Technical Datasheet

1 Key Features

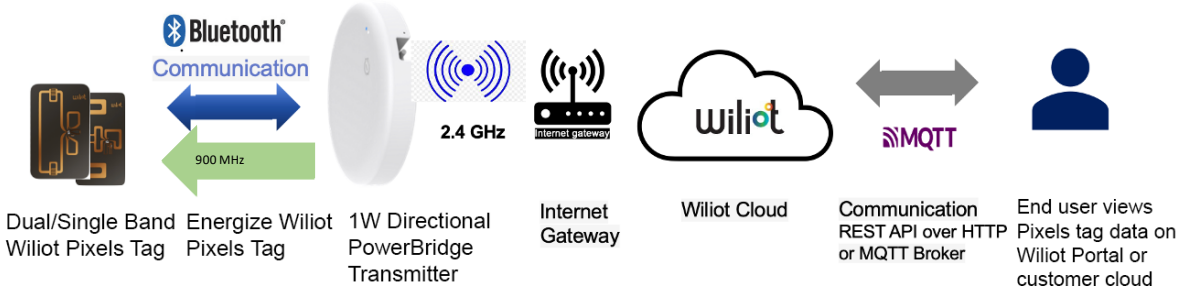
- Works with Wiliot
  - Up to +30 dBm 900 MHz band energizing signal
  - Up to +20 dBm 2.4 GHz band energizing signal
  - BLE beacon filter and repeater functionality
- Dual linear 900 MHz and 2.4 GHz antennas
- 5V/1A Operation

2 Characteristics

Specification	Description
Supported products	Wiliot Single-band IoT Pixels tags Wiliot Dual-band IoT Pixels tags
Energizing*	Up to +30 dBm in 900 MHz band Up to +20 dBm in 2.4 GHz band
Echo function*	Scan for Wiliot beacons, filter non-Wiliot BLE beacons, and re-broadcast
Antennas	Dual linear Sub-1 GHz and 2.4 GHz
Typical antenna gain	Sub-1 GHz: Dual 2 dBi linear 2.4 GHz: Dual 2.5 dBi linear
Antenna 3 dB beam width	Sub-1 GHz: ±35° 2.4 GHz: ±35°
LED indicators	**Echo LED**: blue LED blinks = Wiliot Pixels tag packets are echo'd **Energizing LED**: white LED on = PowerBridge is energizing **Blink action**: blue and white LEDs blink rapidly = PowerBridge receives blink action **Keep alive**: Echo LED blinks 3 times every 30 seconds = transmission of management packets by PowerBridge if no Pixels tag packets are being sent **Advertisement mode (BLE services)**: constant Echo LED = PowerBridge is in Advertisement mode 30 seconds after wake-up and can be connected for BLE services
Software updates	Via OTA from Wiliot Management portal
Power supply	5V/1A via USB-C connector
Certifications	FCC Part 15, ISED (Canada), EU, UK, CN, KR, JP
Operating temperature	0° ~ 50°C
Dimensions	15.4 cm diameter, 2.6 cm thick

