Operation
[5]	IEEE 1609.3™	Draft Standard for Wireless Access in Vehicular Environments (WAVE) – Networking Services

Address

For further information please contact:

Kapsch TrafficCom U.S. Corp.
21515 Ridgetop Circle, Suite 290
Sterling, VA 20166
Phone: +1 (703) 885 1976

Kapsch TrafficCom AG
Am Europlatz 2
A-1120 Vienna
Phone: +43 (0)50 811 0
Fax: +43 (0)50 811 2589
E-mail: kapsch.at@kapsch.net