

	<b>iQ ZigBee RF Controller User Manual</b>	Status: Draft  Date 01/11/2019
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## 1. Introduction:

iQ ZigBee RF Controller board is designed for Osram internal use only. To explain further, this RF controller board can be integrated into any Osram end products such as LED Lamp, Power Supply for LED, Electronic Ballast or Luminaires. However, this RF Controller board is NOT meant to be sold to third parties.

Specification of this RF Controller board is presented in Table1.

**Table 1: RF Module specification**

Parameter	Description
Description	iQ ZigBee RF Controller
PHY and MAC layers transceiver	2.4GHz IEEE 802.15.4-2003
Max RF TX Power (EIRP)	+18dBm
sensitivity	-102.7dBm
Operating temperature range	-40 to +105°C
Supply voltage	2.1 to 3.6V
RX current (+18dBm)	126 mA (typical)
TX current (+0dBm)	10 mA (typical)
MCU core	32 bit ARM Cortex M4 up to 40MHz with AES128 encryption accelerator
Flash	256 kB (EFR32MG1B232F256IM48-C0)
RAM	32 kB
Peripherals	UART, SPI, I2C, ADC, Timers, GPIO
Deep sleep mode current consumption (Mode EM4S)	85nA (typical)
PCB size (See section#2 for more details)	12.9x23.0mm
Agency Approvals	FCC, IC
FCC #	DZO-OSREFRMG1P2
IC#	23566-OSREFRMG1P2
HVIN#	OSREFRMG1P2

## 2. Warning

*Changes or modifications not expressly approved by R&D Director of Osram could void the user's authority to operate this equipment. This is due to FCC or IC requirements.*

## 3. Federal Communication Commission Interference Statement

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

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

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.

#### 4. Industry Canada 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.*

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

*Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.*

**WARNING! This module is to be installed only in OSRAM end products by their personnel, and shall not be offered to 3rd party OEM integrators or the general public.**

This RF Module has been certified for integration into products without further testing or certification. However, **OSRAM** is still responsible for testing their end-product for any additional compliance requirements required with this module installed (such as digital device emissions, PC peripheral requirements, etc.).

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## 5. End Product Labeling Requirements

The following statement shall be placed in the manual of the end product as this RF Controller board is considered extremely small (~8 x 10cm).

*“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.”*

*« 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 » .*

The final end product must be labeled in a visible area with the following: “Contains Transmitter Module FCC ID: DZO-OSREFRMG1P2 (IC: 23566-OSREFRMG1P2)” OR “Contains FCC ID: DZO-OSREFRMG1P2 (IC: 23566-OSREFRMG1P2)” or similar wording.”

## 6. End Product User Manual Requirements

- The user manual for the end product must include the following information in a prominent location:

“To comply with FCC and Industry Canada RF radiation exposure limits for general population/uncontrolled exposure, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and all persons at all times. In addition this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter.”

“Pour se conformer aux limites d'exposition FCC / IC Canada RF pour la population générale / exposition non contrôlée, l'antenne(s) utilisée pour ce transmetteur doit être installé pour fournir une distance de séparation d'au moins 20cm de toutes les personnes et ne doit pas être co-implantés ou exploités en conjonction avec une autre antenne ou émetteur”.

**IMPORTANT NOTE:** In the event that these conditions can not be met (for certain configurations or collocation with another transmitter), then the FCC and Industry Canada authorizations are no longer considered valid and the FCC ID and IC Certification Number can not be used on the final product. In that case the end product must be re-evaluated to obtain separate FCC and Industry Canada authorizations.

*“To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.”*