

**METHOD FOR RECOGNIZING IDENTIFICATION MEDIA**

The invention relates to a method for recognizing identification media within the communication range of an antenna of a read/write unit according to the preamble of claim 1.

It is known that between an antenna of a read/write unit based on the principle of inductive coupling of an RF field and a conductive object, for example an identification medium, inductive coupling is produced in the vicinity of the antenna as soon as the RF field is switched on.

In RFID (radio frequency identification) systems, contactless communication between an identification medium and a read/write unit is based on this inductive coupling. In a read/write unit with power line connection in which the current consumption does not play a role, the RF field can be switched on as often and as long as desired in order to look for an identification medium within communication range and set up a communication. Accordingly, communication is set up in such read/write units by means of a communication signal for authenticating a passive identification medium. For this purpose, the RF field is switched on, e.g. every 200 ms, an authentication signal (with modulation) of some ms duration is sent out and a response is awaited. Because of the relatively high current consumption, this method is not optimal for battery-operated read/write units. In this case, it would be very advantageous to send the communication signal only when an identification medium is located within communication range of the antenna of a read/write unit. The problem is to recognize when this is the case. Proximity detectors for solving this problem, e.g. optical ones, require additional circuits and respond to any objects - they cannot specifically



indicate an identification medium or its RF field coupling.

From EP 0 944 014, a method is known which is intended
5 to enable identification media to be detected within
the vicinity of a read/write station, but only in the
lower RF band, i.e. in the previous standard band of
125 KHz. However, this method is not applicable to
high-power RFID systems with carrier frequencies in the
10 MHz band, preferably above 5 MHz or 10 MHz and
especially at 13.56 MHz where much higher information
transmission rates and much more sophisticated and
further applications are possible than in the standard
125 KHz band. Such high-power systems in the MHz band
15 are known, e.g. from WO 97/34265.

The method according to EP 0 944 014 is based on the
excitation of the resonant oscillation of an antenna by
means of a single pulse and measuring the decay
20 characteristic of this signal. In this method, a short
rectangular single pulse of, e.g. 2 μ s duration (i.e.
much shorter than a fundamental oscillation of approx.
8 μ s at 125 KHz) is generated with reduced current and
used for exciting a transmitting antenna into natural
25 oscillation at its resonant frequency. After a waiting
time of, e.g. 200 μ s (corresponding to approx. 25
fundamental oscillations), during which the single
signal decays, the decayed single-pulse signal is
measured over, e.g. 20 μ s via a receiving antenna. With
30 an identification medium in the vicinity of the
read/write unit, the signal decays more strongly than
without. Correspondingly, the presence of an
identification medium is concluded if the single-pulse
signal or the natural oscillation decays below a
35 certain value.

However, this method for the 125 KHz band, could not be
implemented at all for several reasons in high-power

systems in the MHz band: a single pulse which is much shorter than the fundamental oscillation of, e.g. 0.1 μ s at 10 MHz cannot be achieved and the decaying of a single pulse or of a natural oscillation which must occur 100-times more rapidly here than in the 125 KHz band, could not be measured at all, and an influence of an identification medium on the decay of a single pulse even less.

10 This method according to EP 0 944 014 has other disadvantages: generating a short single pulse which does not correspond to the fundamental for the RF communication requires an additional circuit. During the waiting time, this circuit must be active. It is
15 not possible to detect identification media within the entire communication range in which the RF communication takes place with higher power, by means of a single pulse generated with reduced current. Neither is this known method suitable for detecting
20 identification media with a resonant frequency which clearly differs from those of the antennas of the read/write unit.

In high-power systems in the MHz band, preferably at at least 5 MHz or at least 10 MHz and especially at 13.56 MHz, the known microprocessors cannot be used for carrying out relatively slow measuring methods of the decay characteristic of natural oscillations for standard systems with 125 KHz by exciting the antenna
30 at its natural frequency, switching off and measuring the decay characteristic of these natural oscillations within a measuring time of, e.g. 0.2 - 1 ms (e.g. by measuring a start value and an end value of the amplitudes within the measuring time or by counting the
35 number of oscillations until they have decayed to a certain threshold value). In particular, e.g. in a 13.56 MHz system, the natural oscillation must have decayed completely to the value 0 within 2.4 μ s so that

communication can be carried out here. It would not be possible to measure any decay characteristic within this very short time.

