Jogging/Walking Speedometer


User Manual

Jogging/Walking Speedometer

## Table of Contents:

1. Quick Start Guide
2. Wrist Strap Installation/Removal
3. Setting the Time
4. Time Mode T
5. Speed Mode S
6. Distance Mode D
7. Heart Rate Mode $\downarrow$
8. Memory Mode M
9. Calibration Methods
10. Changing the Batteries
11. Additional Information
12. Trouble Shooting
13. Remarks


This means the receiver is not able to establish a wireless connection with the accelerometer module. To correct this:
a. Remove the accelerometer from both sides of the belt clip or chest strap and reconnect.
b. Press all four buttons until the screen goes black and an $\mathbf{r}$ appears followed by a number. Press START/STOP; this clears all mem ory and time.
c. Change the battery in the accelerometer module and the display. See section 11.

## Getting Started:

Your receiver/watch has a user friendly menu system. The lower left button toggles through the MODES, and the lower right button toggles through the OPTIONS within each MODE. The different Modes are:


S SPEED
D DISTANCE

- HEART RATE

M MEMORY
Locate the lower left button and toggle through the five modes. The OPTIONS within each MODE are listed below. When in a particular mode, press the OPTION/- button to view the various options. Press MODE to return to the main view at any time. The functions are divided into the different main modes as follows:

T: Time/date, Alarm 1, Alarm 2, Countdown Timer, Stopwatch, Stopwatch History, $2^{\text {nd }}$ Time Zone
S: Actual-, Average-, Maximum Speed, Actual-, Average Pace
D: Trip Distance, Trip Time, TotsI Dis tance, Trip Calories, Total Calories, Lap Counter

๒: Actual-, Average-, Maximum Heart Rate
M: Memory for the last 7 active days for the following functions:

Distance, Average-, Maximum
Speed, Average-, Maximum Heart
Rate, Trip Time, Average Pace, Day Calories

By pressing MODE in any sub-function you return to the corresponding main mode.
2. Wrist Strap Installation/Removal:

Your receiver/watch has an innovative removable strap system that allows
use with a watch style wrist band, lanyard, or carabiner boot. It is important to take care when removing or installing the receiver into the watch band. This should always be done from the front. Insert the LIGHT (bottom) button into the band first and then work your way up both
 sides to the top. Once the bottom button and the lower left and lower right buttons are in the strap, pull the top of the band to fit the receiver into the band. This band is

## Stopwatch Basic Functions

a. In the stopwatch mode, press START/STOP to activate and start logging data.
b. Press SET to log a second set of data- lap or intermediate time. The circumference ring displays the number of data sets you have stored (the ring normally acts as a second hand). There is a twelve set maximum. Once the twelve sets are full, the stopwatch will overwrite the earliest data points, one at a time.
c. To end the stopwatch press START/STOP
d. To reset the stopwatch to zero press SET (upper left) to enter the setup and START/STOP to reset. memory at any time.
4d. Stopwatch History
designed and tested to last over 1000 times - if installed and removed properly

## 3. Setting the Time

a. Press MODE until you have reached the Time Mode $\mathbf{T}$
b. Press SET (upper left) to activate the Setup. Hr:12 or Hr:24 will appear
c. Press + (upper left) or - (lower right) to select; (the watch is pre-set to 12 Hr.)
d. Press START/STOP (upper right) to confirm. Actual time will display and the hour digit will flash.
e. Press + or - to change the hour digit. Confirm with START/STOP (upper right). The minute digits will flash.
f. Adjust using the same method and confirm.
g. Adjust the date and confirm
4. Time Mode T

When you log the various lap and split times into the stopwatch mode, they also log into the stopwatch stored data mode.
You can address the stored data as follows:
a. When in the Time Mode $\boldsymbol{T}$, press OPTION/- five times and you will see data.
b. Press START/STOP (upper right) to view stored data in this mode.
c. You can now see the first lap/int time.
d. While in Stopwatch History you can toggle between lap and intermetiate times by pressing SET
e. if you have recorded speed and distance information - by running while the stopwatch is on - you can now review this data by pressing OPTION
f. You can view the following information:
a. Distance of the period

In the time main mode the display shows you the actual time and the date. Additionally there are 6 submodes of the time mode
Alarm 1, Alarm 2, Countdown; Stopwatch, Stopwatch History, $2^{\text {nd }}$ Time Zone

4a. Setting the Alarms:
a. In Time Mode T, press OPTION/(lower right) once to view Alarm 1
b. Press START/STOP again to turn the alarm on (A1 on) or (A1 off).
c. Press SET (upper left) to change the time, select a time using the $+\&-$ (upper left and lower right).
d. Press START/STOP (upper right) to confirm each time (hr/min) selection
e. Set Alarm 2 (A2 on) or (A2 off) using the same method.

