

WAVECONTROL

EMF Personal Monitor WaveMon RF

USER'S MANUAL



V 2.0

WAVECONTROL
Safety, Quality, Service

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W

Congratulations for your acquisition of a **Wavecontrol WaveMon RF**. This Manual provides you with instructions for using and handling your **WaveMon RF**. Please read this Manual carefully before using your **WaveMon RF**.

Disclaimer

Use of the product is controlled exclusively by the product manual (this document) and the product warranty. Wavecontrol assumes no responsibility or liability of any kind for errors or omissions in the contents of this document. Although the information contained herein is correct to the best of Wavecontrol's knowledge, it is provided with no guarantees of completeness, accuracy, usefulness or timeliness and without any warranties of any kind, express or implied. Wavecontrol provides all content in this document "AS IS" and "WITH ALL FAULTS." No use of this document or its contents shall be permitted without Wavecontrol's prior consent.

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Product specifications and descriptions in this document depend on the firmware version and are subject to change without notice.

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1. WARNINGS AND PRECAUTIONS

-  Review this manual and become familiar with all the instructions for using and handling your **WaveMon**.

-  Your **WaveMon** is a portable apparatus with rechargeable batteries. Before taking any measurement, make sure that the batteries are sufficiently charged for the time that you need for the measurement. If it is not, recharge them before.

-  Adjustment, maintenance or repair of the equipment must be performed only by qualified personnel. Please get in touch with **Wavecontrol** at service@wavecontrol.com.

-  The **WaveMon** is a professional measurement device that must be calibrated to ensure that it works properly. Check to make sure that its calibration is valid at all times. If you are unsure or need to recalibrate, please contact your distributor or contact us at service@wavecontrol.com (see [section 13.2](#)).

Environmental information

Disposal of your old product: Your product is designed and manufactured with high quality materials and components, which can be recycled and reused.

When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC. Please get informed about the local separate collection system for electrical and electronic products.



Please act according to your local rules and do not dispose of your old products with your normal household waste. The correct disposal of your old product will help prevent potential negative consequences for the environment and human health.

2. INTRODUCTION

The **WaveMon RF** is a personal electromagnetic field monitor. Its main function is to monitor the user's exposure. For that purpose, it should be carried close to the body to provide a warning in the event of overexposure. It may also be placed in other locations to warn of high field in areas of special interest that we wish to monitor. The warning is given by means of audible signals (beeps), vibration and visible signals (LEDs).

The **WaveMon RF** can measure power density continuously and store readings in its internal memory. It has a capacity to store up to 1,000,000 readings.

Warnings are given based on instantaneous and/or average field values. Measurements are taken continuously and stored in memory to make it possible to check whether exposure has exceeded the permitted limits, to what extent, when and where (geographical position and altitude).

The information stored in memory can easily be downloaded to a PC via USB for later processing.

3. MATERIAL INCLUDED

When you receive the device, please check the box to see if it is damaged in any way. Make a note of any damage detected before you sign the delivery note.

Check that you have received all the components of your **WaveMon RF** and its accessories as ordered. The standard elements are:

- The **WaveMon RF** with its mount.
- USB cable.
- USB key.
- Elastic band to fasten the device to your arm.
- Non-elastic band to fasten the device to a harness.

If any of those components are missing, please contact your distributor or **Wavecontrol** at service@wavecontrol.com.



Figure 1: WaveMon Case

4. FIRST STEPS

The **WaveMon RF** is an easy-to-use and very complete electromagnetic field monitor. To switch it on, press the ON/OFF button on the front panel. The device will switch on and go through the start-up sequence to check that all the warning systems are working properly and that the batteries are suitable to run the device.

The sequence is:

- **2 beeps → vibration for 1 second → all the white LEDs light up → the battery status is displayed with the blue LEDs for a few seconds.**



Figure 2: Parts of the WaveMon

When it is switched on, the **WaveMon RF** will show the power of the present electric or magnetic field by means of signal lamps. The ambient power density is shown as a percentage of the regulated limit. The signal lamps show the maximum levels of the instantaneous electric and magnetic field power density, but the record of both is stored in memory. There is also the option of displaying the average power density. The instantaneous value is shown with a single flash each second, while the average is shown with two short flashes.

