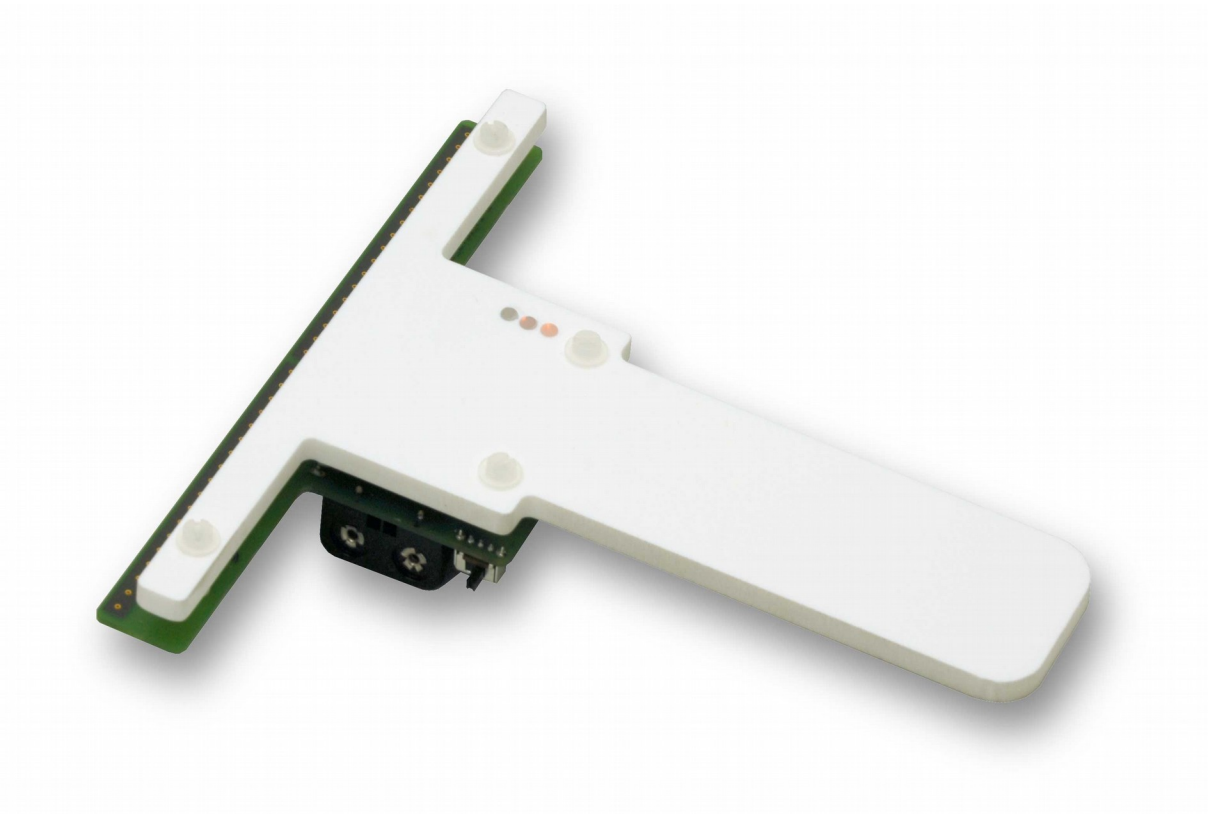


Technical Documentation

for metraTec UHF Field Analyser



Date: December 2016

Version: 1.2

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1 General Information / Security Advice

The metraTec UHF Field Analyser is a handheld device for evaluating the fieldstrength emitted by RFID readers in the UHF range. It is available for European (ETSI) 868MHz frequency band and for FCC 915 MHz frequency range.

1.1 Notes on the use of this documentation

This user manual and integration guide uses different symbols to point out potentially dangerous situations. The following symbols are used throughout the document.



ATTENTION

Indicates a potentially hazardous situation. If this is not avoided, the product or something in its surrounding could be damaged.



NOTES

Declares notes for the user as well as other useful information, where no harmful or dangerous situations can be expected.

