

DK-EVAL-04A

IQRF development kit

User's Guide



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Description

DK-EVAL-04A is a universal development kit for wireless applications with IQRF transceiver modules. Very small size, LiPoL accumulator and low cost make this kit ideal for use in networks.

A user-specific functionality is given by software in internal TR module.



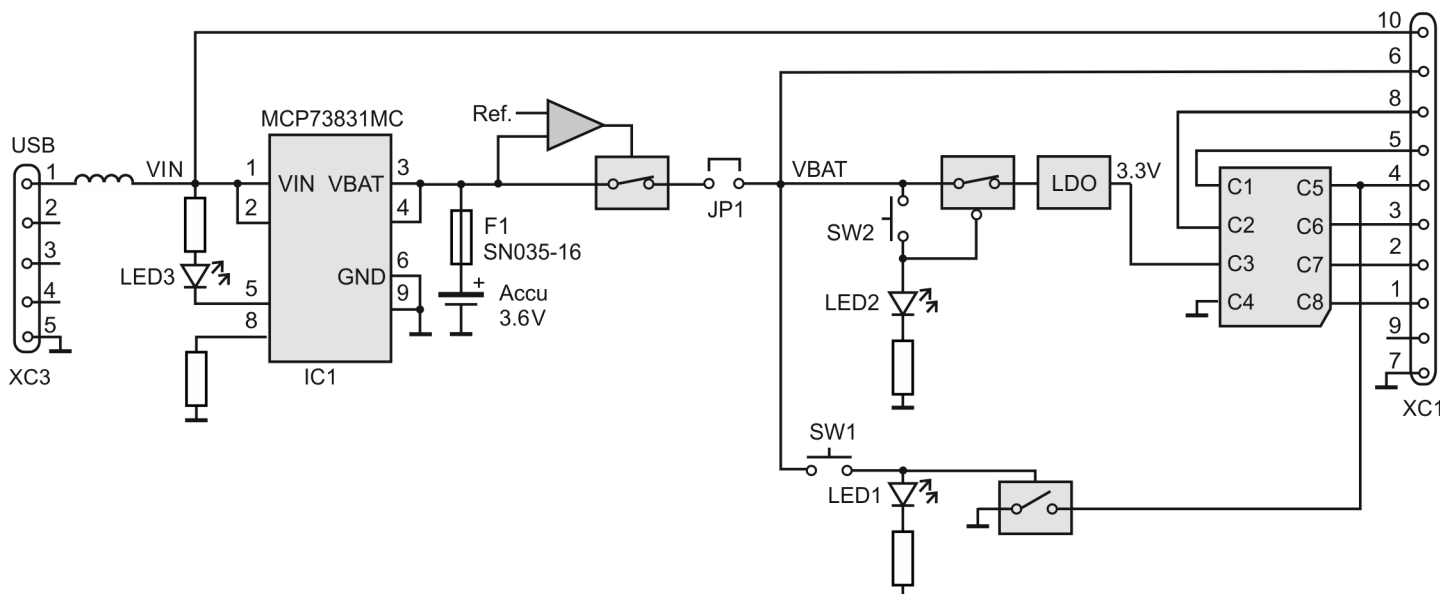
Applications

- Wireless applications development
- Host for IQRF TR modules
- Huge IQMESH networks debug and testing
- Battery powered and portable wireless systems

Key features

- SIM connector with plastic holder for TR module
- 2 pushbuttons, wake-up on button press capability
- 3 indication LEDs
- 6 I/Os
- LiPoL accumulator and internal charger. Charged via microUSB connector
- Accumulator over-current and over-discharge protection
- Voltage output to supply low power peripherals, sensors etc.
- Optional DK-PWR-01 power supply board to support operation and charging up to 5 kits available
- Compatible with IQRF DDC kits (Development Daisy Chain)
- Space saving