Bear in mind as well that the average field value, based upon the instantaneous field, is stored in memory to allow analysis of your exposure in respect of international standards.

The user can learn the power density by observing the number of blinking lights. Power density indication starts when it is over 10% of the established limit. A colour code is also used so that the user does not have to focus continually on the device.

If the power density is lower than 50% of the limit, the lights showing the present power density will blink green. If the power density is higher than 50% but lower than 100% of the limit, the lights showing the present power density will blink orange. When the power density is over 100% of the limit, the lights will blink red.

Note: *correlation between LED, power density and field strength*

LED	Power density	Field strength
10 %	10 %	31 %
25 %	25 %	50 %
50 %	50 %	71 %
75 %	75 %	86 %
100 %	100 %	100 %
200 %	200 %	141 %

To ensure that the user is aware of the presence of a strong field, the device will also give audible and vibratory warnings when the threshold defined by the user is exceeded. This threshold can be changed, through the software delivered, by connecting the **WaveMon RF** to a PC.

5. FALL WARNING

The **WaveMon RF** is equipped with a fall sensor and if it detects such an event, the device will begin beeping until it is switched off. This feature makes it possible to warn others nearby instantly if someone carrying a **WaveMon RF** falls.

Note: *the device will continue measuring and recording the electromagnetic field even after a fall is detected.*

6. PLACING THE DEVICE

The device is supplied with a mount to which it may be attached using a quick release mechanism. The device can be released from its mount easily with one hand. This can be useful for checking a potential source of radiation before approaching it, minimising the risk of exposure. This can be done simply by holding it in your outstretched hand or using an extension attached to the tripod socket if you wish to check from farther away.

Note: *this holder is equipped with an RF absorber to minimise the effect of the body on the measurement.*

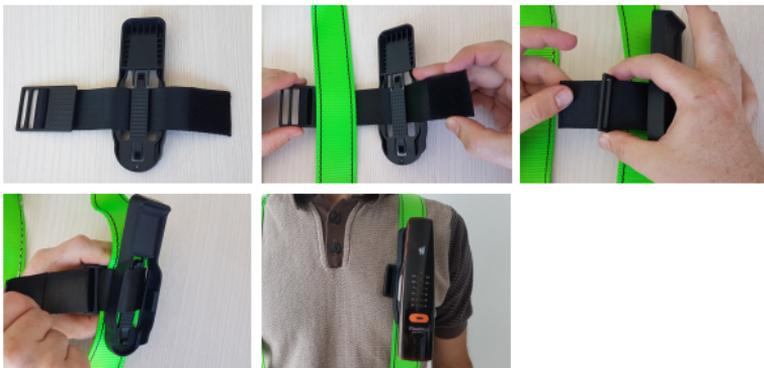
The device can be attached to your body in several different ways.

a. Using the mount

- With the elastic band to fasten it to your arm.



- With the non-elastic band to fasten it to a safety harness.



- With a belt passed through the mount.

b. In a pocket, detached from the mount.



Important: *when working at heights, the opening on the bottom of the WaveMon RF can be used to fasten it to a harness. This is particularly advisable to keep it from being dropped if the device is to be used without its mount as mentioned above.*

The device can also be attached to a tripod or a non-conductive extension arm using the ¼ inch socket to detect leakage without having to approach the potential source.

7. LOG

7.1 Log interval and average

The '**log interval**' defines how often a measurement is stored in memory. These intervals do not affect how the measurement is taken or the warnings given to the user. The device always measures every second, regardless of whether a sample is recorded every log interval and always measures and calculates the average every second, regardless of the log interval value.

Two different log intervals may be defined. This allows you to define a different interval for when the field is low and when the field is high. Where the field is low, we may not need to memorise so much negligible information, saving memory space and battery life. Where the field is high, however, we can define a shorter log interval to have more relevant information for later processing.

The '**average interval**' defines the length in seconds of the average to be calculated. This is what is known as a sliding window, since it defines the size of the average that is made continuously. In other words, if you define a sliding window (average interval) of 6 minutes, the average of the samples for the last 6 minutes will be calculated with each new sample.