4b. Using the Countdown Timer:
b. Average Speed of the period
c. Average Pace of the period
g. Press START/STOP while viewing to advance to the next lap or intermediate time.
h. by pressing MODE you can always exit the Stopwatch History and return to the time main mode.

## 4e. Second Time Zone

Your Speedometer is equipped with an alternate time zone clock. This is the sixth option in the Time Mode
a. Press OPTION/- six times to toggle to the second time zone.
b. Press SET and then press $+\&-$ to adjust the hours and minutes.
c. Press START/STOP to confirm each selection.

Note: The PM or AM designation will appear as a $\boldsymbol{P}$ or $\boldsymbol{A}$ to the left of the time. The time displayed at the top is the rea time in the watch.

## 5. Speed Mode S

## 5a. Speed Mode Setup

Program the following items while in Speed Mode S:

- View Option Heart Rate or Time at the top of the display.
- Calibration multiplier (it is highly recommended that you use this feature)
- Units (miles or kilometers)
- Weight (pounds or kilograms)
a. Scroll to any view on the Speed Mode S.
b. Press SET to enter the setup.
c. Hrt or $t$ will appear. These represent a choice between heart rate or time in the smaller display area at the top of the display. (Speed is shown in large digits on the bottom of the display)
d. Press OPTION/- to select one and press START/STOP to confirm.
tion multiplier. Record these items prior to reset because you will need to reenter them.


## 7. Heart Rate Mode $v$

7a. Heart Rate Mode Setup
a. Press SET (upper left) when in heart rate mode.
b. Select whether you want the hi/low zone alarm (beep) turned on with + \& - and press START/STOP (upper right) to confirm.
c. Select the upper heart rate alarm limit max with $+\&-$ and press START/STOP to confirm.
d. Select the lower heart rate alarm limit $\boldsymbol{m i n}$ with $+\&-$ and press START/STOP to confirm.
e. Heart rate setup is now complete.

## 7b. Heart Rate Mode Functions

- Current Heart Rate
- Trip Average Heart Rate
e. The next number displayed is the calibration multiplier.
TO DETERMINE YOUR CALIBRATION MULTIPLIER SEE SECTION 9 NOW.
Program your calculated number, from section 9 press $+\&-$ and then press
START/STOP to confirm.
f. Select miles or kilometers on the next screen $\boldsymbol{M}$ or $\boldsymbol{K M}$ and press START/STOP to confirm.
g. Confirm the weight in either pounds or kilograms. (Press SET to toggle between lbs or $\boldsymbol{k g}$, the screen will display SI - System International - at the top for kilograms). Press START/STOP to confirm.
h. Press $+\&-$ to enter weight and then press START/STOP to confirm.


## 5b. Speed Mode Functions

The following functions are available in Speed mode:

## - Trip Maximum Heart Rate

## 7c. Heart Rate Memory Reset

To reset the average and maximum heart rate functions scroll to the Memory Mode $\boldsymbol{M}$ and hold the SET (upper left) for 3 seconds. (This will also clear the Speed and Distance memory.)

## 8. Memory Mode M

Your receiver/watch is equipped with an automatic internal seven day memory for the last 7 days of activity.
This allows you to track your performance history on a daily basis within the receiver watch itself. Each daily internal memory record consists of the following:

- Distance
- Average Speed
- Maximum Speed
- Average Heart rate in Beats per Minute
- Current Speed
- Average Speed
- Maximum Speed
- Current Pace
- Average Pace

Press OPTION/- (lower right) to toggle through the various functions.

