

ESRPB / EDRPB
EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

ESRPBB / EDRPB

EASYFIT Bluetooth® Single / Double Rocker Pad

29.05.2019



Observe precautions! Electrostatic sensitive devices!

Patent protected:

WO98/36395, DE 100 25 561, DE 101 50 128,
WO 2004/051591, DE 103 01 678 A1, DE 10309334,
WO 04/109236, WO 05/096482, WO 02/095707,
US 6,747,573, US 7,019,241

ESRPB / EDRPB EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

REVISION HISTORY

The following major modifications and improvements have been made to this document:

Version	Author	Reviewer	Date	Major Changes
1.0	MKA	MKA	22.02.2017	Initial Release
1.1	MKA	MKA	30.03.2017	Added step by step payload parsing example
1.2	MKA	MKA	30.06.2017	Added product label information
1.3	MKA	MKA	09.01.2018	Added Australia approval
1.4	MKA	MKA	20.12.2018	Separated ExRPB and PTM 215B product documentation
1.5	MKA	MKA	29.05.2019	Highlighted reference to PTM 215B documentation

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Important!

This information describes the type of component and shall not be considered as assured characteristics. No responsibility is assumed for possible omissions or inaccuracies. Circuitry and specifications are subject to change without notice. For the latest product specifications, refer to the EnOcean website: <http://www.enocean.com>.

As far as patents or other rights of third parties are concerned, liability is only assumed for modules, not for the described applications, processes and circuits.

EnOcean does not assume responsibility for use of modules described and limits its liability to the replacement of modules determined to be defective due to workmanship. Devices or systems containing RF components must meet the essential requirements of the local legal authorities.

The modules must not be used in any relation with equipment that supports, directly or indirectly, human health or life or with applications that can result in danger for people, animals or real value.

Components of the modules are considered and should be disposed of as hazardous waste. Local government regulations are to be observed.

Disposal

Product

Dispose of the used components at an official collection point for electronic waste or at your local dealer.

Packing

Please use the recycling operators known to you.



ESRPB / EDRPB
EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

TABLE OF CONTENT

1	GENERAL DESCRIPTION	4
1.1	Basic functionality	4
1.2	Ordering information.....	4
1.3	Technical data.....	5
1.4	Physical dimensions and mounting options	5
1.5	Environmental conditions	5
1.6	Packaging information.....	5
2	FUNCTIONAL INFORMATION	6
3	PRODUCT LABEL	7
3.1	QR code format.....	8
4	APPLICATION INFORMATION	9
4.1	Transmission range	9
4.2	External magnets	9
5	REGULATORY INFORMATION.....	10
5.1	CE / RE-D for Europe Union	10
5.2	FCC (United States) Certificate.....	11
5.2.1	FCC (United States) Regulatory Statement.....	12
5.3	IC (Industry Canada) Certificate.....	13
5.3.1	IC (Industry Canada) Regulatory Statement.....	14
5.4	ACMA (Australia) Declaration of Conformity	15
5.5	ARIB (Japan) Construction Type Conformity Certification.....	17

ESRPB / EDRPB EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

1 GENERAL DESCRIPTION

1.1 Basic functionality

EnOcean Easyfit Bluetooth® Single / Double Rocker Pad (ESRPB / EDRPB, jointly referred to as ExRPB) are universal energy harvesting wireless switches in the US rocker pad form factor for systems using the 2.4 GHz Bluetooth Low Energy (BLE) radio standard.

ESRPB and EDRPB are based on the maintenance free, self-powered Bluetooth push button transmitter module PTM 215B.

This User Manual provides an overview of the ExRPB finished product.

For detailed technical description, please refer to the PTM 215B User Manual available at: <https://www.enocean.com/en/enocean-modules-24ghz-ble/details/ptm-215b/user-manual-pdf/>

The PTM 215B module within ExRPB contains an electro-dynamic energy transducer which is actuated by the ExRPB rocker movement. Whenever a rocker is pushed down or released, electrical energy is created and a set of Bluetooth advertising frames is transmitted which identifies the rocker status (pushed or released). Radio telegrams are protected with AES-128 security based on a device-unique private key.

