



# IDS

The RFID Semiconductor  
Company

## DK-R902 RD1

Development Kit for EPC Gen2 RFID Readers

With **R902DRM**

### EPC Gen2 Reader Development Kit for Medium-Power UHF Readers

The kit can be used as a development system or as a module (via a connector to embed the board into a host system). The graphic user interface (GUI) can be used via a USB port of a PC. All mandatory commands and some optional commands for the EPC Gen2 standard are supported.

#### Content of Kit

- PCB with R902DRM, SPA2118, PIC and 10dB directional coupler
- CD-ROM with demo application (incl. Gerber files), documentation, examples, firm- and software (incl. source codes)
- Poynting antenna (ETSI or FCC) with cable
- USB cable and power supply adapter
- 2 transponders (EPC Gen2)
- 2 R902DRM samples in QFN64

#### R902 RD1 Development Kit



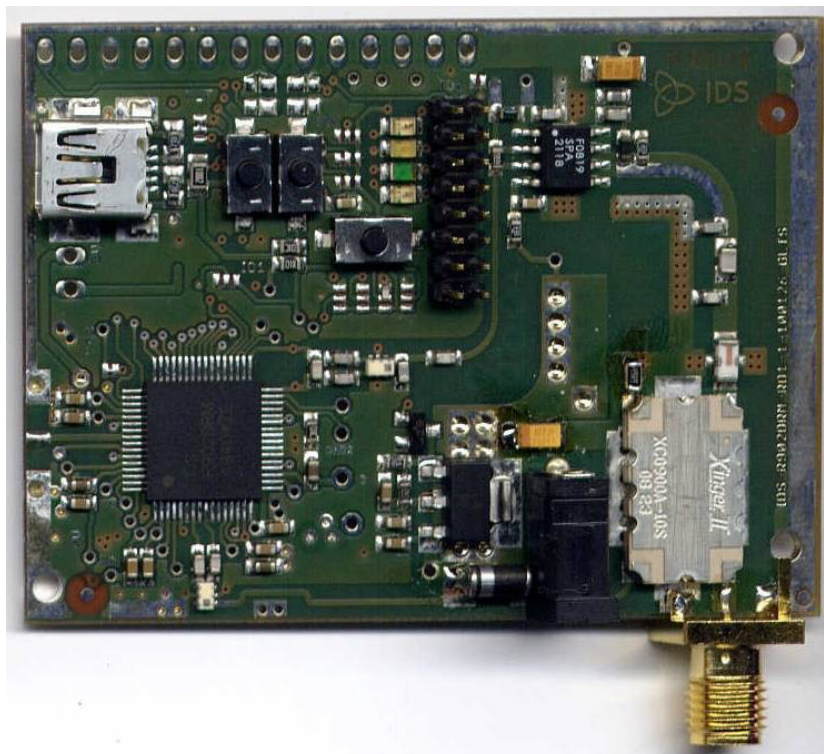
#### Key Features

- Enabling development of small form-factor EPC Gen2 readers (PCB size: 63 x 46 mm)
- Supports dense reader mode (DRM)
- Supports cool-Log™ commands for data logging

#### Development Kit

The development kit includes an R902DRM reader board with a PIC controller. The kit comes with demo application and GUI software with source codes.

The kit is available for ETSI or FCC compliancy.



## Graphic User Interface (GUI)

The GUI consists of four main panels:

- Top Left:** Command execution interface. It features a 'Commands' list with options like 'Begin Round', 'Read', 'Write', 'Block Write', 'Lock', and 'Kill'. Below this, there are input fields for EPC (30003B8B3382D90101403F050000), Mask, Number of Slots (4), Bank Number (0), Number of Blocks (1), Password, and Block Number (0). An 'Execute' button is at the bottom.
- Top Right:** A detailed block diagram of the RFID reader's internal architecture. It shows the flow from a 'Crystal oscillator' through 'Modulation shaping', 'Modulator', and 'EPC protocol physical layer transmit' to '20dBm Amp' and '0dBm Amp'. The receive path includes 'EPC protocol physical layer receive', 'FIFO System control and option registers', 'AGC AGL gain control Filter selection', 'Gain and filtering', 'Digitizer', and 'RSSI'. Other components include 'Phase splitter', 'VCO', 'PLL', 'Supply regulators', and 'MCU interface'.
- Bottom Left:** A 'Registers' panel with various control settings. It is divided into 'Main Control' (Circuit Status Control: 00, Protocol Control: 02), 'Subsystems' (Regulator & ID: 02, CL\_SYS & ...: 93, Modulator: 203F00, PLL Main: 40D84F, PLL Aux: 311846, DAC: 00, ADC: 3A), 'Status' (IRQ Status: 00, Interrupt Mask: 37, AGC Status: 03, RSSI Level: 0.0, AGL Status: 00), 'Test' (Test Settings 1: 00, Test Settings 2: 00), and 'FIFO' (FIFO Status: 00, TX Length Byte 1: 00, TX Length Byte 2: 00). Buttons for 'Set Defaults', 'Write', and 'Read' are at the bottom.
- Bottom Right:** A 'Reflected Power (dBm)' graph. The graph shows concentric circles representing power levels from -10 to 20 dBm. A blue arrow points to a value of approximately -10 dBm. To the left of the graph are input fields for 'Mix A DC' (20), 'Mix B DC' (1), 'Abs Value' (20.025), 'Phase' (177.138), 'Pin' (7.75517), 'Int RF level' (0), 'ADC Input Level' (62), and 'AGL Level' (0). Buttons for 'Calibrate', 'Reset', 'Sweep', 'Update', and 'Scan' are at the bottom.

The R902DRM kit includes GUI software for running the reader demo, and for controlling and changing the settings in the various registers over a PC using the USB port.

## RFID Data Logging Demo System

The DK-R902 reader board can read the included tags using the GUI software. Also, the logging data of the DK-SL900A smart data logger can be read and displayed by the reader and the GUI software. Furthermore, programming the settings of the data logger is done using the GUI software with the reader board.

### About IDS Microchip AG

IDS Microchip AG is an RFID semiconductor company specialized in integrated circuits for RFID system solutions including readers, enhanced tags and labels with sensors for both HF and UHF systems. With its long history in RFID development, IDS offers one of the most complete semiconductor portfolios comprising both passive, semi-passive as well as active RFID systems.

Focusing on all silicon aspects of radio frequency identification (RFID) technology, IDS Microchip helps customers achieving cost-effective solutions. Its comprehensive portfolio comprises RFID and sensor-enabled integrated circuits and IP for highly integrated low-power RFID system solutions including fully integrated readers, enhanced tags and labels for HF and UHF systems. Founded in 1996 and privately funded, IDS Microchip is headquartered in Wollerau, Switzerland; with a design centre in Ljubljana, Slovenia, an office in Toronto and distributors throughout the world.

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The DK-R902 RD1 is intended for use in laboratories only!

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