## 5c. Memory Reset

To reset the average speed, maximum speed, and average pace functions scroll to the Memory Mode $\boldsymbol{M}$ mode and hold SET (upper left) for 3 seconds.
For a total memory reset (clear "lifetime" data), simultaneously press all 4 left and right buttons.
Note: This clears the time, date, and calibration multiplier. Record these items prior to reset because you will need to re-enter them.
6. Distance Mode D

- Maximum Heart rate in Beats per Minute
- Trip Time
- Average Pace
- Trip Calories


## 8a. Memory Mode Data Retrieval

a. Press MODE to toggle to M; data will display.
b. Press OPTION/- to view the most recent data set. (Either last active day or today)
c. Continue pressing OPTION/- to view all of the recorded data for that day.
d. Press START/STOP (upper right) to switch days. (The date will be displayed at the top of the display.)
Hint: To view a weekly performance history of one item (example: average speed) continue pressing START/ STOP. This feature allows you to easily see a comparison of your daily performance.

## 6a. Distance Mode Setup

If you've completed section 5a., skip this; the data is already stored. Refer to 5a. (speed mode setup) as this is the same procedure.

## 6b. Distance Mode Functions

- Trip Distance
- Trip Time
- Total Distance (lifetime memory)
- Trip Calories
- Total Calories (lifetime memory)
- Lap Counter


## 6c. Memory Reset

To reset the trip distance, trip time and trip calorie functions scroll to the Memory Mode $\boldsymbol{M}$ and hold SET (upper left) for 3 seconds. For a total memory reset (clear "lifetime" data), press all 4 left
and right buttons the same time. This also clears the time, date, and calibra-

The memory works on a rolling seven active days, memory data will automatically be erased after seven active days to save storage space on the receiver watch.

## 9. Calibration

Your Jogging Speedometer is programmed with a set of variables which describe the running style of an average person. However your individual style could differ significantly. This normally affects the accuracy of the Speedometer in a negative way.

The calibration has two independent components: The calculation of the personal multiplier and the running style analysis.
For the occasional runner normally the calculation of the personal multiplier is sufficient.

The ambitious runner can increase the accuracy further by performing a running style analysis. The best results are achieved when you start with the running style analysis, followed by the calculation of the personal multiplier.

Now the different calibration routines for the occasional (personal multiplier) and ambitious runner (running style analysis and personal multiplier) are described in detail. Normally the error can be reduced to $4 \%$ by the calculation of the personal multiplier alone. While the calibration with running style analysis and personal multiplier reduces the error to $\pm 2 \%$.

Calibration for the occasional runner
For a better understanding of the
calibration for an occasional runner please imagine a numerical axis. If you run the same distance at different speeds the results might be like this:


No matter at which speed you are running the displayed distance is always close to the real distance. The average error is usually below $2 \%$. If you discover a lower accuracy there might have been something wrong in the calibration process. Please reset the speedometer and redo the complete calibration. This procedure can be done as often as you like and will not damage your Jogging Speedometer.

The following chapters explain the different calibration routines in detail. The occasional runner can directly jump to Chapter 9b. The Personal Multiplier PM.


The mark below the axis represents the true distance of your run. Above you see examples of displayed distances for various running speeds.
By calculating the correct personal multiplier the balance point of the error is optimised. This will reduce the error for the slow running speed in the example above. On the numerical axis you get the following picture:


9a. Running style analysis CALIB
During the running style analysis the Jogging Speedometer calculates individual parameters which describe the change in your running style when you change your jogging speed. The closer you follow the instructions for the running style analysis the more accurate the results will be.

Before you actually perform the running style analysis please read the following pages carefully. This helps you to understand the underlying concept of the routine an well as to avoid errors during the process.

Put on your running shoes and take this Speedometer together with all components in your speedometer set to the outside.

Search for a plain running track and mark a 50 m long track. This is easy with

The calculation of the personal multiplier reduces the average difference from the true distance.

## Calibration for the ambitious runner

Before the calibration starts the following randomly chosen initial state should be valid.