5 It is the object of the present invention, therefore, to overcome the previous disadvantages and restrictions and to create a method for recognizing all identification media within the communication range of a read/write unit in high-power RFID systems with
10 carrier frequencies in the MHz band and, at the same time, with minimized current consumption which is of great importance especially for battery-operated read/write units. In addition, it should also be possible to minimize interference effects of the
15 environment on the antenna field so that an identification medium can be detected more reliably. It is also intended to enable identification media to be recognized, the resonant frequency of which distinctly deviates from that of the antenna.

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According to the invention, this object is achieved by a method as claimed in claim 1 and by a read/write unit as claimed in claim 22. The dependent claims relate to developments of the invention with additional
25 improvements of the method with regard to energy saving, reliable detection of identification media and compensation for interference effects. A particularly advantageous embodiment consists in the fact that the return signal of the current measuring period is used
30 as the reference value for the next measuring period.

In the text which follows, the invention will be explained in greater detail with reference to figures and examples. In the figures

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figure 1 shows a read/write unit according to the invention for carrying out the method,

figure 2 shows a read/write unit with separate detection path and separate evaluation elements,
figure 3 shows a polling signal,
5 figure 4a shows a return signal with reference to the polling signal,
figure 4b shows a comparison of return signal with a reference signal,
figure 5a shows a polling signal with reference to the communication signal with identical transmitting power,
10 figure 5b shows a polling signal and a communication signal with reduced transmitting power,
figure 6 shows the current consumption in the method according to the invention,
15 figure 7 shows a flowchart of the method according to the invention.

Figure 1 shows a read/write unit WR for carrying out the method according to the invention for recognizing identification media IM within the communication range K-B of the read/write unit WR. The read/write unit contains a common antenna At for transmitting and receiving RF signals in accordance with the principle of inductive coupling of an RF field in the MHz frequency band, a transmitting path HFo connected directly to the antenna, a receiving path Dem connected directly to the antenna, a circuit S(HF) for RF communication (modulated and unmodulated) with a standard transmitting power P-HF and a logical circuit Pr for evaluating a communication between the read/write unit and an identification medium IM.
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To recognize identification media IM which enter into the communication range K-B, a short polling signal ASo, which contains a number of fundamental oscillations of the RF field, is periodically emitted with the standard transmitting power P-HF via the
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transmitting path HFO and the antenna At (method step 1), then, during the emission of the polling signal ASo, a return signal ASi, which also contains a number of fundamental oscillations of the RF field, is
5 simultaneously detected at the antenna (method step 2), then, the return signal ASi is compared with a reference signal RS (3) and then a communication signal KS for recognizing an identification medium IM is sent out (4) if the return signal ASi differs from the
10 reference signal RS (3-2). Otherwise, another polling signal ASo is sent in the next cycle (3-1). For the comparison with the return signal ASi, the reference signal RS can also be reduced by a threshold value X (reference value is thus $= RS - X$, see fig. 4b and 7).
15 If an authorized identification medium IM is found with the communication signal KS and authenticated (5), communication takes place with this (5-2). After the end of the communication, the polling signal ASo is sent out again. This is also illustrated further and
20 explained in the diagram of figure 7. The forced excitation of the antenna At with the fundamental oscillations of the RF field with full transmitting power P-HF also makes it possible to recognize identification media IM with resonant frequencies
25 deviating greatly from the fundamental oscillation (of, e.g. up to 18 MHz for 13.56-MHz-RFID systems) in spite of correspondingly weaker inductive coupling.