1.2 Security Advice

The metraTec UHF Field Analysers where not designed for use in dangerous environments. Using these products in applications where a failure could directly result in severe injuries or death ("high risk activities") is not permitted. This includes but is not limited to applications in nuclear facilities, flight control systems, life support systems or weapon systems. The manufacturer denies the suitability of these devices for such scenarios.

1.3 Export Restrictions

All metraTec UHF Field Analysers contain components that underlie US Export restrictions. It is therefore forbidden to export these products to countries that are on the US trade embargo list. The same applies to any countries that are on the EU embargo list.

1.4 Further Documentation

Additional documentation might be available via:

<http://www.metratec.com/en/support/downloads/documentation.html>

USB Drivers for all metraTec devices are available here:

<http://www.metratec.com/en/support/downloads/driverslibraries.html>

2 Intended Use

The metraTec UHF Field Analyser is a handheld device for estimating the fieldstrength emitted by UHF RFID readers antennas. The device is for troubleshoting RFID installations.

It can be used to check:

- electrical fieldstrength (Is the emitted field strong enough to power the tag?)
- electrical field polarisation (Are tag and reader antenna properly aligned?)
- Is there field at all (Is the reader operational, are the antenna connections OK?)

For additional information the device may be connected to a PC via the included USB stick.

The software allows evaluation of multiple sensors and logging.



This is not a precision measuring instrument

The device is not suitable for measuring absolute field strength in order to check conformity of devices or installations or other occasions where accurate analysis is required.

3 Making Measurements

The front of the Field Analyser contains a dipole antenna that is sensitive to the ETSI or FCC frequency range. The device measures the field strength along the dipole. It is insensitive to field perpendicular to the dipole and therefore allows to check the polarisation of the incident field. The expected accuracy is +/- 1 dB and is greatly influenced by how the device is placed at the measuring point. Hold the device as far back on the handle as possible avoiding to disturb the fields by the hand of the holder. Use wooden or plastic stands if desired.

The field is sampled approximately every second for 10ms. For most accurate evaluation of the field strength bring the reader to continuous wave mode as ASK modulation may lead to strongly varying measuring results. IF CW output cannot be used, sampling for a longer period and using the maximum measured value will lead to best results.

The device is switched on via the switch on the handle.

An amber LED indicates power up of the device.

The blue LED indicates that a field strength of 1 V/m is achieved. This is the field strength required by large dipole type transponders to power up.

The red LED indicates that a field strength of 4 V/m is achieved. This is the field strength required by compact transponders to power up.

The measuring range is from 0 to 13 V/m. Field strengths above lead to saturation of the sensor.



ATTENTION

Overload conditions are virtually impossible to achieve with 2W limited installations and should be avoided. Permanent damage may occur.

The device is frequency sensitive and unlikely to be damaged by strong fields at other frequencies. It is insensitive to magnetic fields.