The running style analysis allows the Jogging Speedometer to adapt to your personal technique. To stay in the picture of the numerical axis the results after the running style analysis might be like this:
the 10 m measuring tape and the white chalk included in your Jogging Speedometer original packaging.
Put on the display and the chest belt and activate the transmission between display and belt by pressing the START button of your display.
a. Press MODE until you reach the Speed S or the Distance D Main mode.
b. Press SET to enter Setup.
c. Press START/STOP until you reach CALIB off
d. Turn the Calibration to $\mathbf{O N}$ by pressing SET/+ or OPTION/-
e. Confirm Calibration ON by pressing START.
f. The receiver watch automatically establishes a communication with the accelerometer module.
During Calibration, the following will display:


The displayed distances are now independently from your speed and in a close range. Normally already close to the real distance also. But there is still a possibility to get a systematic error during the running style analysis. l.e. mistakes in measuring the 50m distance or stopping to late/early after the finish line of the calibration run. This systematic error can be compensated by the run ning coefficient which is also called personal multiplier. When you set the personal multiplier to the correct value you will finally get the following result:

Upper line: 50:50- indicates the re ceiver/watch is using the factory pre-set values for all variables.
Center Line: i.e. 1:23:08

- 1 - indicates the number of the calibration run (you need to make 3 runs).
- 23 - the approximate number of steps in that particular 50 meter calibration run.
- 08 - the approximate time in seconds of the calibration run so far
g. After the accelerometer and receive watch are linked together, a $15 \mathrm{sec}-$ ond Countdown will start. Display reads 1:00:15, 1:00:14...
h. After the countdown reaches 0 start your first 50 m run in a slow jogging speed - this jog should take approximately 20 seconds.
i. After the finish line STOP! The Speedometer automatically recog-
nizes you stopped and displays the total number of steps and the total time of the run for 10 seconds.
j. The receiver watch initiates the 2nd run with another 15 second countdown. The display reads 2:00:15, 2:00:14...
k. Run the second calibration run at a moderate jogging speed - approximately 16 to18 seconds. (You can go the opposite direction this time to save walking back)
I. Continue in the same manner until the 3rd calibration run at a faster jogging speed - approximately 13-15 seconds.
m . The result of the calibration displays in the upper line. i.e. 92:89
This ends the running style analysis. The speedometer automatically returns to the normal running mode where you can check the improved accuracy.


## Quality of the running style analysis

The following table gives you the correct setting of the personal mulitplier PM for reference distances of 400 m an 1 km .

| real <br> in [m] | Displ <br> ayed | PM | real in <br> $[\mathrm{km}]$ | Dis- <br> playe <br> d | PM |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 400 | 300 | 133 | 1,00 | 0,80 | 125 |
| 400 | 310 | 129 | 1,00 | 0,82 | 122 |
| 400 | 320 | 125 | 1,00 | 0,84 | 119 |
| 400 | 330 | 121 | 1,00 | 0,86 | 116 |
| 400 | 340 | 118 | 1,00 | 0,88 | 114 |
| 400 | 350 | 114 | 1,00 | 0,90 | 111 |
| 400 | 360 | 111 | 1,00 | 0,92 | 109 |
| 400 | 370 | 108 | 1,00 | 0,94 | 106 |
| 400 | 380 | 105 | 1,00 | 0,96 | 104 |
| 400 | 390 | 103 | 1,00 | 0,98 | 102 |
| 400 | 400 | 100 | 1,00 | 1,00 | 100 |

The calibration was successful when both values i.e. 92:85 are between 50 and 99. The closer to 99 the more accurate the results will be. From now on, the Speedometer will use your individual running variables to calculate speed and distance.

If one or both the values are not in the 50-99 range, the calibration is rejected and the Speedometer will continue to use the preset values. The display will then show the values 50:50 again in the upper row before terminating the calibration.
The biggenst impact on the quality of the calibration has the variation of speed levels for the calibration runs. Three different levels (slow - moderate fast) give the best results.

ATTENTION! Fast does not mean you are doing a sprint (running with your toes first touching the ground), but fast

| 400 | 410 | 98 | 1,00 | 1,02 | 98 |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 400 | 420 | 95 | 1,00 | 1,04 | 96 |
| 400 | 430 | 93 | 1,00 | 1,06 | 94 |
| 400 | 440 | 91 | 1,00 | 1,08 | 93 |
| 400 | 450 | 89 | 1,00 | 1,10 | 91 |
| 400 | 460 | 87 | 1,00 | 1,12 | 89 |
| 400 | 470 | 85 | 1,00 | 1,14 | 88 |
| 400 | 480 | 83 | 1,00 | 1,16 | 86 |
| 400 | 490 | 82 | 1,00 | 1,18 | 85 |
| 400 | 500 | 80 | 1,00 | 1,20 | 83 |

For programming the PM value into your display please refer to 5 a. Speed Mode Setup.