The method according to the invention can already be
30 implemented in read/write units WR according to figure 1 if, by means of its components, the return signal ASi can be detected via the receiving path Dem and in the circuit S(HF) and can then be processed in the logical circuit Pr e.g. by means of an A/D
35 converter. This possibility of conversion without additional components is an essential advantage of the method according to the invention.

Figure 2 shows various possible supplements with additional components if the read/write unit cannot perform all functions of the recognition method. If the return signal AS_i cannot be detected via the receiving path Dem or not evaluated in the logical circuit Pr, such read/write units could be upgraded in a simple manner with minimum component expansion. The return signal AS_i is then detected via a separate detection path Det and, for example, the return signal is evaluated and compared with the reference signal RS by means of a discrete circuit $dS(AS)$ with a comparator Co, or, after an A/D conversion, in an additional logical circuit $Pr(AS)$. The circuits $dS(AS)$ and $Pr(AS)$ can be connected to the logical circuit Pr. Additionally, an application computer H could also contribute to coordinating the signals (if an application computer H can transmit information to a read/write unit WR via a radio link but cannot deliver power to the read/write unit). As shown in figure 2, the return signal AS_i can be compared with a reference signal RS by analog means via a comparator Co of a discrete circuit $dS(AS)$ or, after an A/D conversion, by digital means by the logical circuit Pr or by a separate logical circuit $Pr(AS)$.

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Figure 3 shows the amplitude A as a function of time t of a polling signal AS_o according to the invention which is generated with the standard transmitting power P-HF and which contains a number of (unmodulated, force-excited) fundamental oscillations of the RF field. The short polling signal AS_o has a pulse width or signal duration Lo of, e.g. $Lo = 4 - 10 \mu s$. At 10 MHz, this corresponds to 40 - 100 fundamental oscillations with a period $T(HF)$ of $0.1 \mu s$. The polling signal is emitted periodically with a polling interval $T1$ of, e.g. $T1 = 100 - 300 ms$ between a polling period p and the next polling period p + 1. Depending on demand, a longer polling interval $T1$ of, e.g. 1 - 3 sec

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can also be variably selected with correspondingly even lower energy consumption (e.g. during marginal times).

Figure 4a shows the amplitude $A(t)$ as a function of
5 time of a return signal AS_i which corresponds to the
polling signal AS_o of figure 3. The detection of the
return signal AS_i at the antenna At (figure 1) occurs
simultaneously with the transmission of the polling
signal. The return signal AS_i is preferably only
10 measured or detected after a defined time delay dt ,
i.e. in the second half or towards the end of the
incoming return signal. As an example, let the pulse
width Lo of the polling signal be $Lo = 5 \mu s$, the time
delay $dt = 3 \mu s$ and the pulse width of the measured
15 return signal $Li = 2 \mu s$. At 10 MHz, this width
corresponds to 20 fundamental oscillations in the
detected return signal AS_i . The return signal AS_i
preferably comprises at least 10 fundamental
oscillations. Within the delay time dt , settling
20 processes can take place whereby only stable
fundamental oscillations are detected as return signal
in the detected measurement range Li .

Figure 4b shows the comparison of the detected return
25 signal AS_i with the reference signal RS or,
respectively, with a reference value $RS-X$, i.e. a
reference signal RS reduced by a threshold value X . In
the measuring period p (on the left in figure 4b), the
return signal $AS_i(p)$ is assumed to be of the same
30 magnitude as the reference signal $RS(p)$ since there is
no identification medium within the communication range
 $K-B$ which would reduce the return signal. This
corresponds to method step 3-1, i.e. no communication
signal KS is emitted but a polling signal $AS_o(p + 1)$
35 again in the next measuring period $p + 1$. For example,
a threshold value X can be defined simply by a
comparator Co or its drive system.

The return signal AS_i can be compared with the reference signal RS (or with a reference value $RS-X$, respectively) in a simple manner by measuring the amplitudes A_i or also by measuring the pulse widths L_i in a suitably defined manner.