„Long“ or „Short“ rocker press (the time between pushing and releasing the rocker) can be calculated by the receiver. This enables switching, dimming control or jalousie control including slat action

Figure 1 below shows the single rocker (ESRPB) and double rocker (EDRPB) product variants.



Figure 1 – ESRPB (single rocker) and EDRPB (double rocker) variants

1.2 Ordering information

Type	Ordering Code
ESRPB	ESRPB-W-EO
EDRPB	EDRPB-W-EO

ESRPB / EDRPB EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

1.3 Technical data

Antenna	Integrated PCB antenna
Output Power	0 dBm
Communication Range (Guidance Only)	75 m ideal line of sight / 10 m indoor environment
Communication Standard	Bluetooth Low Energy (Advertising)
Radio Frequency (min / max)	2402 MHz / 2480 MHz
Default Radio Channels	BLE CH 37 / 38 / 39 (2402 MHz / 2426 MHz / 2480 MHz)
Advertising Events per press or release (min / max)	2 / 3
Data Rate and Modulation	1 Mbit/s GFSK
Configuration Interface	NFC Forum Type 2 Tag (ISO/IEC 14443 Part 2 and 3)
Device Identification	Unique 48 Bit Device ID (factory programmed)
Security	AES128 (CBC Mode) with Sequence Code
Power Supply	Integrated Kinetic Energy Harvester
Inputs	Single (ESRPB) or Double Rocker (EDRPB)

1.4 Physical dimensions and mounting options

Dimensions of Single Rocker Pad	4.95" H x 3.21" W x 0.74" D (126mm x 82mm x 19mm)
Dimensions of Double Rocker Pad	4.95" H x 4.52" W x 0.72" D (126mm x 115mm x 18mm)
Weight of Single Rocker Pad	3.9 oz (112g)
Weight of Double Rocker Pad	5.3 oz (150g)
Mounting	Screwing onto flat surface (screws enclosed)

1.5 Environmental conditions

Operating Temperature	-25°C ... 65°C
Storage Temperature	-25°C ... 65°C
Humidity	0% to 95% r.h. (non-condensing)

1.6 Packaging information

Packaging Unit	24 units
Packaging Method	Each unit packed in a box, 24 units packed in a case

2 FUNCTIONAL INFORMATION

ESRPB and EDRPB are implemented based on the EnOcean PTM 215B module which is shown in Figure 2 below.



Figure 2 – PTM 215B module (shown with and without rocker)

The PTM 215B module provides four button contacts which are actuated by one (single) rocker (ESRPB) or two (double) rockers (EDRPB).

The button contacts of the PTM 215B module are grouped into two channels (Channel A and Channel B) with each channel containing two button contacts (State O and State I).

For the double rocker variant EDRPB, each channel is actuated by one of the two rockers. In case of the single rocker variant ESRPB, only channel B is actuated by the single rocker.

The state of all four button contacts (pressed or not pressed) is transmitted together with a unique device identification (48 bit source address) whenever a rocker is pushed or released.

Figure 3 below shows the arrangement of the four button contacts on the PTM 215B module and their designation.

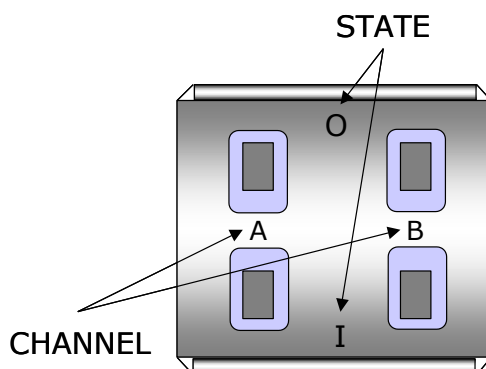


Figure 3 – Button contact designation of the PTM 215B module

Please refer to the PTM 215B user manual for detailed technical information about product functionality.

3 PRODUCT LABEL

Each ESRPB or EDRPB rocker pad contains a product label as shown in Figure 4 below.