## 10. Changing the Batteries

ATTENTION! Batteries consist of dangerous, poisonous materials. They should never be swallowed or played
is your jogging high speed which you can run in for about 15 min .
The slow run should take about 20 seconds, the moderate run 16-18 and the fast run about 13-15 seconds.
These times are for reference only. The ambitious runner can run faster if he wants without affecting the quality of the running style analysis.
You can redo the calibration as often as you like. We recommend that you calibrate from time to time in order to adjust to your training progress or to changes in your running style such as after an injury.

Please keep in mind that it is most important that you run with a constant speed.A typical successful running style analysis follows the following scheme:

> 1st run: slow
> 2nd run: moderate
with by children! Also batteries should never be thrown away carelessly because of the damage to the environment. Your community offers battery collections for proper disposal.

## 10a. Changing the display battery

a. Remove the display from the bracelet, carabiner or lanyard.
b. Remove the back cover from the watch. There is a notch at the top. Insert a fingernail or small screwdriver into the notch to lift the cover off. Take care, do not damage the circuit board or the wire antenna inside.
c. Remove the two battery retaining screws. Take extra care; do not lose these as they must be re-installed.
d. Remove the old battery and replace it with a new one. Fit it inside the metal holder and set it back on the circuit board.

## 3rd run: fast jogging

## 9b. The Personal Multiplier PM

The preset value for the running coefficient or personal multiplier PM is 100. You can leave this value unchanged when the results of your Speedometer after the running style analysis are accurate enough to satisfy your needs. If not you can improve the accuracy by calculating your personal multiplier.
The value of the personal multiplier calculates from the following formula:
(real distance) divided by (displayed distance) multiplied by 100.
If the displayed distance is longer than the real distance the personal multiplier will be lower than 100, if the real distance is shorter than the displayed distance PM will be higher than 100.
e. Place the small screws in the holes and then tighten with the screwdriver. Do not over tighten.
f. Replace the back cover and align the two notches. (The one on the back cover with the one on the watch case) Make sure that the rubber gasket on the back cover has not come lose.

Note: If the "beep" does not work after you finished, the back cover was not properly replaced. Check the alignmen and adjust as necessary. There is a small notch in the battery cover, this should be at the twelve o'clock position and aligned with the notch on the watch case.

In some cases you can see all segments on after replaciong the battery meaning that you have accidentialy activated the test mode. Simply take out the battery one more time and try again until the watch shows the normal functions.

## 10b. Changing of the speed modul battery

a. Remove the back cap of the accelerometer module with an appropiate coin.
b. Gently tap the module against the palm of your hand to pop the battery out of the module
c. Replace the battery with the + side face up and replace the cap.

## 11. Additional Information

## Accuracy

The accuracy of your Speedometer is highly influenced by the quality of the running style analysis and the running coefficient you have performed during the calibration procedure (Chapter 9.).
If the calibration consisting of running style analysis and running coefficient was done carefully and successfully the accuracy of your Speedometer is about

Solution: The current temperature is higher or lower than the operating temperature of the speedometer $\left(0^{\circ} \mathrm{C}\right.$ to 55 ${ }^{\circ} \mathrm{C} / 32{ }^{\circ} \mathrm{F}$ to $131^{\circ} \mathrm{F}$ ).

## Problem: Black display.

Solution: Temperature is too high, perhaps the display has been exposed to direct sunlight for too long.
Problem: The displayed actual speed seems not to be realistic.
Solution A. The transmission may have been interrupted for a short time. Such an interruption has no significance for the accuracy of the measurement of the distance, as long as the interruption is not for longer than 1 kilometre or 0.6 miles.
Solution B. The running style analysis was either not performed at all or was not accurate enough. Please study
$98 \%$ from the real values. Please keep in mind that your car or bicycle speedometer only has the same accuracy when you want to compare distance information provided by different speedometer types!

If the Speedometer works worse after the calibration than without calibration something definitely went wrong during the calibration. Please read the chapter 9. Calibration again carefully and try to figure out what might be the course for this failure.

## Running Belt

The accelerometer modules of the Microsport Speedometer are integrated in the chest belt. When you run on a running belt your chest actually does not move forward so no acceleration can be measured.
However Microsport is aware that many runners exercise on the running belt and
want to cumulate their total achievements and running history in the Speedometer watch. Microsport therefore has equipped its running software in that way that it works also on the running belt with nearly the same accuracy as when you run outdoor.