In the example on the right in figure 4b, the previous return signal $AS_i(p)$ has been set as the new reference signal $RS(p + 1)$ as a particularly advantageous embodiment. This makes it possible to compensate in a simple manner for a slow change in the environmental influence which is not produced by an identification medium. In this case, a threshold value $X(p + 1)$ is additionally defined wherein the return signal $AS_i(p + 1)$ is compared with a reference value $RS-X(p + 1)$ (according to figure 7). In this case, it is assumed that an identification medium has entered into the communication range and the return signal $AS_i(p + 1)$ is correspondingly reduced so that $AS_i(p + 1)$ is less than $RS-X$ (method step 3-2). Correspondingly, a communication signal KS is subsequently emitted for authenticating the identification medium IM (4).

With the adaptation of the reference signal RS (e.g., by continuously setting $RS(p + 1) = AS_i(p)$), slow changes in the return signal AS_i due to environmental influences and disturbances are compensated for in principle. For this purpose, the reference signal can also be changed in time in accordance with a stored reference signal profile $RSP(t)$ in order to compensate for known changes in time of environmental influences. The reference signal $RS(t)$ can also be changed in self-adapting manner by continuously newly taking into consideration previous empirical data or reference signals for generating and storing a new adapted reference signal profile $RSP(t)$. For example, the relationship between identification media detected

correctly and those detected falsely can be included in the determination of the new reference values RS or also of the threshold value X, respectively. In principle, the influence $d(IM)$ of an identification medium on the return signal AS_i can be reliably
5 detected by means of the threshold value X. For this purpose, the threshold value X is selected to be lower than the influence $d(IM)$ of an identification medium but greater than the influence dsu of short-term
10 disturbances and environmental changes on the return signal AS_i .

This is diagrammatically illustrated in figure 4b: for example, let a short-term interfering influence be
15 $dsu = 5\%$, an influence of the identification medium $d(IM) = 10\%$ and the threshold value be set as $X = 7\%$ of AS_o . The interfering influence is not then detected (dsu is less than X) but the identification medium is detected ($d(IM)$ is greater than X). The threshold value
20 X can thus be used for setting the sensitivity of the detection of identification media. The threshold value X can be, e.g. 5 - 20%, preferably 5 - 10% of the polling signal AS_o . However, the threshold value X, can also be 0%. This will be explained further with respect
25 to figure 7.

Figure 5a shows the variation with time of the transmitting power $P(t)$ of a polling signal AS_o and of a communication signal KS, both of which are generated
30 with a standard transmitting power P-HF. As specified here, for example, the pulse width or signal duration Lo of the polling signal AS_o of, e.g. $Lo = 5 \mu s$ is shorter by at least two orders of magnitude than the communication signal KS for authenticating a detected
35 identification medium IM, the duration Tk_1 of which is, e.g. $Tk_1 = 2 - 5 ms$ and is thus 400 - 100 times longer than the polling signal AS_o with a correspondingly much higher energy demand if, as in the present case, a

communication signal KS is periodically emitted, instead of the short polling signal ASo according to the invention, for recognizing identification media within the communication range. With the polling signal
5 KS which corresponds to method step 4, RF energy is first transferred to the passive identification medium IM, then a modulated authentication signal is sent and then a response is awaited. After a positive authentication, a communication can be carried out
10 between the read/write unit WR and the identification medium IM in a time T_{k2} (step 5-2).

Figure 5b shows an example in which the communication signal KS is emitted with a transmitting power P_{-HF_r}
15 reduced by at least a factor of 2 whereas the polling signal ASo is always emitted with full transmitting power P_{-HF} . Thus, an identification medium IM is detected early when entering into the communication range K-B whereas communication with the read/write
20 unit WR can also be reliably carried out with this reduced transmitting power P_{-HF_r} subsequently - in applications where the identification medium is held relatively close to the antenna of the read/write unit. A communication signal KS can also be emitted first
25 with reduced transmitting power and, if no authentication takes place by this means, a communication signal KS can be emitted with full transmitting power P_{-HF} again immediately thereafter.

30 On the basis of empirical data, the read/write unit WR can also adaptively determine in a self-learning manner whether the communication KS is to be emitted with the standard transmitting power P_{-HF} or with a reduced transmitting power P_{-HF_r} .