Figure 4 – ESRPB / EDRPB product label

This device label identifies the following parameters:

- (1) Frequency and radio standard (2.4 GHz BLE in above example)
- (2) Product revision (DA-01 in above example)
- (3) Manufacturing date (week 35, 2016 in above example)
- (4) QR code for automated reading of all information (see below)
- (5) Static Source Address (E21501234567 in above example)
- (6) Manufacturer and Serial Number (03123456 in above example)

ESRPB / EDRPB
EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

3.1 QR code format

The QR code used on the ESRPB / EDRPB product label encodes the product parameters based on the following structure:

Data Identifier	Data Length (excluding identifier)	Data Content
30S	12 characters	Source Address (hexadecimal)
Z	32 characters	Security Key (hexadecimal)
30P	Up to 10 characters	Ordering Code
2P	4 characters	Step Code and Revision
S	8 characters (including leading zero)	First 2 characters: Manufacturer (03) Final 6 characters: Serial Number

Table 1 – ExRPB product QR code structure

4 APPLICATION INFORMATION

4.1 Transmission range

The main factors that influence the system transmission range are:

- Type and location of the antennas of receiver and transmitter
- Type of terrain and degree of obstruction of the link path
- Sources of interference affecting the receiver
- "Dead spots" caused by signal reflections from nearby conductive objects.

Since the expected transmission range strongly depends on this system conditions, range tests should always be performed to determine the reliably achievable range under the given conditions.

The following figures should be treated as a rough guide only:

- Line-of-sight connections
Typically 10 m range in corridors, up to 30 m in halls
- Plasterboard walls / dry wood
Typically 10 m range, through max. 2 walls
- Ferro concrete walls / ceilings
Typically 5 m range, through max. 1 ceiling (depending on thickness)
- Fire-safety walls, elevator shafts, staircases and similar areas should be considered as shielded

The angle at which the transmitted signal hits the wall is very important. The effective wall thickness – and with it the signal attenuation – varies according to this angle. Signals should be transmitted as directly as possible through the wall. Wall niches should be avoided.

Other factors restricting transmission range include:

- Switch mounting on metal surfaces (up to 30% loss of transmission range)
- Hollow lightweight walls filled with insulating wool on metal foil
- False ceilings with panels of metal or carbon fibre
- Lead glass or glass with metal coating, steel furniture

The distance between the receiver and other transmitting devices such as computers, audio and video equipment that also emit high-frequency signals should be at least 0.5 m.

4.2 External magnets

ExRPB is powered by an electromagnetic harvester. Using magnets (e.g. for mounting) in close proximity to ExRPB therefore has to be avoided.

5 REGULATORY INFORMATION

The PTM 215B module within ESRPB and EDRPB has been certified according to FCC, IC and CE regulations. Changes or modifications not expressly approved by EnOcean could void the user's authority to operate the equipment.

5.1 CE / RE-D for Europe Union

The Radio Equipment Directive (2014/53/EU, typically referred to as RED) has replaced the old R&TTE directive from 1999 as regulatory framework for radio products in the European Union. All products sold to final customers after 12th of June, 2017 have to be compliant to RED.

At the time of writing, the text of the RED legislation was available from this link:
<http://eur-lex.europa.eu/eli/dir/2014/53/oj>

It is the responsibility of the OEM manufacturer to demonstrate compliance to all applicable EU directives and standards. The attestation of conformity for PTM 215B serves as input to the declaration of conformity for the full product.

At the time of writing, guidance on the implementation of EU product rules – the so called “Blue Guide” – was available from this link:
<http://ec.europa.eu/DocsRoom/documents/18027/>

Specifically within the new RED framework, all OEM manufacturers have for instance to fulfill the following additional requirements:

- Provide product branding (on the product) clearly identifying company name or brand and product name as well as type, charge or serial number for market surveillance
- Include (with the product) documentation containing full postal address of the manufacturer as well as radio frequency band and max. transmitting power
- Include (with the product) user manual, safety information and a declaration of conformity for the final product in local language
- Provide product development and test documentation upon request

Please contact an accredited test house for detailed guidance.