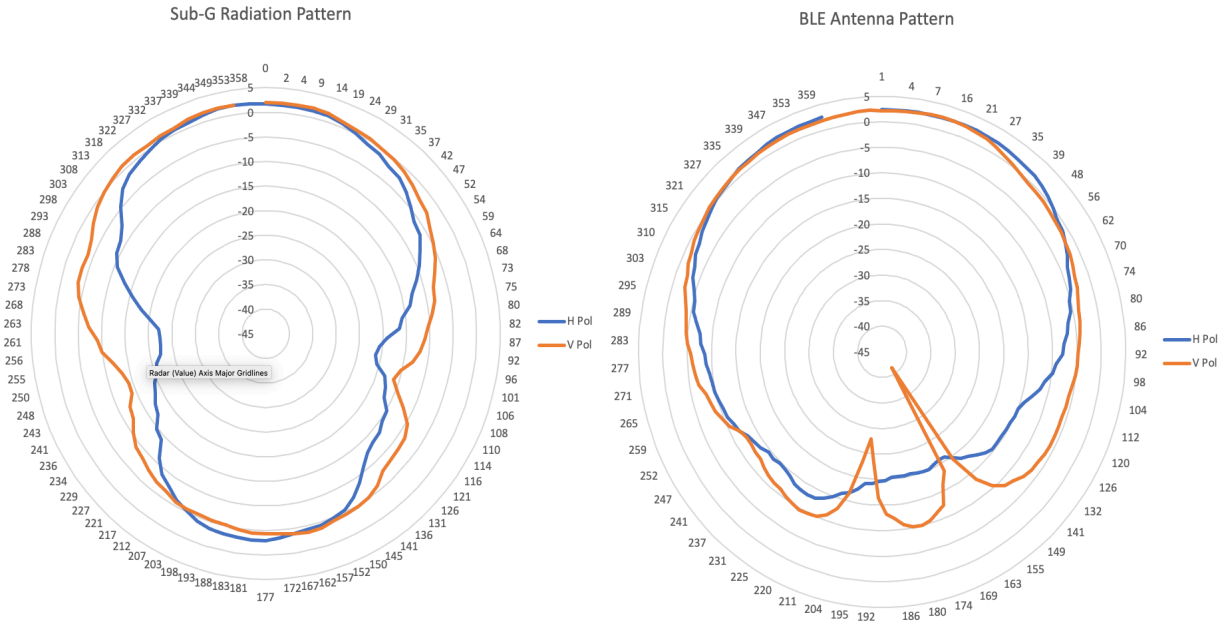
*Programmable from Wiliot Management portal