7.2 Log format

Each log can be saved as CSV file using the PC software delivered with the unit (see [section 9](#)). The CSV format is very simple and is detailed in [Appendix 2](#).

The device provides 3 values for each field (E & H fields for both the **WaveMon RF-8** and the **WaveMon RF-60**):

1. the instantaneous power density value
2. the average value
3. the maximum average value

The average represents the field average calculated at the time it is stored in memory. In contrast, the maximum average represents the highest average that has been calculated since the last record in memory. This last value is very important since even having a slow log interval we will always have the maximum value of average in memory (sliding average updated every second) as required by international standards.

Note: the **WaveMon RF** limits the maximum length of each log to 10 hours. In case of leaving the equipment on for more than 10 hours, the **WaveMon RF** will create more than 1 log. It is a normal behavior that allows a more agile download on the PC.

8. GPS AND ALTIMETER OPTION

As optional features, the **WaveMon RF** can have an internal GPS receiver and an altimeter so that each reading can be automatically associated with a geographical position. The altimeter allows determination of the relative altitude in respect of the position where the device was initially switched on.

The format of the GPS position is **ddmm.mmmmm** (dd = degrees mm = minutes, and decimals of minutes) with the datum WGS84

9. PC SOFTWARE

The **WaveMon Reader** software is an easy-to-use tool with two main functions:

- Displaying and downloading recorded measurements.
- Configuration of the device.

9.1 Installation

The software is available in the USB key in the box. We recommend, however, you register in **Wavecontrol's Intranet** where you can find the latest version (exclusive service for registered customers, see [Appendix 1](#)).

Before connecting the **WaveMon RF** to your PC, install the **WaveMon Reader** software by running the 'WaveMon_Setup.msi' file. This will install the software with the necessary drivers. When the installation is complete, connect the **WaveMon RF**. Your PC will recognise the **WaveMon RF** and finish installing the drivers automatically.

System requirements:

- Microsoft Windows 7 or later.
- Microsoft .NET Framework 4 (4.5 recommended).
- At least 2 GB RAM.

9.2 Displaying information

The first step is to run the **WaveMon Reader** program. The main screen will show a picture of the **WaveMon RF** and prompt you to connect it to your PC via the USB port.



Connect the **WaveMon RF** USB to the PC. The program will detect and start the connection process as shown below.

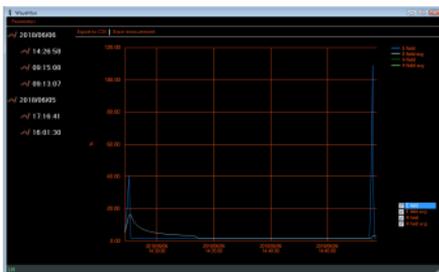
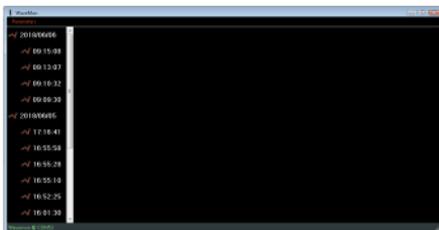
Note: you do not need to turn on the device before connecting the USB.

With the device connected, the list of measurements taken by the **WaveMon RF** appears on the screen. Each measurement contains the list of measurement points.

When you click on a measurement, the measurement points are downloaded and the graph is displayed. You can zoom into the information by clicking on the graph and selecting a square.

When a register is fully downloaded to the computer, it will be available for future consultation. If you wish to download the same register again, the software will check whether the files in the **WaveMon RF** and in the computer are identical before downloading it again.

These files are available in the Windows user's folder, in /Wavecontrol/WaveMon_Reader.



9.3 Parameters

You will find the Parameters menu at the top on the left (with the **WaveMon RF** connected). Clicking here will open a new window offering access to 5 sections:



First section: Parameters of the device:

- **Date of the device:** can be synchronised with the PC by clicking on 'sync. with PC'.
- **GPS ON:** If you have this option, you can activate or deactivate its use.