4 Power Supply

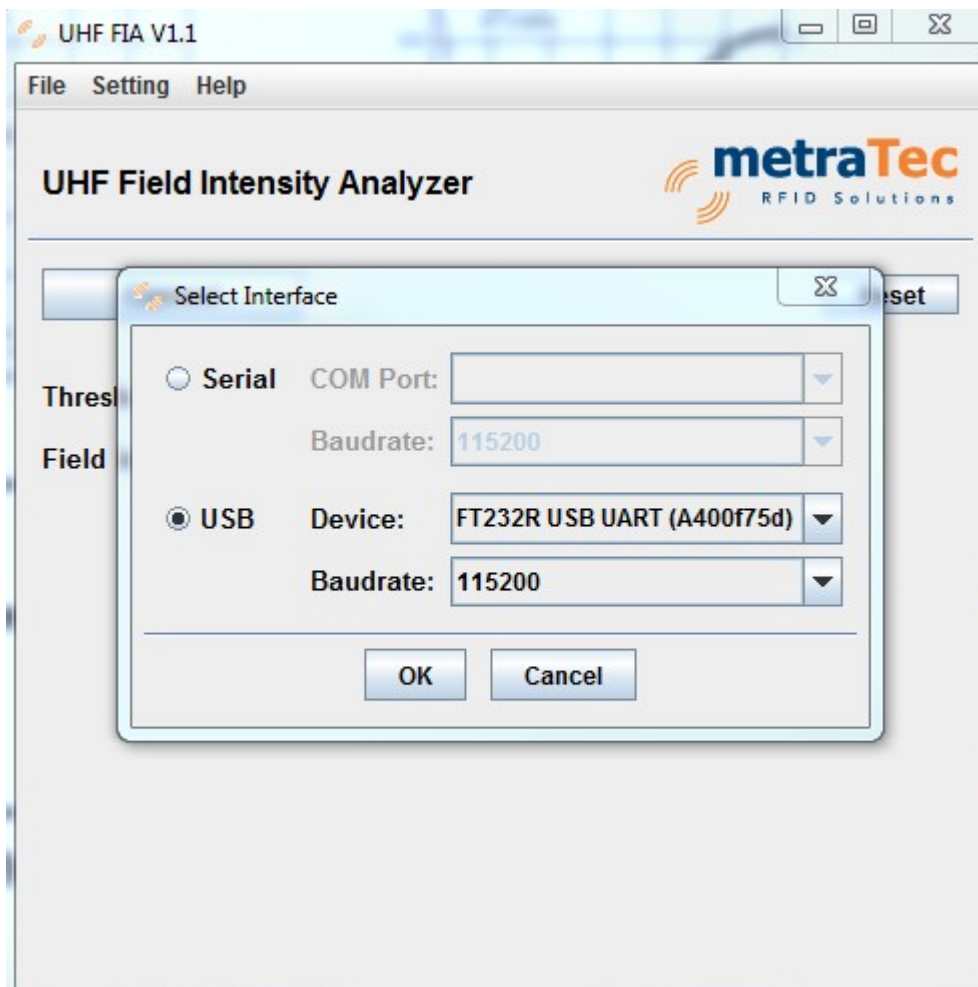
The device is powered by two AAA size batteries and consumes 18mA at 3V. It will run approximately 50 hours on industrial grade batteries. The device transmits measured values to the USB stick as long as the voltage is sufficient to perform measurements. Results may slightly degrade at end of battery lifetime.

5 Software

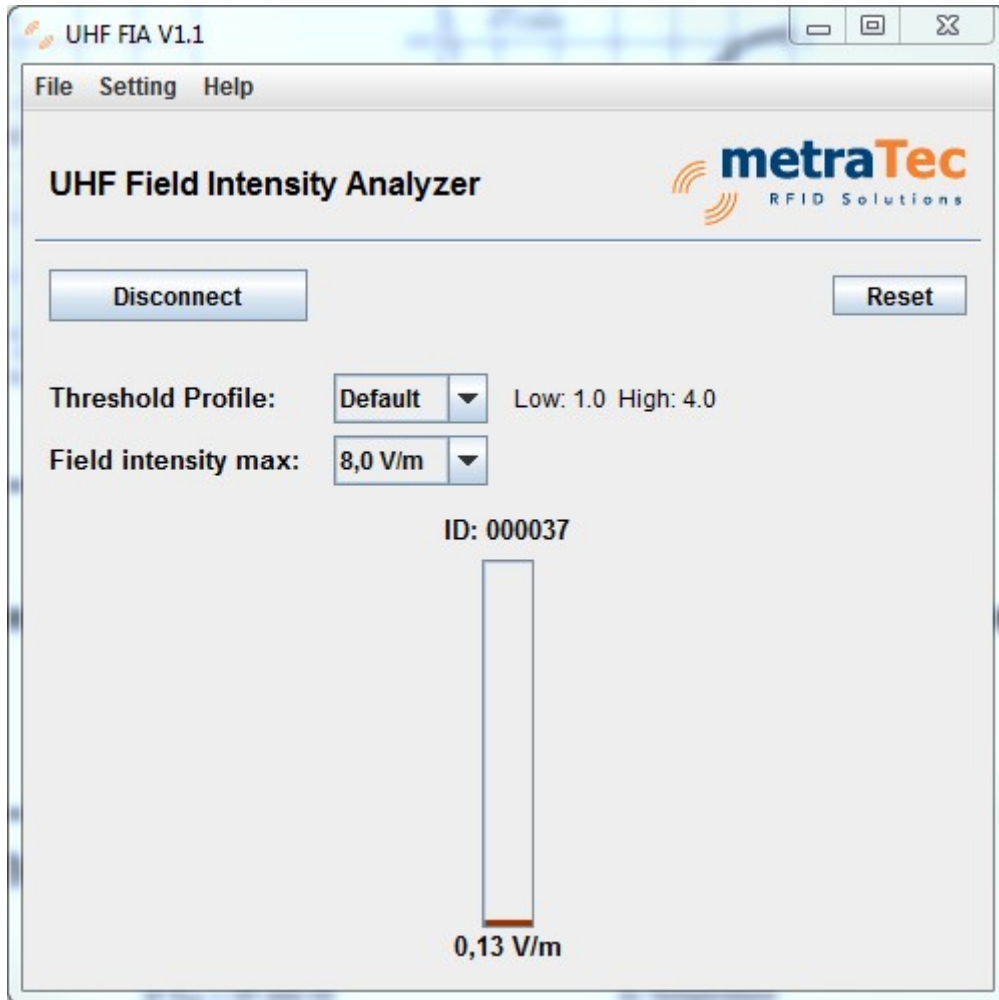
Download the USB driver from the metraTec website.

