



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Document Control Center - WO66-G609
Silver Spring, MD 20993-0002

August 20, 2017

Microlife Intellectual Property GmbH
% Ms. Susan Goldstein-Falk
MDI Consultant, Inc.
55 Northern Blvd.
Great Neck, New York 11021

Re: K170467

Trade/Device Name: Microlife Upper Arm Automatic Digital Blood Pressure Monitor,
Model BP3MS1-3B

Regulation Number: 21 CFR 870.1130

Regulation Name: Noninvasive Blood Pressure Measurement System

Regulatory Class: Class II

Product Code: DXN

Dated: February 14, 2017

Received: February 16, 2017

Dear Ms. Susan Goldstein-Falk:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the [Federal Register](#).

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-

related adverse events) (21 CFR 803); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Division of Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address

<http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to

<http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm> for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address

<http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Bram D. Zuckerman", is written over a large, light blue, semi-transparent "FDA" watermark.

for
Bram D. Zuckerman, M.D.
Director
Division of Cardiovascular Devices
Office of Device Evaluation
Center for Devices and Radiological Health

Enclosure

Indications for Use

510(k) Number (if known)

K170467

Device Name

Microlife Upper Arm Automatic Digital Blood Pressure Monitor, Model BP3MS1-3B

Indications for Use (Describe)

The Microlife Upper Arm Automatic Digital Blood Pressure Monitor, Model BP3MS1-3B is a device intended to measure the systolic and diastolic blood pressure, pulse rate of an adult individual with arm circumference sizes ranging from 22-42 cm by using a non-invasive oscillometric technique in which an inflatable cuff is wrapped around the single upper arm.

The device detects the appearance of irregular heartbeat during measurement, and gives a warning signal with the reading once the irregular heartbeat is detected.

The device can be used in connection with a smart phone running the APP. The memory data can be transferred to the smart phone via Bluetooth.

The blood pressure monitor is an automatic digital blood pressure measuring device for use by adults on the upper arm at home or in your doctor's/nurse's office.

Type of Use (Select one or both, as applicable)

☐ Prescription Use (Part 21 CFR 801 Subpart D)

☒ Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

This section applies only to requirements of the Paperwork Reduction Act of 1995.

DO NOT SEND YOUR COMPLETED FORM TO THE PRA STAFF EMAIL ADDRESS BELOW.

The burden time for this collection of information is estimated to average 79 hours per response, including the time to review instructions, search existing data sources, gather and maintain the data needed and complete and review the collection of information. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden, to:

Department of Health and Human Services
Food and Drug Administration
Office of Chief Information Officer
Paperwork Reduction Act (PRA) Staff
PRASStaff@fda.hhs.gov

"An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB number."

510(k) SUMMARY

The assigned 510(k) number is: K170467

1. Submitter's Identification:

Microlife Intellectual Property GmbH, Switzerland
Esenstrasse 139
9443 Widnau / Switzerland

Date Summary Prepared: March 9, 2017

Contact: Mr. Gerhard Frick
Vice President of Technical and Service
Microlife Intellectual Property GmbH, Switzerland
Tel: +41 79 216 0070
E-Mail: gerhard.frick@microlife.ch

2. Name of the Device:

Microlife Upper Arm Automatic Digital Blood Pressure Monitor, Model BP3MS1-3B

Regulation Number: 21 CFR Part 870.1130
Regulation Name: Non-Invasive Blood Pressure Measurement System
Regulatory Class: II
Product Code: DXN

3. Information for the 510(k) Cleared Device (Predicate Device):

- a. Microlife Upper Arm Automatic Digital Blood Pressure Monitor, Model BP3NF1-2B, K151869, Microlife Intellectual Property GmbH.
- b. Microlife Upper Arm Automatic Digital Blood Pressure Monitor, Model BP3MS1-4A (BP A200 Comfort), K153450, Microlife Intellectual Property GmbH.

4. Device Description:

Microlife Upper Arm Automatic Digital Blood Pressure Monitor, Model BP3MS1-3B is designed to measure systolic and diastolic blood pressure, pulse rate of an individual with arm circumference sizes ranging from 22 -42 cm by using a non- invasive technique in which one inflatable cuff is wrapped around the single upper arm. Our method to define systolic and diastolic pressure is similar to the auscultatory method but use two resistive pressure sensors rather than a stethoscope and mercury manometer. The sensors convert tiny alterations in cuff

pressure to electrical signals, by analyzing those signals to define the systolic and diastolic blood pressure and calculating pulse rate, which is a well - known technique in the market called the “oscillometric method”.

The device detects the appearance of irregular heartbeat during measurement, and the symbol “” is displayed after the measurement. In addition, the device can be used in connection with smart mobile devices running the APP. The memory data can be transferred to the smart mobile devices via Bluetooth.

The blood pressure monitor is an automatic digital blood pressure measuring device for use by adults on the upper arm at home or in your doctor’s/nurse’s office.

5. Indications for Use:

The Microlife Upper Arm Automatic Digital Blood Pressure Monitor, Model BP3MS1-3B is a device intended to measure the systolic and diastolic blood pressure, pulse rate of an adult individual with arm circumference sizes ranging from 22 -42 cm by using a non-invasive oscillometric technique in an inflatable cuff is wrapped around the single upper arm.

The device detects the appearance of irregular heartbeat during measurement, and gives a warning signal with the reading once the irregular heartbeat is detected.

The device can be used in connection with smart phone running the APP. The memory data can be transferred to the smart phone via Bluetooth.

The blood pressure monitor is an automatic digital blood pressure measuring device for use by adults on the upper arm at home or in your doctor’s/nurse’s office.

