

TECHNICAL INFORMATION MANUAL

Revision 00 - 15 June 2015

tile R1250I

Compact UHF RFID Desktop Reader



easy2read[®]

Visit the [tile R1250I](#) web page, you will find the latest revision of data sheets, manuals, certifications, technical drawings, software and firmware. All you need to start using your reader in a few clicks!

Scope of Manual

The goal of this manual is to provide the basic information to work with the Tile R1250I Compact UHF RFID Desktop Reader.

Change Document Record

Date	Revision	Changes	Pages
15 June 2015	00	Preliminary release	-

Reference Document

[RD1] - EPCglobal: EPC Radio-Frequency Identity Protocols Class-1 Generation-2 UHF RFID Protocol for Communications at 860 MHz – 960 MHz, Version 1.1.0 (December 17, 2005).

CAEN RFID srl

Via Vетraia, 11 55049 Viareggio (LU) - ITALY
Tel. +39.0584.388.398 Fax +39.0584.388.959
info@caenrfid.com
www.caenrfid.com

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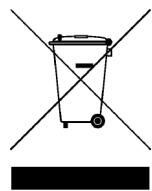
Preliminary Product Information

This document contains information for a new product. CAEN RFID reserves the right to modify this product without notice.

"Preliminary" product information describes products that are ready for production, but for which full characterization data is not yet available. CAEN RFID believes that the information contained in this document is accurate and reliable. However, the information is subject to change without notice and is provided "AS IS" without warranty of any kind (Express or implied). You are advised to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability. No responsibility is assumed by CAEN RFID for the use of this information, including use of this information as the basis for manufacture or sale of any items, or for infringement of patents or other rights of third parties.

Disposal of the product

Do not dispose the product in municipal or household waste. Please check your local regulations for disposal/recycle of electronic products.



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1 INTRODUCTION

Product Description

The Tile (model R1250I), desktop reader of the easy2read® family, is an UHF RFID reader with integrated antenna for short to medium range applications.

The reader is powered and controlled directly by an USB cable, thus allowing to read EPC Class1 Gen2 UHF RFID tags in an easy desktop environment.

Thanks to its compact size, the Tile reader is the perfect choice for various applications such as point-of-sales, document tracking, tag programming stations, access control and so on. It can also be used as a building block for smart shelves and smart displays.

The Tile reader supports the HID profile (native keyboard emulation) allowing to interact directly with legacy application, office automation SW or any other generic solution requiring manual input.

Being compliant with both European and US regulatory environments, the Tile reader allows installations in various countries worldwide as needed by retailers, forwarders, warehouses and other global organizations.