ESRPB / EDRPB
EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

5.2 FCC (United States) Certificate

TCB

**GRANT OF EQUIPMENT
AUTHORIZATION**

TCB

**Certification
Issued Under the Authority of the
Federal Communications Commission
By:**

**EMCCert Dr. Rasek GmbH
Stoernhofer Berg 15
91364 Unterleinleiter,
Germany**

**Date of Grant: 09/26/2016
Application Dated: 09/26/2016**

**EnOcean GmbH
Kolpingring 18a
Oberhaching, 82041
Germany**

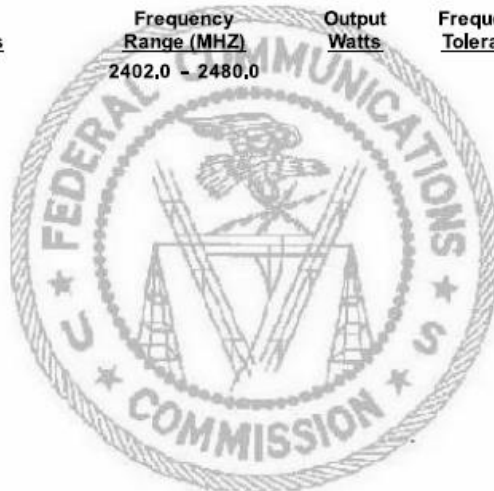
Attention: Armin Anders , Director Product Marketing

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: SZV-PTM215B
Name of Grantee: EnOcean GmbH
Equipment Class: Part 15 Low Power Communication Device Transmitter
Notes: 2402 MHz - 2480 MHz transmitter

<u>Grant Notes</u>	<u>FCC Rule Parts</u>	<u>Frequency Range (MHZ)</u>	<u>Output Watts</u>	<u>Frequency Tolerance</u>	<u>Emission Designator</u>
	15C	2402,0 - 2480,0			



5.2.1 FCC (United States) Regulatory Statement

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.

ESRPB / EDRPB
EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

5.3 IC (Industry Canada) Certificate



FCB under the Canada-EC MRA
TCB under the USA-EC MRA
RFCAB under the Japan-EC MRA
Notified Body R&TTE Directive 99/5/EC
Notified Body RED Directive 2014/53/EU
Notified Body EMC Directive 2014/30/EU
No. CA001711G

**TECHNICAL ACCEPTANCE
CERTIFICATE
CANADA**

**CERTIFICAT D'ACCEPTABILITÉ
TECHNIQUE
CANADA**

CERTIFICATION No. **▶ 5713A-PTM215B**
No. DE CERTIFICATION
ISSUED TO **▶ EnOcean GmbH**
DELIVRE A

Street Address **Kolpingring 18 a**
Numéro et rue
Province or State **Germany**
Province ou Etat

City **Oberhaching**
Ville
Postal Code **82041**
Code postal

TYPE OF EQUIPMENT **▶ Low Power Device (2400-2483.5 MHz)**
GENRE DE MATERIEL

PMN **▶ PTM 215B**
HVIN **▶ PTM 215B**
FVIN **▶**

ANTENNA **▶ Integrated** ANTENNA GAIN **▶**
ANTENNE **Incorporé** GAIN D'ANTENNE

FREQUENCY RANGE BANDE DE FRÉQUENCES	EMISSION TYPE GENRE D'ÉMISSION	RF POWER PUISSANCE H.F.	SPECIFICATION / ISSUE / DATE SPÉCIFICATION / ÉDITION / DATE
2402 - 2480 MHz	947KG1D	96.6 dBµV/m	RSS-210 / 9 / August 2016

TEST LABORATORY **▶ EMCCons DR. RASEK GmbH & Co. KG**
LABORATOIRE D'ESSAY

Street Address **Stoernhofer Berg 15**
Numéro et rue
Province or State **Germany**
Province ou Etat

CN **3464C** OATS **3464C-1**
City **Unterleinleiter**
Ville
Postal Code **91364**
Code Postal

Name **Ludwig Kraft**
Nom
E-mail **Lkraft@emcc.de**

Tel **+49 9194 7263-301**
Fax **+49 9194 7263-309**

Certification of equipment means only that the equipment has met the requirements of the above-noted specification. Licence applications, where applicable to use certified equipment, are acted on accordingly by the ISED issuing office and will depend on the existing radio environment, service and location of operation. This certificate is issued on condition that the holder complies and will continue to comply with the requirements and procedures issued by ISED. The equipment for which this certificate is issued shall not be manufactured, imported, distributed, leased, offered for sale or sold unless the equipment complies with the applicable technical specifications and procedures issued by ISED.

