UCODE EPC G2

UHF RFID Smart Label IC

The UCODE EPC G2 IC is a dedicated chip for passive, intelligent tags and labels supporting the EPCglobal class 1 gen2 standard. It is especially suited for supply chain management and logistics applications where operating distances of several meters and high anti-collision rates are required.

Semiconductors

Key features

- Interface fully compatible with UHF EPC G2 standard
- Long-range solutions (up to 7 m in the US and 6.6 m in Europe)
- Suitable for UHF RFID, allowing one tag to be used worldwide
- Fast data rate
  - forward link: 40 - 160 kbits/s
  - return link: 40 - 640 kbits/s
- Multi-label operation at 600 tags/sec in Europe, 1600 tags/sec in the US
- 512 bits of on-chip memory
  - 96 bits EPC
  - 32 bits Tag Identifier
  - 128 bits programmable user memory
  - 32 bits access password
  - 32 bits kill password
- Runs on the same hardware infrastructure as the UCODE HSL and the UCODE EPC1.19

Key benefits

- Tags / labels and readers available from various suppliers
- First UHF EPC product operating worldwide
- Highly advanced anti-collision and highest identification speed
- Reliable and robust RFID technology suitable for dense reader and noisy environment
- Secure UHF communication; readers do not transmit EPC data
- Broadest industry back-up – EPCglobal and ISO 18000-6C
- Reader portfolio covers all regional demands

The UCODE EPC G2 IC is the first UHF EPC product from Philips. Designed specifically for long-range applications, the entire UCODE family also offers anti-collision and collision arbitration functionality. This allows a reader to simultaneously operate multiple labels / tags within its antenna field.

A UCODE EPC G2 based label / tag requires no external power supply. Its contactless interface generates the power supply via the antenna circuit by propagative energy transmission from the interrogator (read/write device), while the system clock is generated by an on-board oscillator. Data transmitted from interrogator to label / tag is demodulated by the interface, and it also modulates the interrogator's electromagnetic field for data transmission from label / tag to interrogator.

A label / tag can be operated without the need for line of sight or battery, as long as it is connected to a dedicated antenna for the targeted frequency range. When the label / tag is within the interrogator's operating range, the high-speed wireless interface allows data transmission in both directions.

Key applications

- Supply Chain Management
- Asset Management
- Container Identification
- Pallet & Case Tracking

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Standards compliance

The UCODE EPC G2 complies with the following Air Interface standards:

- EPCglobal class 1 gen2
- ISO 18000-6C

Operating distances

For UCODE EPC G2 based tags and labels in released frequency bands

Frequency range	Region	Available power	Read range [1] [2]
869.4 - 869.65 MHz (UHF)	Europe [3]	0.5 W ERP	3.3 m
865.6 - 867.6 MHz (UHF)	Europe [4]	2 W ERP	6.6 m
902 - 928 MHz (UHF)	America [5]	4 W EIRP	7.0 m

Notes:

1. These read distances are typical values for general tags and labels. Practical usable values may be lower due to damping by object materials and environmental materials. A special tag antenna design can help achieve higher values.
2. Maximum write distance is approximately 70% of the read distance.
3. CEPT / ETSI EN 330 220
4. CEPT/ ETSI EN 302 208
3. FCC regulations, Part 15 Section 247

Ordering information

Order no.	Delivery type description
SL3ICS1001FW/V1	Bumped, sawn wafer on ffc, 150 µm, inked and mapped
SL3FCS1001DV/DH	IC on flip chip package in reel format
SL3S1001FTT	TSSOP8

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