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Figure 6 shows the current consumption in the method according to the invention when emitting a polling signal ASo. The upper illustration of figure 6 shows

the current consumption $I(t)$ of the logical circuit Pr and of the RF circuit S(HF). In the idling state, the current consumption I_s (stand-by current) is, e.g. $5 \mu A$ (a). Before the polling signal ASo is sent, the circuits Pr and S(HF) must be placed into an operating state (b) with an operating current I_b of, e.g. 20 mA during a time T_{b1} of, e.g. $100 - 150 \mu s$ for settling a crystal. Then the polling signal ASo is sent with a current I_{HF} of, e.g. 100 mA during a transmitting duration L_o of, e.g. $5 \mu s$ (c). Then the return signal ASi is evaluated with the operating current I_b and within a time T_{b2} of, e.g. $20 \mu s$ (d). The entire power-on time is here, e.g. $125 \mu s$ and the very short measuring time is less than $10 \mu s$. In the lower part of figure 6, the required operating current I_b of an additional logical circuit Pr(AS) is shown if the evaluation (d) is done by this means and not by means of the logical circuit Pr. The current consumption for emitting a polling signal ASo is thus, for example:

$$I_b \times (T_{b1} + T_{b2}) + I_{HF} \times L_o = 20 \text{ mA} \times 120 \mu s + 100 \text{ mA} \times 5 \mu s = 2.9 \mu As.$$

In contrast, emitting a communication signal KS according to figure 5a requires a current consumption of, e.g.

$$I_{HF} \times T_{k1} = 100 \text{ mA} \times 4 \text{ ms} = 400 \mu As,$$

i.e. more than 100 times the current consumption for a polling signal ASo.

Figure 7 shows the method according to the invention, and the various possibilities which can result from the comparison of the return signal ASi with the reference signal RS or with RS-X, respectively, in the form of a flowchart. After emitting the polling signal ASo (method step 1) and detecting a return signal ASi (2), the return signal ASi(p) of the polling period (p) is compared with the reference signal RS(p) (3) or compared with a reference value reduced by a threshold value X, $RS(p) - X(p)$.

If the return signal $ASi(p)$ is greater than or equal to the reference value $(RS-X)(p)$ in this period (p) , a polling signal ASo is emitted again in the next period
5 $(p + 1)$ as previously (step 3-1).

If the return signal $ASi(p)$ is lower than the reference value $(ASi < RS - X)$ (step 3-2), a communication signal KS is emitted (4). If there is no authorized
10 identification medium IM within the communication range $K-B$ and this is successfully authenticated (because the return signal has changed due to coupling with an unauthorized identification medium or due to environmental influences and not due to the new
15 presence of an authorized identification medium IM), a polling signal ASo is emitted in the next polling period $(p + 1)$ as previously (step 5-1).

If an authorized identification medium IM is detected,
20 a communication takes place between the latter and the read/write unit WR (after successful authentication), e.g. for carrying out an application (5-2).

After the end of the communication, a polling signal
25 ASo is emitted again in the next period possible.

For the next polling period $(p + 1)$, a new reference signal $RS(p + 1)$ can normally be set (step 6). If necessary, a new threshold value $X(p + 1)$ can also be
30 set in exceptional cases (step 7).

Figure 7 also shows a simple and advantageous possibility of minimizing environmental and interfering influences (due to other objects, e.g. due to a metal
35 cabinet which is shifted into the vicinity of the read/write unit WR). For this purpose, the return signal $ASi(p)$ of the period (p) can be adaptively used as reference signal $RS(p + 1)$ for the next period

(p + 1). An environmental or interfering influence on the return signal is thus continuously adapted and compensated for by means of the new reference signal.

5 If an identification medium IM additionally passes into the communication range K-B within the period (p + 1) and, as a result, the return signal $AS_i(p + 1)$ is reduced at least by the threshold value X, this is detected (3-2) and the communication signal KS is
10 emitted (4). As is explained with reference to figure 4b, the sensitivity to interference can be minimized by means of an adjustable threshold value.