La certification du matériel signifie seulement que le matériel a satisfait aux exigences de la norme indiquée ci-dessus. Les demandes de licences nécessaires pour l'utilisation du matériel certifié sont traitées en conséquence par le bureau de délivrance d'ISDE et dépendent des conditions radio ambiantes, du service et de l'emplacement d'exploitation. Le présent certificat est délivré à la condition que le titulaire satisfasse et continue de satisfaire aux exigences et aux procédures d'ISDE. Le matériel à l'égard duquel le présent certificat est délivré ne doit pas être fabriqué, importé, distribué, loué, mis en vente ou vendu à moins d'être conforme aux procédures et aux spécifications techniques applicables publiées par ISDE.

I hereby attest that the subject equipment was tested and found in compliance with the above-noted specification.

J'atteste par la présente que le matériel a fait l'objet d'essai et jugé conforme à la spécification ci-dessus.

DATE **26 September 2016**

Certification Officer

5.3.1 IC (Industry Canada) Regulatory Statement

This device complies with Industry Canada licence-exempt RSS standard(s).
Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement."

ESRPB / EDRPB
EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

5.4 ACMA (Australia) Declaration of Conformity

Supplier's Declaration of Conformity



As required by the following Notices:

- > *Radiocommunications (Compliance Labelling - Devices) Notice 2014* made under section 182 of the *Radiocommunications Act 1992*;
- > *Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2008* made under section 182 of the *Radiocommunications Act 1992*
- > *Radiocommunications (Compliance Labelling – Electromagnetic Radiation) Notice 2014* made under section 182 of the *Radiocommunications Act 1992* and
- > *Telecommunications (Labelling Notice for Customer Equipment and Customer Cabling) Instrument 2015* made under section 407 of the *Telecommunications Act 1997*.

Instructions for completion

- > **Do not return this form to the ACMA.** This completed form must be retained by the supplier as part of the documentation required for the compliance records and must be made available for inspection by the ACMA when requested.

Supplier's details (manufacturer, importer or authorised agent)

Company Name (OR INDIVIDUAL)

Compliance Folder Management Pty Ltd
On behalf of: EnOcean GmbH

ACN/ABN

ABN 75 082 447 194

Street Address (AUSTRALIAN)

Unit 1, 570 City Road
South Melbourne
Victoria, 3205



Product details and date of manufacture

Product description – brand name, type, current model, lot, batch or serial number (if available), software/firmware version (if applicable)

Brand:	Dolphin
Model:	PTM 215B
Description:	Bluetooth (LE) Pushbutton Transmitter Module
Manufacturer:	EnOcean GmbH Kolpingring 18a, 82041 Oberhaching, Germany
Date of manufacture or importation of the original/modified item	

ESRPB / EDRPB
EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

Compliance – applicable standards and other supporting documents

Evidence of compliance with applicable standards may be demonstrated by test reports, endorsed/accredited test reports, certification/competent body statements.

Having had regard to these documents, I am satisfied the above mentioned product complies with the requirements of the relevant ACMA Standards made under the *Radiocommunications Act 1992* and the *Telecommunications Act 1997*.