Simplified circuit diagram



Electrical specifications*(Typical values unless otherwise stated)*

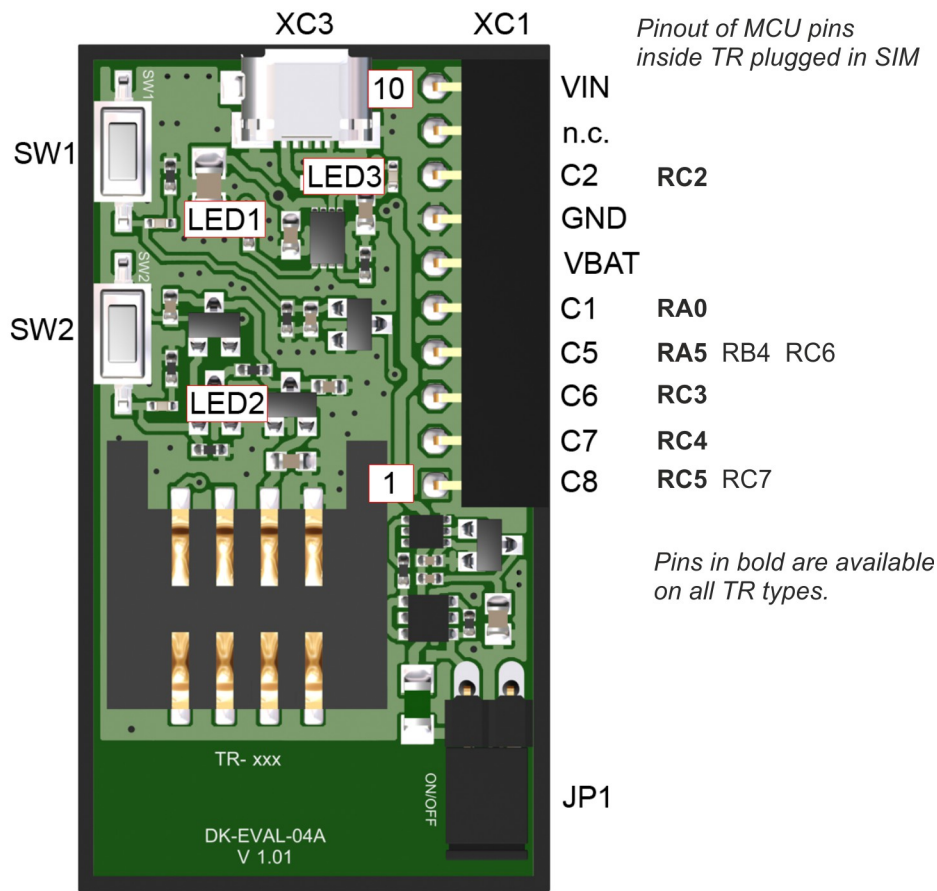
| | |
|---|--|
| Power supply | |
| Accumulator | LIP552240, 400 mAh, nominal voltage 3.7 V |
| External source | |
| Via micro USB connector (with charging) | 4.4 V to 6.0 V DC |
| Via XC1 connector, pin 6 | 3.5 V to 6.0 V DC |
| Supply current | |
| Sleep | 1.5 μ A (powered from accumulator, jumper JP1 disconnected) |
| Accumulator charged | 50 mA max. |
| Temperature | |
| Operating | |
| Accumulator not charged | -20°C to +60°C |
| Accumulator charged | 0 °C to +45 °C |
| Storage | -20°C to +20°C (1 year), +10°C to +25°C recommended |
| Supported TR modules | TR-52B, TR-52D, TR-55D, TR-56D and similar types, in SIM card format |
| Dimensions | 48 mm x 27 mm x 11 mm |
| Weight | 17 g |

Absolute maximum ratings

Stresses above those values may cause permanent damage to the device. Exposure to maximum rating conditions for extended periods may affect device reliability.

| | |
|-------------------------------------|--------------------------|
| Power supply (from external source) | 6.0 V |
| Ambient temperature | -20 °C to +60 °C |
| Storage temperature | -20°C to +60°C (1 month) |

Hardware



Power supply

DK-EVAL-04A is supplied from internal accumulator or from external power source via micro USB connector XC3 which also serves as a charger. The TR module is supplied when jumper JP1 is set. Charging is indicated by LED3. The accumulator is protected against over-current (by resettable fuse SN035-16) and against over-discharging.

The accumulator should be kept charged.

For external power source also connector XC1 (pins 6 and 7) can be used.

Jumper JP1 must be disconnected in this case.

Pushbuttons

- User pushbutton SW1 is connected to pin C5 of the TR module, active low. Therefore, the TR module should have the C5 pin configured as input with internal pull-up. It is arranged by OS by default. Wake-up on change or interrupt on change on this pin can also be configured by user software.
- Reset pushbutton SW2 TR module is disconnected from power supply when the SW2 pushbutton is pressed.

LEDs

- LED1 and LED2 are on when the appropriate pushbutton is pressed.
- LED3: charging indication. LED3 is on during charging and switched off when fully charged.

SIM connector

Caution: The TR module can be plugged / unplugged into / from the SIM connector while powered off only.

Tip: Use the SW2 pushbutton for this. The TR module is disconnected from power while the SW2 pushbutton is held.

Supported TR module types

| TR | Supported |
|--------------|-----------|
| TR-52D | Yes |
| TR-53D | – |
| TR-54D v1.01 | – |
| TR-54D v1.02 | Yes |
| TR-55D | Yes |
| TR-56D | Yes |

| TR | Supported |
|---------|-----------|
| TR-58DA | – |
| TR-52B | Yes |
| TR-53B | – |
| TR-72D | Yes |
| TR-76D | Yes |
| | |

Caution: The unsupported TR modules must not be plugged into DK-EVAL-04A SIM connector.

Interface connector

Interface connector XC1 makes SIM I/O pins, power supply and ground accessible externally. It is compatible with IQRF DDC development kits.

Caution: DK-EVAL-04A PCB layout is optimized for space savings during development of network applications with a lot of nodes on a table. Thus, this kit is not intended for range tests using TR modules with internal PCB antenna (e.g. TR-52DA, the range would be shortened in this case). For range test use e.g. TR-52D and an external antenna.

Product information

Pack list

- DK-EVAL-04A kit (without a TR-module)
- Accumulator (soldered) inside
- 1 jumper (power on switch)

Recommended options

- TY-A6A Power supply with USB A connector
- CAB-USBABMICRO-100 Cable for TY-A6A power supply
- DK-PWR-01 Power supply expansion board (to supply and charge up to 5 DK-EVAL-04A kits)

Ordering code

- DK-EVAL-04A IQRF universal development kit

Document history

- 150805 Extended for TR-72D and TR-76D transceivers. Temperature range revised.
- 150119 Pinout of MCU pins added in chapter *Control and indication*.
- 140801 Chapter *Supported TR module types* added.
- 140124 First release.

Sales and Service

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Partners and distribution

Please visit www.iqrf.org/partners

Quality management

ISO 9001 : 2009 certified

Complies with Directive 2002/95/EC (RoHS)



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