Note: *the autonomy of this equipment will go from more than 200 hours to 40 hours when GPS is ON.*

It is possible that, in situations of very low field level, it is not necessary to generate a large amount of data that does not add value. On the other hand, it is possible that, in high field conditions, we want to have more samples to evaluate. In this sense, the user is given the possibility of defining the sampling period below and above a field threshold defined by the user. That is why the following three parameters are defined:



- **Log interval for low fields:** defines the time interval in seconds when a sample is stored in memory when the measured field is below the threshold. The minimum value is 10 seconds and the maximum value is 60 minutes.
- **Log interval for high fields:** defines the time interval in which a sample is stored in memory when the measured field is greater than the threshold value. The minimum value is 1 second and the maximum value is 60 minutes.

- **Field threshold for recording interval:** Field value in %, that the user considers as threshold between low field and high field, in terms of data recording.

Note: *this value must be higher than 25% and lower than alarm level 1.*

The device will give an alarm when the field value reaches a given level. Two alarm thresholds can be defined:

- **Alarm level 1**
- **Alarm level 2**

Alarm level 2 must be higher than alarm level 1 if they are both defined for the same type (instantaneous or average value). If level 1 is defined for the instantaneous value and level 2 is defined for the average value, level 2 may be lower than level 1. We recommend two types of configuration:

- **Alarms based only on the instantaneous level:** in this case level 1 is defined below 100%, e.g. 50% or 75%, and level 2 at 100% or 200%. With this configuration, you will receive immediate warnings of the instantaneous field level, but you will not know the average value.
- **Alarms based on the instantaneous value and the average:** level 1 is based on the instantaneous level at 100% or 200% of the limit and level 2 is based on the average at 50% or 75%. With this configuration you will be warned immediately that you are in an area with high levels of exposure but you will be able to continue working until the average reaches a given level (50% or 75%), at which time you will have to leave to avoid exceeding 100%.

The sound or vibration can be activated or deactivated for each alarm level.

Note: *the device vibrates and beeps more noticeably when alarm level 2 is reached.*

- **Average interval:** time interval in seconds for calculating an average. Value between 1 and 1800 seconds (60 minutes).

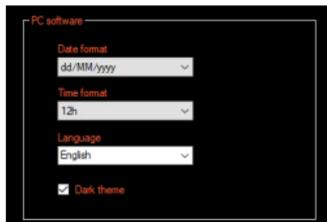
Note: between 6 and 30 minutes the allowed interval is in multiples of 5 seconds. Between 30 minutes and 60 minutes, in multiples of 10 seconds.

- **Enable snooze alarm:** with this option activated, when the ON/OFF button is pressed after an alarm sounds, it will be muted for 1 minute.
- **Enable vibrate on double tap function:** if this option is activated and your **WaveMon RF** is on, the device will vibrate every time the user pokes it twice.

Second section: Program parameters:

- **Date format:** used to select the day/month/year format.
- **Time format:** 12 or 24 hours.
- **Language:** used to select the language.

The program must be rebooted to apply the changes made.



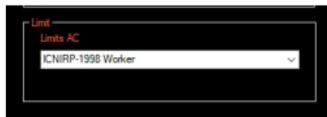
Third section: Updating the firmware for the device:

Select the .bin file of the new firmware and wait for the device to be updated. Do not switch the device off while the firmware is being updated and make sure that the device has sufficient battery charge before starting the update.



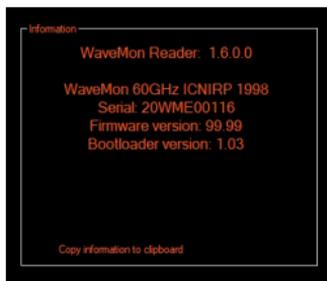
Fourth section: Limit:

Some models have the option to select the limit for public or workers. Please note that public limits are not compatible with the magnetic sensor so only electric field will be registered if a public limit is selected.



Fifth section: System information:

You can check the device's serial number, firmware version, etc. You can also click on 'Copy information to clipboard' to save all the system information and send it to your support contact if necessary.



9.4 Registration

When the software is run and the **WaveMon RF** is connected for the first time, a pop-up window will appear allowing you to register with the **Wavecontrol's Intranet**. We strongly recommend registering, since it will allow you access to support documents and you will need it for obtaining free software and firmware updates (see [section 11](#) on updates and [Appendix 1](#) on the intranet).