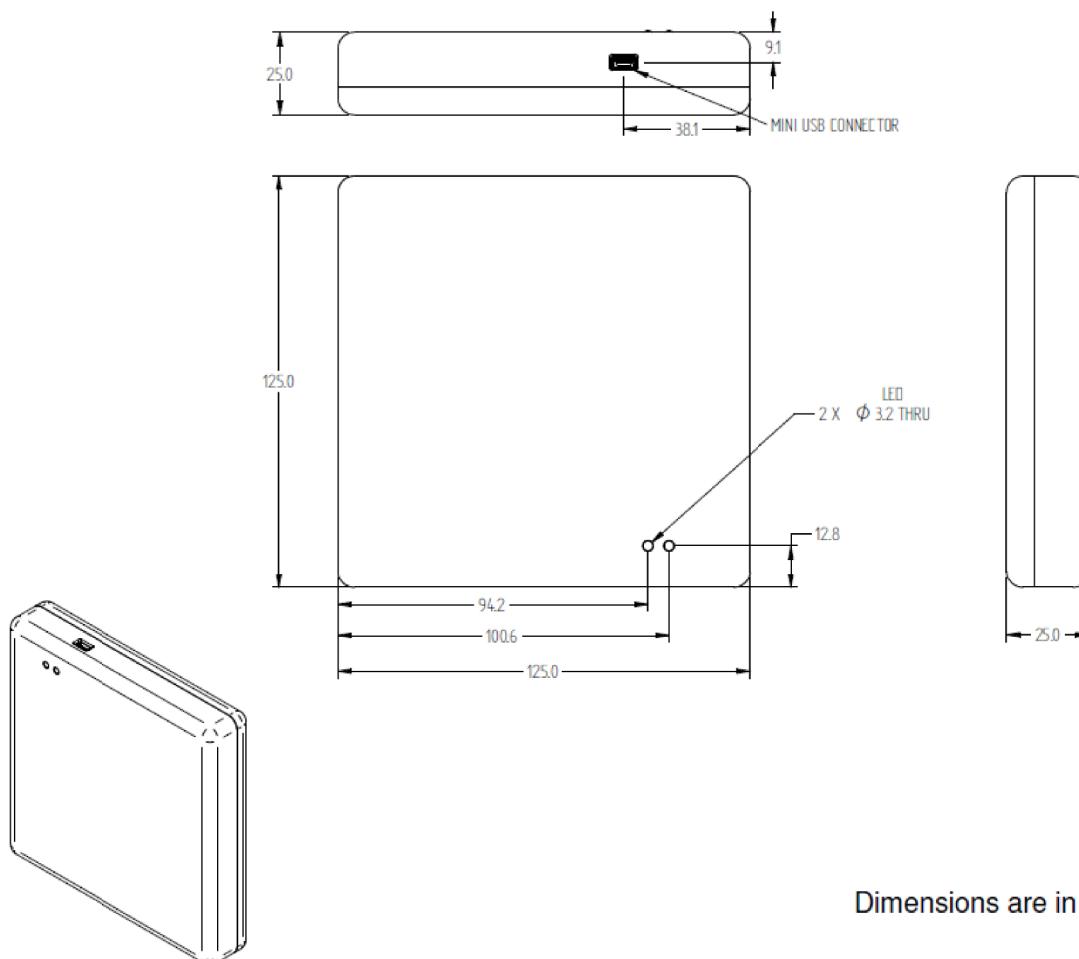
The core components of the Tile reader are the CAEN RFID QuarkUp module, a top performing ultra-compact UHF RFID module, and the Quad, a compact circular polarized antenna designed by CAEN RFID.



Fig. 1: Tile R1250I Compact UHF RFID Desktop Reader

Installation Notice

The Tile R1250I can be easily placed on a table for desktop applications or it is possible to hang it on the wall (only for the model with flanged enclosure).