A simple exemplary application of the method according
15 to the invention is a mechanical and electronic lock with a battery as energy supply and with mechanical keys which also contain an identification medium as electronic key. The previous detection method with periodic emission of a communication signal KS cannot
20 be used at all in this case because of a much too high demand of energy from the battery. For this reason, additional mechanical contacts and electronic switches had to be used hitherto in order to detect an identification medium and switch on the communication
25 with the latter. This additional expenditure can be omitted with the method according to the invention and the detection of an identification medium can thus be carried out more rapidly and more reliably, with very low current consumption from the battery.

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The following designations are used in the description:

IM	Identification medium, tag, card
K-B	Communication range, near-field area
35 At	Antenna
WR	Read/write unit
HFo	Transmitting path
Dem	Receiving path

	ASo	Polling signal, emitted
	ASi	Return signal, detected
	RS	Reference signal
	RSP	Reference signal profile
5	KS	Communication signal, polling signal for authentication and communication with an IM
	Det	Separate detection path
	Co	Comparator
	X	Threshold value
10	S(HF)	RF circuit, component of WR
	dS(AS)	Separate discrete circuit for ASi
	Pr	Logical circuit, microprocessor of WR
	Pr(AS)	Separate logical circuit for evaluating ASi
	P-HF	Standard transmitting power of S(HF)
15	P-HFr	Reduced transmitting power of S(HF)
	t	Time
	dt	Time delay for ASi
	T(HF)	Period of fundamental oscillation
	T1	Polling interval
20	Tk1, Tk2	Duration of KS
	Tb1, Tb2	Power-on time of Ib
	p	Number of polling period, measuring period
	A, Ao, Ai	Amplitudes
	L, Lo, Li	Pulse widths, signal duration
25	Lo	Measuring time
	dsu	Interfering influence
	d(IM)	Influence of IM
	H	Application computer, host
	I	Current consumption
30	Is	Stand-by current
	Ib	Current consumption in the operating state
	I-HF	Current consumption during RF-signal emission
	1 - 7	Method steps
	1	Emitting ASo
35	2	Receiving, detecting ASi
	3	Comparing ASi with RS or with RS-X, resp.
	3-1	ASi greater than or equal to RS or RS-X, resp.

- 3-2 ASi less than RS or RS-X, resp.
- 4 Sending KS
- 5 Authentication
- 5-2 Communication with IM
- 5 6 Setting RS
- 7 Setting X

PATENT CLAIMS

1. A method for recognizing identification media (IM) within the communication range (K-B) of an antenna (At) for transmitting and receiving RF signals of a read/write unit (WR) which operates in accordance with the principle of inductive coupling of an RF field in the MHz frequency band and which has a transmitting path (HFO) connected directly to the antenna, a receiving path (Dem) connected directly to the antenna, a circuit (S(HF)) for RF communication with a standard transmitting power (P-HF) or less, and a logical circuit (Pr) for evaluating a communication between the read/write unit (WR) and an identification medium (IM), characterized in that a short polling signal (ASo), which contains a number of fundamental oscillations of the RF field, is periodically emitted with the standard transmitting power (P-HF) via the transmitting path (HFO) and the antenna (At) (1), that during the emission of the polling signal (ASo), a return signal (ASi) with a number of fundamental oscillations of the RF field is detected at the antenna (At) (2), then the return signal (ASi) is compared with a reference signal (RS) (3), and then a communication signal (KS) is emitted for recognizing an identification medium (IM) (4) if the return signal (ASi) differs from the reference signal (RS) (3-2).
2. The method as claimed in claim 1, characterized in that the polling signal (ASo) is shorter by at least two orders of magnitude than the communication signal (KS).
3. The method as claimed in claim 1, characterized in that the return signal (ASi) is detected via the receiving path (Dem) (2).