10. BATTERIES

10.1 Use

The **WaveMon RF** uses 2 rechargeable AA Ni-Mh batteries. Any type of Ni-Mh battery can be used as long as the 2 batteries are the same model.

When the unit is switched on, the unit displays the battery status with blue lights for a few seconds. This status can be: full battery with all LEDs on, medium battery with 4 LEDs on, low battery with 2 LEDs on.

Once it has been switched on, the device indicates the battery charge level: blinking white means the batteries are sufficiently charged; blinking red means the batteries are in very low level.

If you do not have enough time to recharge the batteries or if they are defective, they can easily be replaced by removing the two screws at the bottom of the device. You will need a cross-head screwdriver for this.

We recommend replacing the batteries every 2 or 3 years to ensure that the device will work properly.

Important: *alkaline batteries may be used in the event of a problem with the rechargeable batteries, but they can only be used temporarily until new rechargeable batteries are available. If you use alkaline batteries, make sure that you do not put the **WaveMon RF** in charge mode, to avoid possible damage to the batteries and to the device.*

10.2 Charging

To charge the **WaveMon RF** battery, connect the **WaveMon RF** cable to a USB charger or a computer. A full charge takes approximately 4 to 5 hours. The charge takes place in two stages:

- Charge: the **WaveMon RF** shows the level indicators in blue while the batteries are charging.
- End of charge: the **WaveMon RF** shows the level indicator in green.

Note: *we recommend making a full charge at least once a month to extend the useful life of the batteries.*

Note 2: *when connected to a computer, the **WaveMon RF** cannot be running the program and charging at the same time. The procedure is as follows: when it is connected to a computer, the **WaveMon RF** waits for 3 minutes before going to charge mode, in case the user wishes to connect the **WaveMon RF** to the computer program and download measurements. After 3 minutes without detecting the PC program, the **WaveMon RF** switches to battery charge mode. If the device is in charge mode and you wish to connect the **WaveMon RF** to the computer program, you will need to disconnect it and then reconnect the USB to have the program recognise it.*

11. SOFTWARE AND FIRMWARE UPDATES

11.1 Updating the WaveMon RF Reader (PC software)

You can download the most recent version of the software from the private area (intranet) of **Wavecontrol**'s web page.

Intranet: www.wavecontrol.com, 'Home' → 'Login'.

Step 1: Registration:

You can register in either of the two following ways:

- from www.wavecontrol.com ('Home' → 'Create an account'), or
- when you connect the **WaveMon RF** to the software for the first time (follow the instructions on the screen, see [section 9.4](#))

Step 2: Downloading and installation:

When you have registered, go to www.wavecontrol.com → 'Home' → 'Login', and enter your login and password. You will be redirected to the download area.

When you reach the downloads page, click on 'WaveMon RF' → 'WaveMon RF software'. Download and install the 'WaveMon_software.zip' file.

11.2 Updating the WaveMon RF firmware

Follow these steps:

1. Update the **WaveMon Reader** (see previous point).
2. Run the **WaveMon Reader** software.
3. Connect the **WaveMon RF** to the PC using the USB cable.

The **WaveMon Reader** will automatically detect whether a more recent version of the **WaveMon RF** firmware is available.

4. Click on 'Update'.

If the most recent version of the firmware was delivered to you as a separate file, you can update it as follows:

- Follow steps 1 to 3,
- then go to 'Parameters' → 'Update firmware' and
- select the firmware file that you received.

12. MODELS

12.1 WaveMon RF-8

Part number	Version	Description
WWM0001	WaveMon RF-8 ICN*	300 kHz - 8 GHz ICNIRP 1998/2020* Occupational & General public
WWM0002	WaveMon RF-8 FCC	3 MHz - 8 GHz FCC Occupational & General public
WWM0003	WaveMon RF-8 SC6	10 MHz - 8 GHz SC6 2015 Occupational
WWM0004	WaveMon RF-8 EUD	300 kHz - 8 GHz EMF Directive 2013/35/EU & EU recommendation 1999/519/EC

* Compliant with ICNIRP 2020 from 27 MHz.