Dimensions are in mm

Fig. 2: Tile R1250I (standard enclosure) mechanical drawing

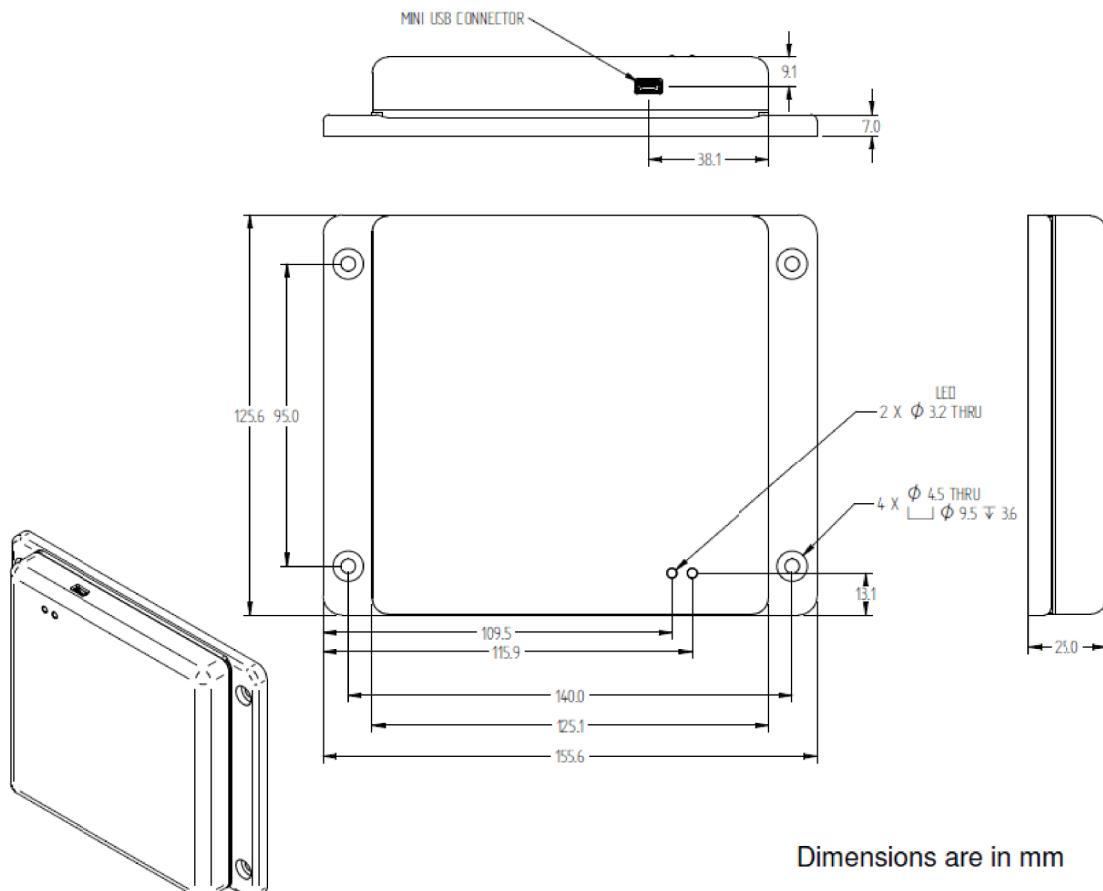


Fig. 3: Tile R1250I (flanged enclosure) mechanical drawing

Ordering Options

	Code	Description
Reader	WR1250IEXAAA	R1250IE - Tile - Compact UHF RFID Desktop Reader (ETSI)
	WR1250IEXAFL	R1250IE - Tile - Flanged - Compact UHF RFID Desktop Reader (ETSI)
	WR1250IEXBAA	R1250IE - Tile - Black - Compact UHF RFID Desktop Reader (ETSI)
	WR1250IEXBFL	R1250IE - Tile - Black Flanged - Compact UHF RFID Desktop Reader (ETSI)
	WR1250IUXAAA	R1250IU - Tile - Compact UHF RFID Desktop Reader (FCC)
	WR1250IUXAFL	R1250IU - Tile - Flanged - Compact UHF RFID Desktop Reader (FCC)
	WR1250IUXBAA	R1250IU - Tile - Black - Compact UHF RFID Desktop Reader (FCC)
	WR1250IUXBFL	R1250IU - Tile - Black Flanged - Compact UHF RFID Desktop Reader (FCC)

2 TILE EXTERNAL INTERFACES DESCRIPTION

External Connection

The external connection is via USB port.

The mini USB connector is located in the front edge of the Tile. You shall use a dual USB cable and connect the reader to two USB ports.

The Tile R1250I is powered through the USB host.