List the details of the documents the above statement was made, including the standard title, number and, if applicable, number of the test report/endorsed test report or certification/competent body statement

<p>Radiocommunications (Short Range Devices) Standard 2014 (Amnt 1 : 2015) Radiocommunications (Low Interference Potential Devices) Class Licence 2015</p> <p>AS/NZS 4268: 2017 WLAN 2.4GHz : EN 300 328 V1.9.1 Bluetooth (LE) - Report No.: 16/06-0033, Dated: 18 August 2016, PKM electronic GmbH</p>
<p>Radiocommunications (Electromagnetic Compatibility) Standard 2008</p> <p>EN 55022: 2010 Report No.: 16/06-0033 Dated: 16 August 2016, PKM electronic GmbH</p>
<p>Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2014</p> <p>Maximum Exposure Levels to Radio Frequency Fields – 3 kHz to 300 GHz (2002) RPS 3, ARPANSA Exemption– Fixed Station Exemption, ARPANSA Schedule 5, General Public Exposure, <20mW Mean Power.</p>

OEM products that this module may be installed may also be required to show compliance with Radiocommunications (Short Range Devices) Standard 2014 (Amnt 1 : 2015), Radiocommunications (Electromagnetic Compatibility) Standard 2008, the Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2014 and the requirements of the Telecommunications Labelling Notice.


Declaration

I hereby declare that:

1. I am authorised to make this declaration on behalf of the Company mentioned above,
2. the contents of this form are true and correct, and
3. the product mentioned above complies with the applicable above mentioned standards and all products supplied under this declaration will be identical to the product identified above.

Note: Under section 137.1 of the *Criminal Code Act 1905*, it is an offence to knowingly provide false or misleading information to a Commonwealth entity.

Penalty: 12 months Imprisonment

 Signature of Supplier or Agent <p style="text-align: center;">Robert Norris</p> Print Name	<p>General Manager</p> Position In Organisation <p>28th November 2017</p> Date
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The *Privacy Act 1988* (Cth) (the *Privacy Act*) imposes obligations on the ACMA in relation to the collection, security, quality, access, use and disclosure of personal information. These obligations are detailed in the Australian Privacy Principles.

The ACMA may only collect personal information if it is reasonably necessary for, or directly related to, one or more of the ACMA's functions or activities.

The purpose of collecting the personal information in this form is to ensure the supplier is identified in the 'Declaration of conformity'. If this Declaration of Conformity is not completed and the requested information is not provided, a compliance label cannot be applied.

Further information on the Privacy Act and the ACMA's Privacy Policy is available at www.acma.gov.au/privacypolicy. The Privacy Policy contains details about how you may access personal information about you that is held by the ACMA, and seek the correction of such information. It also explains how you may complain about a breach of the Privacy Act and how we will deal with such a complaint.

Should you have any questions in this regard, please contact the ACMA's privacy contact officer on telephone on 1800 228 667 or by email at privacy@acma.gov.au.

ESRPB / EDRPB
EASYFIT BLUETOOTH® SINGLE / DOUBLE ROCKER PAD

5.5 ARIB (Japan) Construction Type Conformity Certification



Notified Body EMC Directive 2014/30/EU
Notified Body Directive 2014/53/EU
RF CAB under the Japan-EC MRA
FCB under the Canada-EC MRA
TCB under the USA-EC MRA

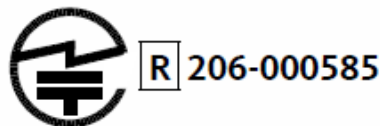
RF CAB ID No. 206

Designated by the German Regulator Bundesnetzagentur to act as a
Recognised Foreign Conformity Assessment Body in accordance with the Japan-EC MRA

CONSTRUCTION TYPE CONFORMITY CERTIFICATE
for
Specified Radio Equipment

Registration No.	JU000585K
Certificate Holder	EnOcean GmbH Kolpingring 18a 82041 Oberhaching Germany
Product Category	Article 2, Paragraph 1, Item 19 (WW)
Product Designation	PTM 215B, ESRPB, EDRPB, EWSSB, EWSDB
Product Description	Bluetooth Low Energy Transmitter
Software Release No.	1.1.0.0
Manufacturer	Katek GmbH Bahnhofstraße 108 83224 Grassau Germany

When the product is placed on the Japanese market, it must carry the Specified Radio Equipment marking as shown on the right



The scope of evaluation relates to the submitted documents only.

This Certificate confirms that the listed product has demonstrated conformity with the relevant technical regulations defined in the attached Annex. It is only valid in conjunction with the Annex.

Unterleinleiter,
2018-03-15


Günther Proß
Recognised Foreign Conformity Assessment Body