4. The method as claimed in claim 1, characterized in that the return signal (ASi) is detected via a separate detection path (Det) (2).
- 5 5. The method as claimed in claim 1, characterized in that return signal (ASi) and reference signal (RS) are compared by the logical circuit (Pr) (3).
- 10 6. The method as claimed in claim 1, characterized in that return signal (ASi) and reference signal (RS) are compared in a separate logical circuit (Pr(AS)) (3).
- 15 7. The method as claimed in claim 1, characterized in that return signal (ASi) and reference signal (RS) are compared by means of a separate discrete circuit (dS(AS)) (3).
- 20 8. The method as claimed in claim 1, characterized in that the return signal (ASi(p)) of the current measuring period (p) is used as reference signal (RS(p + 1)) for the next measuring period (p + 1) (6).
- 25 9. The method as claimed in claim 1, characterized in that the reference signal (RS) is changed in time in accordance with a stored reference signal profile (RSP(t)) (6).
- 30 10. The method as claimed in claim 1, characterized in that the reference signal (RS(t)) is self-adapting in time (6).
- 35 11. The method as claimed in claim 1, characterized in that the amplitudes (A) of return signal (ASi) and reference signal (RS) are compared (3).
12. The method as claimed in claim 1, characterized in that the pulse widths (L) of return signal (ASi) and reference signal (RS) are compared (3).

13. The method as claimed in claim 1, characterized in that a communication signal (KS) is emitted if the return signal (ASi) is below the reference signal (RS) by a defined threshold value (X) (3-2): $ASi < RS - X$ (4).

14. The method as claimed in claim 1, characterized in that return signal (ASi) and reference signal (RS) are compared by analog means via a comparator (Co) of a discrete circuit (dS(AS)) (3).

15. The method as claimed in claim 1, characterized in that return signal (ASi) and reference signal (RS), after an A/D conversion, are compared by digital means by the logical circuit (Pr) or by a separate logical circuit (Pr(AS)) (3).

16. The method as claimed in claim 13, characterized in that the threshold value (X) is defined by a comparator (Co) or its drive system.

17. The method as claimed in claim 1, characterized in that there is a defined time delay (dt) between the beginning of the emission (1) of a polling signal (ASo) and the detection (2) of the return signal (ASi).

18. The method as claimed in claim 1, characterized in that the return signal (ASi) contains at least 10 fundamental oscillations of the RF field.

19. The method as claimed in claim 1, characterized in that the logical circuit (Pr) is placed from an idling state (Is) into an operating state (Ib) before transmitting the polling signal (ASo).

20. The method as claimed in claim 1, characterized in that the communication signal (KS) is emitted with a

transmitting power (P-HFr) reduced by at least a factor of 2.

21. The method as claimed in claim 1, characterized in
5 that the read/write unit (WR) adaptively determines in a self-learning manner whether the communication signal (KS) is emitted with standard transmitting power (P-HF) or with reduced transmitting power (P-HFr).

10 22. A read/write unit for recognizing identification media (IM) within the communication range (K-B) of an antenna (At) for transmitting and receiving RF signals of the read/write unit (WR) which operates in accordance with the principle of inductive coupling of
15 an RF field in the MHz frequency band and which has a transmitting path (HFo) connected directly to the antenna,
a receiving path (Dem) connected directly to the antenna,
20 a circuit (S(HF)) for RF communication with a standard transmitting power (P-HF) or less, and a logical circuit (Pr) for evaluating a communication between the read/write unit (WR) and an identification medium (IM), characterized in that a short polling signal (ASo),
25 which contains a number of fundamental oscillations of the RF field, can be periodically emitted with the standard transmitting power (P-HF) via the transmitting path (HFo) and the antenna (At) (1),
and during the emission of the polling signal (ASo), a
30 return signal (ASi) with a number of fundamental oscillations of the RF field can be detected at the antenna (At) (2), then the return signal (ASi) can be compared with a reference signal (RS) (3), and then a communication signal (KS) can be emitted for
35 recognizing an identification medium (IM) (4) if the return signal (ASi) differs from the reference signal (RS) (3-2).