Front Panel LEDs

Tile R1250I front panel houses the following LEDs (see figure below):

LED	FUNCTION	TYPE
PWR	Power ON	Red LED
TAG-ID	Tag detection	Blinking Green LED

Tab. 3.1: Tile R1250I Front Panel LEDs

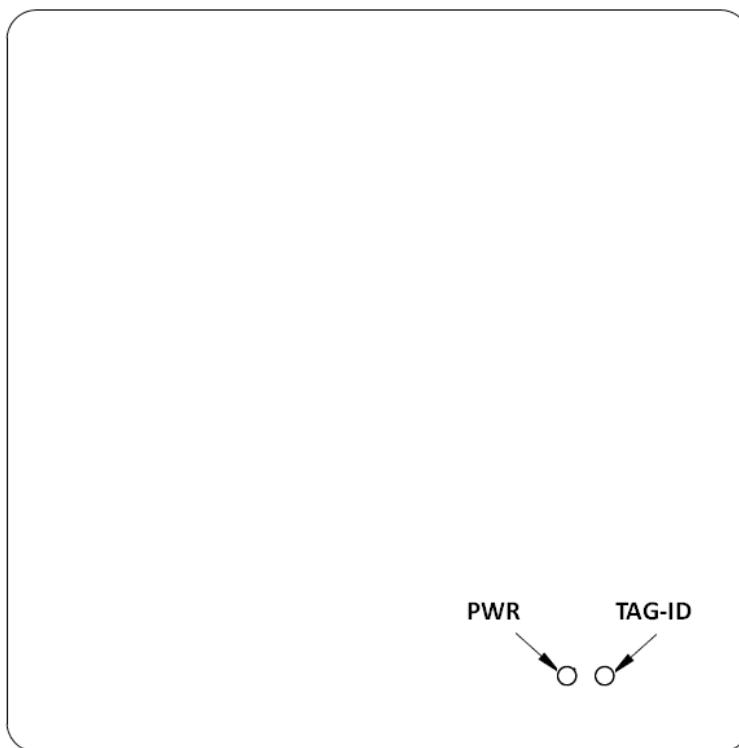


Fig. 4: Tile R1250I Front Panel LEDs

3 TILE TECHNICAL SPECIFICATIONS

Technical Specifications Table

Frequency Band	865.600÷867.600 MHz (ETSI EN 302 208) (Mod. R1250IE) 902÷928 MHz (FCC part 15) (Mod. R1250IU)
RF Power	Programmable in 18 levels (1dB step) from 8 dBm ERP to 25 dBm ERP (Mod. R1250IE) Programmable in 18 levels (1dB step) from 8,5 dBm ERP to 25,5 dBm ERP (Mod. R1250IU)
Output power accuracy	+/- 1dB
Antenna	Integrated Circular Polarized Antenna
Frequency Tolerance	±10 ppm over the entire temperature range
Number of Channels	4 channels (compliant to ETSI EN 302 208 v1.4.1) (Mod.R1250IE) 50 hopping channels (compliant to FCC part 15.247) (Mod.R1250IU)
Standard Compliance	EPC C1G2/ISO 18000-6C
User Interface	Red LED: Power Blinking Green LED: Tag detection
Connectivity	Mini USB type B plug connector USB 2.0 Full Speed (12Mbit/s) device port Must be connected to two High-power USB Type A ports (500 mA @ VBUS) Virtual COM port parameters: - Baudrate: up to 115.200kbps - Databits: 8 - Stopbits: 1 - Parity: none - Flow control: none HID profile available
Dimensions	(W)125 x (L)125 x (H)25 mm ³ (4,92 x 4,92 x 0.98 inch ³)
Electrical Power	5 V ± 5% - DC bus powered (USB) Max 650 mA
Operating Temperature	-10 °C to +55 °C
Weight	220g max.
Length of USB cable	1 m

Tab. 5.2: Tile R1250I Technical Specifications



Warning: The RF settings must match the country/region of operating to comply with local laws and regulations.

The usage of the reader in different countries/regions from the one in which the device has been sold is not allowed.

Reader – Tag Link Profiles

The Tile R1250I reader supports different modulations and return link profiles according to EPC Class1 Gen2 protocol.

In the following table are reported all profiles that have been tested for the compliance with ETSI and FCC regulations.