	E field	H field
WaveMon Version Response shaped to	Frequency range & response	Frequency range & response
WaveMon RF-8 ICN* ICNIRP 1998/2020*	±3.5 dB (300 kHz - 8 GHz)	25 MHz - 1 GHz ±1 dB (30 MHz - 700 MHz) +0 dB/-2.5 dB (700 MHz - 850 MHz) +0 dB/-5 dB (850 MHz - 1 GHz)
WaveMon RF-8 EUD EMF Directive 2013/35/EU & EU recommendation 1999/519/EC		
WaveMon RF-8 FCC FCC 96-326	±3.5 dB (3 MHz - 8 GHz)	3 MHz - 1 GHz ±1 dB (3 MHz - 400 MHz) ±2 dB (400 MHz - 850 MHz) +0 dB/-4 dB (500 MHz - 1 GHz)
WaveMon RF-8 SC6 Safety Code 6	±3.5 dB (10 MHz - 8 GHz)	25 MHz - 1GHz ±2 dB (30 MHz - 800 MHz) +0 dB/-5 dB (800 MHz - 1 GHz)

* Compliant with ICNIRP 2020 from 27 MHz.

	E field	H field
Dynamic range	1 - 300%	2 - 300%
Linearity	0.5 dB (2% - 200%)	±1 dB (5% - 200%)
Isotropic deviation	±1 dB @ 1 GHz	±1 dB @ 400 MHz

Note: the H field sensor is used only for the Occupational limits, as only workers can be found in near field condition where both E and H field are measured.

12.2 WaveMon RF-60

Part number	Version	Description
WWM0011	WaveMon RF-60 ICN*	ICNIRP 1998/2020* Occupational & General public
WWM0012	WaveMon RF-60 FCC	FCC 96-326 Occupational & General public
WWM0013	WaveMon RF-60 SC6	SC6 2015 Controlled & Uncontrolled
WWM0014	WaveMon RF-60 EUD	EMF Directive 2013/35/EU & EU recommendation 1999/519/EC
WWM0015	WaveMon RF-60 NATO	NATO Standards Zone 1

* Compliant with ICNIRP 2020 from 27 MHz.

WaveMon Version Response shaped to	E field		H field	
	Frequency response	Dynamic range	Frequency response	Dynamic range
WaveMon RF-60 ICN* ICNIRP 1998/2020* Occupational	±3.5 dB (100 kHz - 10 GHz) ±4 dB (10 GHz - 35 GHz) +10/-6 dB (35 GHz - 60 GHz)	0.5 - 1000%	±3 dB (25 MHz - 1 GHz)	1 - 1000%
WaveMon RF-60 ICN* ICNIRP 1998/2020* General public	±3.5 dB (5 MHz - 10 GHz) ±4 dB (10 GHz - 35 GHz) +10/-6 dB (35 GHz - 60 GHz)	0.5 - 1000%	±3 dB (25 MHz - 1 GHz)	3 - 1000%
WaveMon RF-60 FCC FCC 96-326 Occupational	±3.5 dB (100 kHz - 10 GHz) ±4 dB (10 GHz - 35 GHz) +10/-6 dB (35 GHz - 60 GHz)	0.5 - 1000%	±2 dB (3 MHz - 1 GHz)	1 - 1000%
WaveMon RF-60 FCC FCC 96-326 General public	±5 dB (100 kHz - 2 MHz) ±3.5 dB (2 MHz - 10 GHz) ±4 dB (10 GHz - 35 GHz) +10/-6 dB (35 GHz - 60 GHz)	0.5 - 1000%	±2 dB (3 MHz - 1 GHz)	3 - 1000%
WaveMon RF-60 SC6 Safety Code 6 Controlled	±3.5 dB (5 MHz - 10 GHz) ±4 dB (10 GHz - 35 GHz) +11/-6 dB (35 GHz - 60 GHz)	0.5 - 1000%	±2 dB (25 MHz - 1 GHz)	1 - 1000%
WaveMon RF-60 SC6 Safety Code 6 Uncontrolled	±3.5 dB (5 MHz - 10 GHz) ±4 dB (10 GHz - 35 GHz) +11/-6 dB (35 GHz - 60 GHz)	0.5 - 1000%	±2 dB (25 MHz - 1 GHz)	3 - 1000%