Plug the USB stick into your computer and install the driver by following instructions. Depending on your OS version the driver might be installed automatically.

Start the software and select → Setting → Connection and select the USB stick and a baudrate of 115 200.



Select the → Connect button and the software will connect to the sensor and display its ID and field strength in form of a column diagram. More columns are added in case more sensors are detected.



The → Reset button removes all connected sensors and resets the display to only the sensors that are still in range after the reset.

The display may be configured via profiles. Select → Setting → Threshold profiles and enter a new name and values for the new profile, then select → Save. The new profile will be available at next program start up.

Profiles can be deleted with the exception of the default profile.

6 Technical parameters

| Parameter | Value |
|----------------------|---------------------------------|
| Frequency range | 868 MHz (ETSI) 915 MHz (FCC) |
| Field strength range | 0 -13 V/m |
| Current consumption | 18 mA |
| Accuracy | 1 dB typ. |
| Antenna type | Half wave dipole |
| Antenna impedance | 50 Ohms |
| Antenna polarization | linear |
| Battery type | 1.5V AAA primary |
| Battery lifetime | 50h typ. |

Tab. 1: Technical Parameters

7 Further Notes

7.1 Environmental

Electronic devices like the metraTec UHF Field Analyser are covered by the (German) ElektroG (electronic waste law) as well as the European WEEE directive and as such may not be disposed of by way of the normal household trash. Instead they have to be recycled properly. For you as our customer this is no additional burden, however, as you can send the device back to us for proper recycling. We assure you that the devices received back will be recycled properly and in an environmentally friendly way. Our WEEE Registration ID is DE 56060482.

When selecting electronic components we additionally made sure that all components are free of heavy metals and other harmful substances as required by the RoHS Directive for many industries. Hence, our products are produced in the most environmentally friendly way possible.



7.2 Declaration of Conformity

The metraTec UHF Field Analyser complies with all directives and regulations applicable in the European Union for this kind of device. This especially includes all laws regarding use of spectrum and EMC. The product therefore bears the CE sign, as required by Directive 1999/5/EC (Radio & Telecommunication Terminal Equipment Directive).

The product is currently not registered for use in the US or Canada. However, metraTec is registered as a manufacturer of electronics at the FCC and IC. A certification of this product is therefore possible, if required. Please ask us or your system integrator for further information.

8 Version History

| <i>Version</i> | <i>Changes</i> | <i>Changed by</i> | <i>Date</i> |
|----------------|--|-------------------|-------------|
| 1.0 | created | TM | 04.11.14 |
| 1.1 | insertion of chapters "Security Advice", "Export Restrictions", and "Further Notes", minor changes | CS | 16.09.15 |
| 1.2 | update address | KS | 09.12.16 |

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