Link profile #	Regulation	Modulation	Return Link
0	ETSI - FCC	PR-ASK; f=40kHz	FMO; f = 40kHz
1	ETSI - FCC	PR-ASK; f=40kHz	Miller (M=4); f = 256kHz
2	ETSI	PR-ASK; f=40kHz	Miller (M=4); f = 320kHz

Tab. 5.3: Tile R1250I Reader to tag link profiles

Radiation Patterns

The radiation patterns of the Tile R1250I are shown in the following figures.

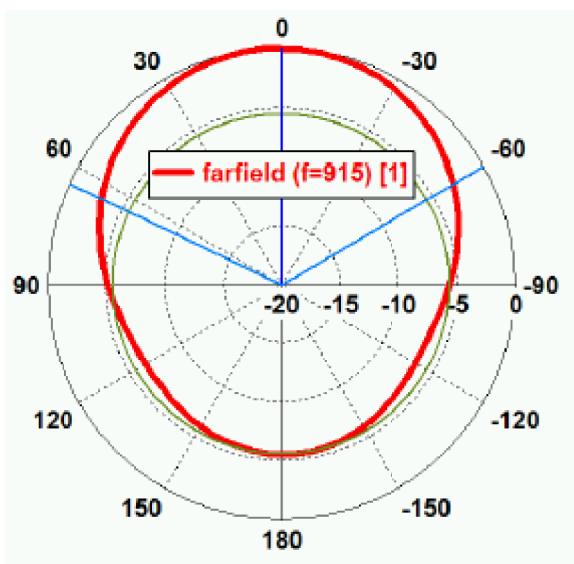


Fig. 5: Tile R1250I Radiation pattern H plane

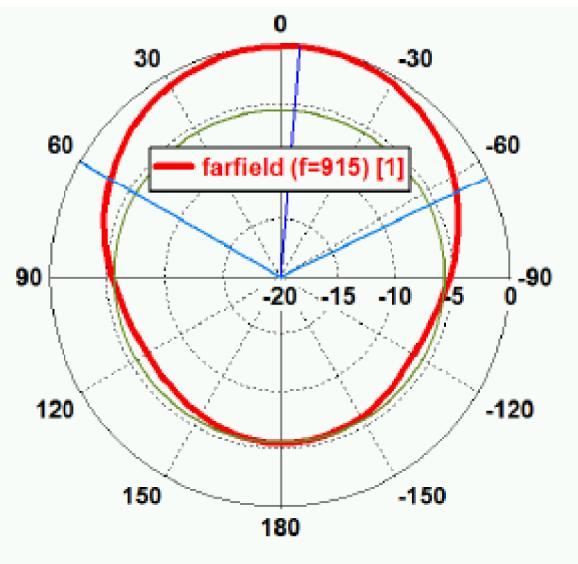
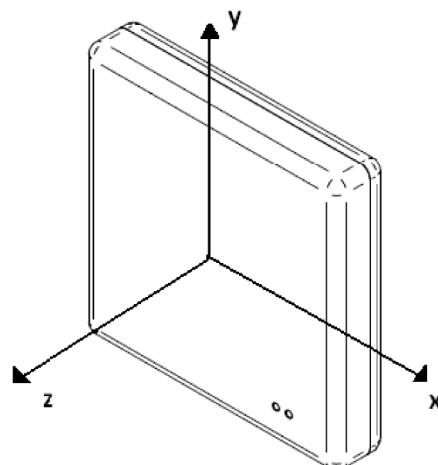


Fig. 6: Tile R1250I Radiation pattern V plane

4 TILE REGULATORY COMPLIANCE

FCC Compliance

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:

- a. Reorient or relocate the receiving antenna.
- b. Increase the separation between the equipment and receiver.
- c. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- d. 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.

Any changes or modification not approved by CAEN RFID could void the user's authority to operate the equipment.

The device shall be used such that a minimum separation distance of 20cm is maintained between the reader and user's/nearby people's body.