WaveMon RF-60 EUD EU Directive 2013/35	±3.5 dB (100 kHz - 10 GHz) ±4 dB (10 GHz - 35 GHz) +10/-6 dB (35 GHz - 60 GHz)	0.5 - 1000%	±3 dB (25 MHz - 1 GHz)	1 - 1000%
WaveMon RF-60 EUD Recommendation 1999/519/EC	±3.5 dB (5 MHz - 10 GHz) ±4 dB (10 GHz - 35 GHz) +10/-6 dB (35 GHz - 60 GHz)	0.5 - 1000%	±3 dB (25 MHz - 1 GHz)	3 - 1000%
WaveMon RF-60 NATO NATO Standards Zone 1	±3.5 dB (100 kHz - 10 GHz) ±5 dB (10 GHz - 35 GHz) +12/-6 dB (35 GHz - 60 GHz)	0.5 - 1000%	±2 dB (100 MHz - 1 GHz)	1 - 1000%

* Compliant with ICNIRP 2020 from 27 MHz.

	E field	H field
Linearity	0.5 dB (2% - 200%)	0.5 dB (5% - 200%)
Isotropic deviation	±1 dB (<4 GHz)	±1 dB

13. MAINTENANCE

The **WaveMon RF** requires very little maintenance, although it should be handled with care, as with any professional measurement equipment.

Maintenance by the user is limited to the outside of the device, its connections and management of regular calibrations. Any maintenance or repair for which the device needs to be opened must be carried out by **Wavecontrol** to avoid invalidating the warranty.

13.1 Cleaning the device

To avoid damaging the surface, use a soft antistatic cloth to clean the device.

13.2 Regular check-up

Wavecontrol recommends that the user should have the **WaveMon RF** checked every 2 years. This is strictly a recommendation and it is up to the owner of the device to decide how often a check-up is performed. That decision may depend on a number of factors. For example, if the device is used very frequently, it may be advisable to have it checked more often, as would also be the case if the device has had any accident that might make its accuracy questionable, or where specific regulations requires a more frequent check-up, or simply at the request of the organisation or client for which the device is being used, among other circumstances.

To perform a complete **WaveMon RF** check-up, please contact your local distributor or **Wavecontrol** at service@wavecontrol.com.

We strive to offer you the best service in terms of quality, price and delivery time. If you have a special need, we will do our best to help you.

14. TECHNICAL SPECS

Sensor type	Isotropic, RMS diode technology
Response	Shaped (ICNIRP 1998*, FCC, Safety Code 6, European Directives, or NATO Standard**) * compliant with ICNIRP 2020 from 27 MHz ** WaveMon RF-60
Interface	1 ON/OFF button, status and low battery LED
Indicators	6 LEDs + Audio + Vibration
Type of alarms	By instantaneous value or average value
Alarm threshold	2 limits adjustable by user
Connectivity	Waterproof USB
Fall detection	Yes
Autonomy	> 1 month (typical working hours) without GPS > 1 week (typical working hours) with GPS
Data logger	> 1 000 000 events
Logging interval	1 sec to 60 min (adjustable by user)
Averaging interval	1 sec to 60 min (adjustable by user)
Battery Type	2 x AA NiMH battery rechargeable by USB
Protection	IP 54
Temperature	-20 / +50 °C (-4 / +122 °F)
Size	174 x 42.5 x 33 mm (6.8 x 1.7 x 1.3 ")
Weight	190 g (6.7 oz.)
GPS and Altimeter	Optional

APPENDIX 1. WAVECONTROL INTRANET

Wavecontrol provides an exclusive intranet space for its customers with pertinent information on its products, such as specification sheets, application notes, etc.

One of the important things that you can do via the intranet is keep your **WaveMon** device always up to date. **Wavecontrol** offers you regular updates of the **WaveMon** firmware and the **WaveMon Reader** software, free of charge. Those updates may contain:

- Error corrections.
- Operating improvements.
- New features.