3 Application – System Level Workflow Architecture Diagram



1W PowerBridge within the Wiliot Ecosystem

4 Antenna Radiation Patterns



900 MHz and 2.4 GHz Radiation Pattern

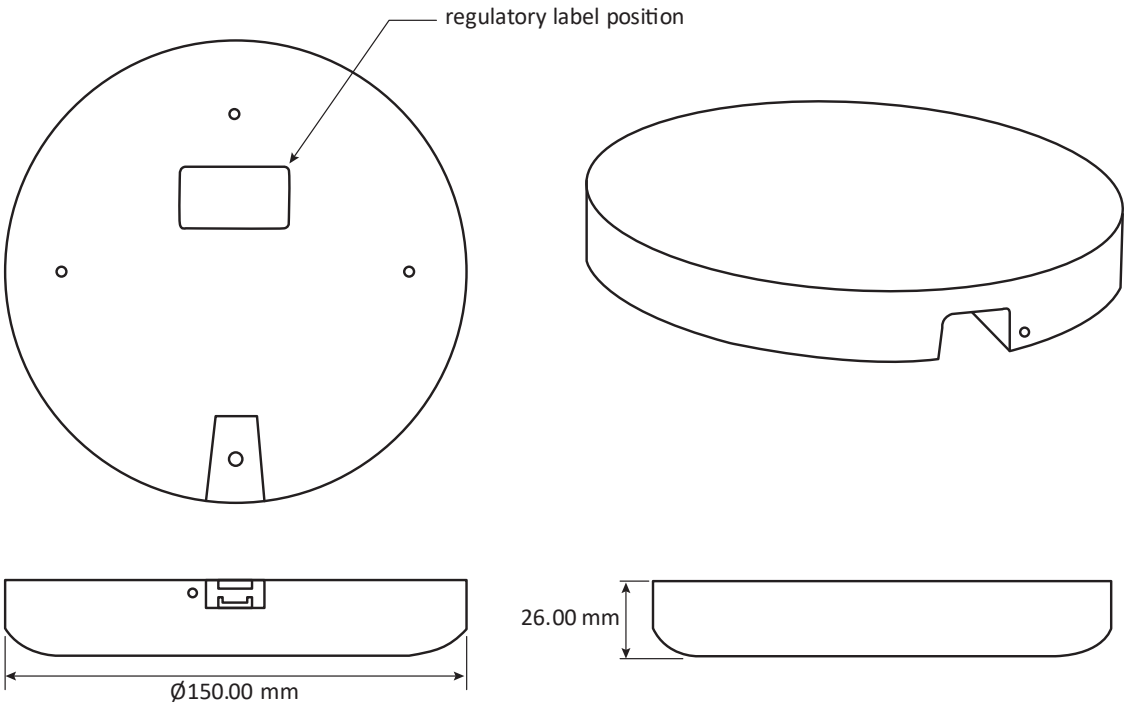
5 Operational Range

The PowerBridge energizes Pixels tags over a distance. Packets received from Pixels tags are rebroadcast by the PowerBridge at a higher power level; this is called Echoing. The distance over which Pixels tags can be energized is defined as Energizing Range and the distance over which the rebroadcast packet can be received is defined as Echo Range. This allows Pixels tag deployments to be meshed, with fewer gateways and "dead zones". Being an RF technology, the operating environment plays a critical role in determining the range.

6 Pacing

The PowerBridge can reduce the amount of over-the-air traffic and throttle the amount of data pushed to the cloud. This feature is known as Pacing and refers to how often data packets received from Pixels tags are echoed by the PowerBridge, which is programmable via the Wiliot Management portal.

7 1W PowerBridge Diagram



8 Regulatory Certification

The following countries are covered by 900 MHz band versions regulatory certification:

- USA
- Canada
- United Kingdom
- European Union
- Japan
- Korea
- China
- Australia
- New Zealand

9 Part Number Information

Part Number	Description
EN-TXS-1000-US-00	Energous 1W PowerBridge Transmitter - US - 918 MHz - with power supply
EN-TXS-1000-EU-00	Energous 1W PowerBridge Transmitter - EU - 918 MHz - with power supply
EN-TXS-1000-CN-00	Energous 1W PowerBridge Transmitter - CN - 900 MHz - with power supply
EN-TXS-1000-KR-00	Energous 1W PowerBridge Transmitter - KR - 900 MHz - with power supply
EN-TXS-1000-JP-00	Energous 1W PowerBridge Transmitter - JP - 900 MHz - with power supply

10 Revision History

Version #	Date	Description of Changes
Version 1.2	05/09/23	- In section 1, changed third bullet to “Circular Polarized 900 MHz and…” - In section 2, added footnote to Energizing Specification, changed description for Energizing Specification to "Up to +30 dBm in 900 MHz band, Up to +20 dBm in 2.4 GHz band", changed Echo function description to "Scan for Wiliot beacons, filter non-Wiliot BLE beacons, and re-broadcast", added "Typical" to Antenna Gain Specification, changed Antenna Gain Specification to “Sub-1 GHz: Dual 2 dBi linear 2.4 GHz: Dual 2.5 dBi linear”, changed Antenna 3 dB beam width to "Sub-1 GHz: ±35˚…", rewrote description for LED indicators, and in image under table changed green arrow for Energize Wiliot Pixel to "900 MHz" - In section 3, replaced Antenna Radiation Pattern diagrams - In section 4, replaced information for Operational Range table - In section 7, renamed section to Regulatory Certification and replaced information with list of countries - Added new section 8 for Part Number Information - Added new section 9 for Revision History
Version 1.21	05/14/24	- Changed product name to “Eagle (1W) Directional…” throughout entire document - In section 1, changed polarization type in bullet 2 to “Dual linear” - In section 2, changed Antennas polarization type to “Dual linear” - Added new section 3, and moved image from section 2 to section 3 - In section 5, removed table - In section 8, changed US to “USA” - In section 9, removed last part number
Version 1.3	07/16/24	- Removed references to “Eagle” and “directional”, changed “Pixel” to “Pixels tag”, and changed “bridge” to “PowerBridge” throughout entire document - In section 3, changed description of diagram to “…PowerBridge within the Wiliot Ecosystem” - In section 8, removed contact information
Version 1.31	08/06/24	- Updated Energous logo throughout entire document