6. Comparison to the 510(k) Cleared Device (Predicate Device):

The subject BP3MS1-3B uses the same oscillometric method as the predicate BP3NF1-2B with the same algorithm to determine the systolic and diastolic blood pressure, pulse rate. Upper arm cuff is inflated automatically by pump, the deflation rate is controlled by factory set exhaust valve and the deflation pressures are transferred via tubing to a sensor in these two units.

The subject BP3MS1-3B and the predicate BP3NF1-2B both have traffic light function, IHD function, and Bluetooth function. They differ by the measurement technology and sensor. The measurement technology of the subject device BP3MS1-3B has been changed to the Inflate Mode Technology. The clinical test report of the subject BP3MS1-3B is identical to the cleared

blood pressure monitor BP3MS1-4A (BP A200 Comfort), which was cleared in K153450. They have the same fundamental scientific technology. Therefore, the repeat clinical testing in accordance with the standard ANSI/AAMI IEC81060-2 for the subject device BP3MS1-3B is not necessary.

Based upon the aforementioned information, the two devices are substantially equivalent.

The modified device model BP3MS1-3B uses the same oscillometric method as the predicate device BP3MS1-4A (BP A200 Comfort). They both have traffic light function, IHD function, and Inflate Mode Technology. They differ by Bluetooth function. The subject device BP3MS1-3B has added the function of transferring the memory data to the smart mobile devices via Bluetooth. However, this function is only a way to transfer the data and will not affect the clinical accuracy.

Although the cuff used with the subject BP3MS1-3B is changed to WRR cuff, it is the same with the one cleared in BP3AP1-3E, under K111652. The other differences do not affect the accuracy and normal use of this device based on the clinical declaration of identity and clinical testing comparing different functions.

The multispanlex material used for the cuff (WRR Cuff) is identical to the cuff material of the Microlife BP3AP1-3E as it was cleared in K111652 and meets ISO 10993-1 requirements. For this reason, additional biocompatibility testing was not required.

Based upon the aforementioned information, the two devices are substantially equivalent.

7. **Discussion of Non-Clinical Tests Performed for Determination of Substantial Equivalence are as follows:**

Testing information demonstrating safety and effectiveness of the Microlife Upper Arm Automatic Digital Blood Pressure Monitor, Model BP3MS1-3B in the intended environment of use is supported by testing that was conducted in accordance with the FDA November 1993 Draft "Reviewer Guidance for Premarket Notification Submissions", DCRND, which outlines Electrical, Mechanical and Environmental Performance requirements.

The following testing was conducted to support safety and effectiveness as well as substantial equivalence to the predicate devices:

The following National and International Standards were utilized for testing the subject device:

- 1) IEC 60601-1 Medical electrical equipment – Part 1: General requirements for basic safety and essential performance AAMI / ANSI ES60601-1:2005/(R) 2012 And A1:2012, C1:2009/(R) 2012 And A2:2010/(R) 2012
- 2) IEC 60601-1-2:2014 Medical electrical equipment Part 1-2: General requirements for safety and essential performance – Collateral standard: Electromagnetic Disturbances - Requirements And Tests.
- 3) ISO 14971: 2007 Medical devices – Application of risk management o medical devices.
- 4) AAMI/ANSI/ISO 10993-1:2009 Biological evaluation of medical devices – Part 1: Evaluation And Testing Within A Risk Management Process.
- 5) AAMI/ANSI/ISO 10993-5:2009 Biological evaluation of medical devices – Part 5: Tests for In Vitro Cytotoxicity.
- 6) AAMI / ANSI / ISO 10993-10:2010, Biological evaluation of medical devices – Part 10: Tests for Irritation and Skin Sensitization
- 7) AAMI/ANSI/IEC 80601-2-30 Medical electrical equipment – Part 2-30: Particular requirements for the basic safety and essential performance of automated non- invasive sphygmomanometers, 2013
- 8) IEC 60601-1-11 Medical Electrical Equipment - Part 1-11: General Requirements For Basic Safety And Essential Performance - Collateral Standard: Requirements For Medical Electrical Equipment And Medical Electrical Systems Used In The Home Healthcare Environment .

None of the testing demonstrated any design characteristics that violated the requirements of the Reviewer Guidance or resulted in any safety hazards. It was our conclusion that Microlife Upper Arm Automatic Digital Blood Pressure Monitor, ModelBP3MS1-3B tested met all relevant requirements of the aforementioned tests.

8. Discussion of Clinical Tests Performed:

Clinical Validation Concerning the Compliance of ANSI/AAMI/ ISO 81060-2: The subject device Model BP3MS1-3B is from the technical point of view, identical to the predicate blood pressure monitor BP3MS1-4A (BP A200 Comfort). Moreover, the measurement algorithm and its program codes of BP3MS1-4A (BP A200 Comfort) remain unchanged. The fundamental scientific technology of the modified BP3MS1-3B device is the same as the predicate device BP3MS1-4A (BP A200 Comfort). Therefore the performance of the BP3MS1-3B in terms of blood pressure measurement would be identical with performance of the predicate device BP3MS1-4A (BP A200 Comfort). Repeated clinical testing in accordance with the standard ANSI/AAMI IEC81060-2 for the subject device BP3MS1-3B is therefore not necessary as clinical testing results were not affected by the changes to the subject modified device.

9. Software information:

Software validation was conducted in accordance with a moderate level of concern designation in accordance with the FDA November 2005 document "Guidance for the Content of Premarket Submissions for Software Contained in Medical Devices ".

10. Conclusions:

Conclusions drawn from the non-clinical and clinical tests demonstrate that the subject device is substantially equivalent to the predicate devices.