You can enter the intranet through the **Wavecontrol** web page. You will have to register with the system through the Home menu:

The image shows a screenshot of the Wavecontrol website homepage. The top navigation bar includes links for HOME, COMPANY, PRODUCTS, APPLICATIONS, SERVICES, NEWS, CONTACT, and a user profile icon with the text 'En - Test Systems'. The main content area features a large blue banner with the following text: 'Now, up to 60 GHz!', 'WaveMon RF-60', and 'EMF Personal Monitor'. A '5G READY' badge is positioned next to the product image. On the right side of the banner, there is a '60 GHz. Higher than ever' headline and a 'Learn more' button. A login form with 'Login' and 'Create an account' buttons is also visible. The background of the banner shows a person in a white hard hat and blue jacket holding a device, with a satellite dish and a red safety light in the sky.

APPENDIX 2. LOG FORMAT

From the PC program you can export the records in CSV format. Below, you can see an example of a CSV with a single sample:

```
*LOG_VERSION;4;  
*MODEL;WaveMon 300 kHz - 8 GHz ICNIRP 1998;  
*SERIAL;18WMA00053;  
*LIMIT;ICNIRP_1998_GENERALPUBLIC;ICNIRP_1998_GENERALPUBLIC;  
*ALARM_LEVEL;E;AC;10;INS;25;AVG;%;H;AC;10;INS;25;AVG;%;  
*RMS_AVG;E;360;s;H;360;s;  
*DATE;E_INST;E_AVG;E_MAX_AVG;E_UNITS;E_ALARM;H_INST;H_AVG;H_MAX_AVG;H_UNITS;H_ALARM;GPS_LAT;GPS_LONG;HEIGHT;  
2019-11-05  
10:03:05;0.02;0.01;0.01;%;0;0.80;0.12;0.12;%;0;4123.673340;211.310577;-0.1;
```

The first 5 lines represent the header, with the following information:

1. Log format version
2. WaveMon model
3. Serial number
4. Limit applied
5. Thresholds and type (INS, AVG) of the 2 alarms for field E (electric), H (magnetic) and units
6. Average time
7. Header row with the following information:
 - a. **DATE**: Date and time of sample
 - b. **E_INST**: instantaneous power density
 - c. **E_AVG**: average of the electric field at the time of log
 - d. **E_MAX_AVG**: maximum average of the electric field measured during the last log interval
 - e. **E_UNITS**: electric field units
 - f. **E_ALARM**: alarm tag for electric field. 0: without alarm; 1: first threshold alarm; 2: second threshold alarm

- g. **H_INST**: instantaneous magnetic power density
- h. **H_AVG**: average of the magnetic field at the time of log
- i. **H_MAX_AVG**: maximum average of the magnetic field measured since the last log interval
- j. **H_UNITS**: magnetic field units
- k. **H_ALARM**: alarm tag for magnetic field. 0: without alarm; 1: first threshold alarm; 2: second threshold alarm
- l. **GPS_LAT: GPS_LAT**: Latitude in ddmm.mmmmm (??? means that the position is not available)
- m. **GPS_LONG: GPS_LONG**: longitude in ddmm.mmmmm format (??? means that the position is not available)
- n. **HEIGHT**: relative height in meters from the point where the equipment has been switched on.

DECLARATION OF CONFORMITY (DOC)

Manufacturer: Wavecontrol, S.L.

C/ Pallars, 65-71. 08018 Barcelona (Spain)

Object of the declaration:

WaveMon Broadband (Personal EMF Monitor)

The above mentioned product complies with the essential requirements, which are specified in the directive 2014/30/EU on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

The product of the declaration described above is in conformity with the requirements of the following specifications:

Documents-No. and description:

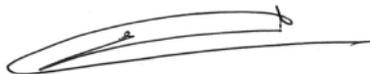
IEC-EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use.

EN 55011:2016 + A1:2017 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement.

IEC-EN 61000-4-2:2010 Testing and measurement techniques - Electrostatic discharge immunity test.

IEC-EN 61000-4-3:2007 + A1:2008 + A2:2011 Testing and measurement techniques- Radiated, radio-frequency, electromagnetic field immunity test.

IEC-EN 61000-4-8:2011 Electromagnetic compatibility (EMC) -- Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test.



Barcelona 30th of April 2018

Ernest Cid - CEO

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Safety, Quality, Service

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