



General Description

The EMBQ24 is a high-performance, cost-effective, easy-to-use, customizable Bluetooth Low Energy V5.0 beacon with a RAIN RFID interface, an accelerometer, and a temperature sensor. The rugged, IP67-compliant EMBQ24 comes fully encapsulated to protect against dust and liquid ingress to ensure reliable use in harsh environments.

The EMBQ24 unique combination of BLE and RAIN RFID allows upgrading an already deployed RAIN RFID infrastructure to support BLE.

The EMBQ24 is compatible with all major beacon formats including iBeacon™ and Eddystone™, as well as proprietary systems such as Quuppa Intelligent Locating System™. The beacon is fully customizable over the air (via Bluetooth or RAIN RFID), either during manufacturing or after deployment. Among others, the following parameters can be easily modified:

UID (UUID, Major/Minor ID)

URL and telemetry data

Multiple interleaved packet types

Output power

Accelerometer function and sensitivity

The EMBQ24 can be securely updated in the field with over-the-air programming from a mobile device.

The EMBQ24 accelerometer can be used to implement efficient, ultralow-power algorithms for various applications, activating beaconing on movement or specific gestures. Furthermore, when not active, the beacon energy consumption is minimized.

The EMBQ24's EPCTM Gen2 and ISO/IEC 18000-63 compliant RAIN RFID interface is compatible with industrial RFID infrastructure, enabling a multitude of RAIN RFID use cases from device activation to data exchange with RAIN RFID readers and gates to track and trace and supply chain management applications. The integrated temperature sensor supports a temperature range from -40°C to +60°C with typical accuracy of ±1.0°C over the full range and ±0.6°C over the typical range for cold chain applications.

The EMBQ24 is manufactured with Swiss quality leveraging the Swatch Group expertise, including the EM9304 Bluetooth SoC and EM4325 RAIN RFID IC from EM Microelectronic, as well as a CR2032 battery from Renata.

The EMBQ24 has a guaranteed unique ID and a 2D unique serial number is printed on the beacon for optical scanning.

The EMBQ24 operates over a -30°C to +70°C temperature range.

The EMBQ24 is FCC and CE certified, RoHS, REACH, and Halogen Free compliant.

Bluetooth® Low Energy V5.0 Encapsulated Proximity Beacon with RAIN RFID interface, Accelerometer and Temperature Sensor

Features

- | Small and rugged, encapsulated in polymer resin
- | Affordable and easy to use
- | Supports popular beacon formats such as iBeacon™ and Eddystone™, and proprietary such as Quuppa Intelligent Locating System™
- | Secure firmware over-the-air updates using all major mobile platforms
- | Up to 8 years of battery life – Battery Lifetime Calculator available
- | Ultra-low power accelerometer to monitor vibration, or activate beaconing on actions such as movement, taps, or gestures. Accelerometer measurement range is ±2 g, ±4 g, ±8 g with sampling data rate from 12.5 Hz to 400 Hz
- | Up to 100 m BLE range line-of-sight (LOS) at maximum output power
- | RAIN RFID range in open space over 4 m⁽¹⁾
- | Rich set of parameters configurable Over the Air allowing for rapid development of a large range of applications with no coding
- | Embedded temperature sensor with sensing range from 40°C to +60°C and a typical accuracy of ±1.0
- | Manufactured with Swiss quality and including the following Swatch Group technologies:
 - **EM9304** Bluetooth Low Energy V5.0 system-on-chip,
 - **EM4325** Class-3 Gen2 RFID IC compliant with ISO/IEC 18000-63, ISO/IEC 18000-64, and EPC™ Class-1 Generation-2
 - Renata CR2032 battery
- | Unique ID and scannable QR-code come standard
- | IP-67 ingress protection rating
- | Operating temperature range from -30°C to +70°C
- | FCC, and CE certified
- | An optional tamper loop for security systems is also available

(1) with a reader of -80dBm sensitivity

Product Dimensions

The EMBQ24 finished product outline dimensions are shown in Figure 1 with 31.7x31.7x9mm outer dimensions.

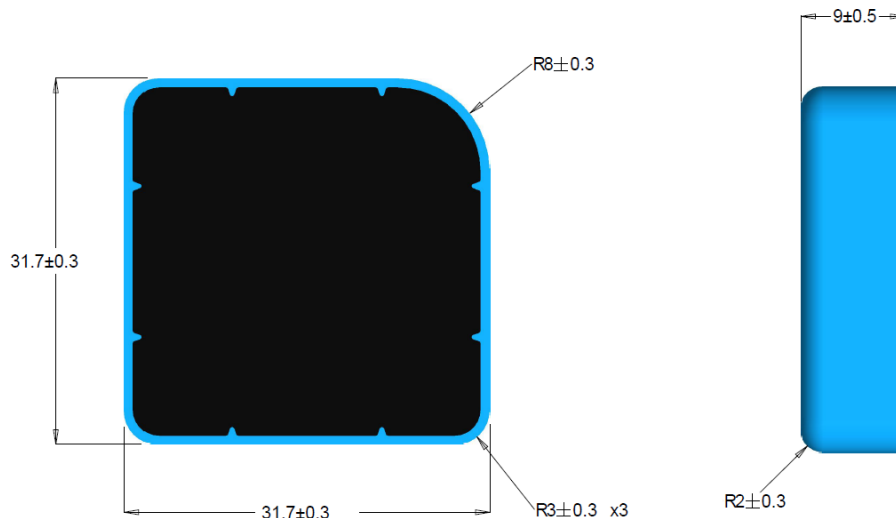


Figure 1: Finished Product Dimensions

Ordering Information

The EMBQ24 is available as a finished product with FCC, IC, and CE certification. The EMBQ24 ordering information is shown in Figure 2 and the order numbers are shown in Table 1.

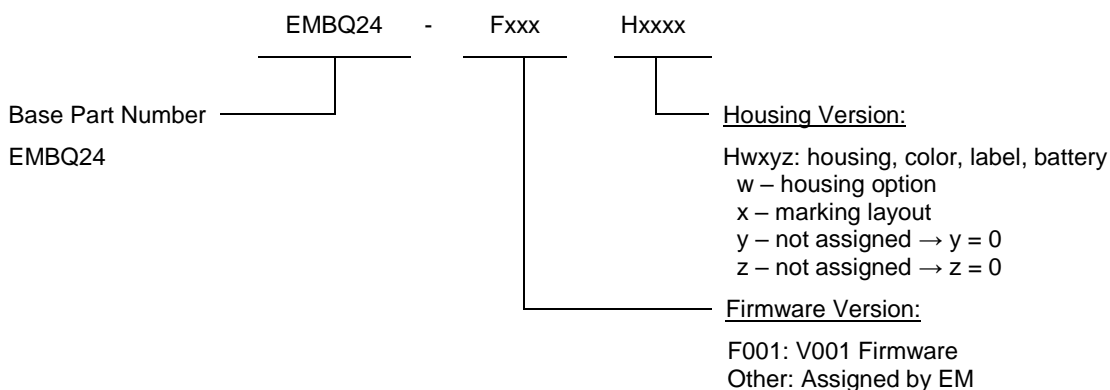


Figure 2: Ordering Information

Order Number	Description	Container	Units per Container
EMBQ24-Fxxx-Hxxx	Standard Encapsulated Accelerometer Beacon in Blue Cup	Tray	50

Table 1: Ordering Information

Contact Information

Inquiries for lead-times, quotes, orders: EMDirect@emmicroelectronic.com