ATTENTION! Under certain circumstances this feature results in a speed and distance reading on your display when you run on the spot only! The running software thinks that you are running on a belt and enters the running belt simulation mode.
Please have that in mind when you stop your run i.e. in front of a red traffic light and start running on the spot in order to keep your body and muscles warm. If you don't want that this distance is added to the real running distance it is most safe when you press STOP when you pause your run and START when you resume running.

## 13. Remarks

Microsport offers various accessories for you speedometer for maintenance and fashion.

- Battery Service Kit for maintenance of your speedometer. Consists of 2
CR2032 batteries for the display and the speed-module, spare screws, o-rings and a small screwdriver.
- Bracelets and lanyards in different colours
- Carabiner Clip for attaching your display to a jacked, a rucksack or bag.
In case of any questions or problems not dealt with in this manual please contact our service number in Germany at: +49 (0)89 30725599

If you have to send in the Speedometer for service and/or repair please use proper packaging in order not to damage

## Walking

The Speedometer is meant for walking as well as jogging. Please note that a running style analysis (chapter 9a.) is not possible for walking! You can however improve the accuracy by findinf the correct personal multiplier PM.

## 12. Troubleshooting

This section deals with the most common problems reported so far.

## Problem: Nothing appears on the display.

Solution: Press MODE, if the display remains blank replace battery of watch and press MODE again.

## Problem: Display readings fade out.

Solution: Battery of watch are running out and have to be replaced.

## Problem: Slow display response.

chapter 9b. again carefully and do another running style analysis.
Solution C. The running coefficient was not adjusted correctly and your running results show a systematically error. Please read chapter 9a. and calculate your personal running coefficient. Don't forget to program it into the display after calculating!

Problem: The communication between the chest belt and display does not work.

Solution A. The contact plates on both sides of the speed-module are defect. Please send in the speed-module for service.
Solution B. The battery is weak so the distance between chest belt and display is to long. You can check by bringing chest belt and display close together and check again. If the signal is ok then you need to replace the batteries.
your Speedometer during transport Please send to the nearest of the Microsport Service Centres (Addresses below). It is always helpful if you send in a short explanation of the trouble or error that occurred.

## Maximum values

Trip distance $\quad 99.99 \mathrm{~km}$ or 99.99 mi Total distance 9999 km or 9999 mi

| Trip calories | 9999 kcal |
| :--- | :--- |
| Trip time | 99 hr 59 min |

99 laps

## Limited Warranty

Microsport offers the original buyer of this In-Line Skate Speedometer the warranty corresponding to the laws in the country of purchase beginning from the date of the purchase for material and/or manufacturing errors. This warranty does not cover manual damage, damage during commercial usage, usual wear and tear, accident and misguiding
the warnings in this manual. Also the batteries are not covered by warranty
During the time of warranty Microsport can repair or exchange accepted claims by it's decision. Please store the receipt carefully for evidence of purchase.
This limited warranty is in lieu of all other express or implied warranties, and excludes refund of the purchase price. In no event shall Microsport be liable for direct, indirect, incidental, or consequential damages arising out of the Jogging Speedometer, and any recovery is limits to the purchase price. No other person r company is authorized to change this imited warranty, and your dealer is solely responsible for any other warranties.

The content of this operating instruction are for information only. The product can be changed during the continuous proc-

## ess of product development without warning

Your Microsport Team hopes you enjoy your Speedometer and that it helps you to achieve your personal goals better! If you have any questions, comments or critics please feel free to contact us.

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The MICORPSORT Jogging Speedome ter meets the following standards for the European Union and the USA.
The devices comply to the requirements of ETS 300683 Electro Magnetic Compatibility (EMC) standard for Short

Range Devices (SRD) operating on requencies between 9 kHz and 25 GHz .
The devices comply with the requirements of EEC directive 89/336/EEC with regard to Electro Magnetic Com-patibility and fulfil the requirements of 99/5/EC with regard to Radio Equipment and Systems (RES); Electro Mag-netic Compatibility (EMC) standard for Shor Range Devices (SRD)

## FCC-ID: OWUACAMP915

The devices comply with Part 15 of the FCC rules. Operation is subject to the following two conditions:

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

