FERROXTAG – Capability guide

1. HF Proximity tags

Consisting of a ferrite core wound with copper wire and provided with a high performance integrated circuit (IC). All details about the available ICs for the proximity tags range are showed next:

IC	**NXP Mifare S50**
FEATURES	• Air protocol according to **ISO 14443A up to layer 3.** • 1Kbytes EEPROM memory. • Simultaneous identification (Anti-collision), up to 50 tags/sec. • Data transfer up to 106Kbits/sec. • Operating temperature: -25ºC to +130º.
SECURITY	• Unique serial number for each device (32 bits). • Mutual three pass authentication (ISO/IEC DIS 9798-2). • Data encryption of RF channel with replay attack protection. • Transport key protects access to EEPROM**.**

FXT1.2-MF1-X (4330 034 10131)	**On metal tuning**	**Epoxy sealed**	NXP MIFARE-S50	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 25 x 12.5 x 5 mm -- 2.5 grams.
- **BLACK** POLYAMIDE 66 UL94-V0 (IP68 degree of protection).
- Storage temperature: -40ºC to +150ºC.

APPLICATIONS

Specially designed for secure contactless data transactions applications in harsh environments.

- Access control.
- Ticketing.
- Electronic wallet.

Thanks to the hard epoxy sealant, it is specially recommended for applications where the tag is glued to the identified object.

*Also available with self-adhesive tape (FXT1.2-MF1-X**T**).*

2. HF Vicinity tags

Consisting of a ferrite core wound with copper wire and provided with high performance integrated circuit (IC). All details about the available ICs for the vicinity tags range are showed next:

IC	NXP ICODE-SLI	Infineon SRF 55V10S
FEATURES	• Fully compliant with ISO/IEC 15693 and ISO/IEC 18000-3. • 1Kbit EEPROM memory. • Simultaneous identification (Anti-collision), up to 50 tags/sec. • Data transfer up to 53Kbits/sec. • Operating temperature: -25ºC to +130º.	• Physical Interface and Anti-collision compliant to ISO/IEC 15693 and ISO/IEC 18000-3 mode 1 • 10Kbit EEPROM memory. • Simultaneous identification (Anti-collision), up to 30 tags/sec. • Data transfer up to 26Kbits/sec. • Operating temperature: -25ºC to +70º.
SECURITY	• Unique serial number for each device (64 bits). • Lock mechanism for each memory block (write protection). • Lock mechanism for DSFI, AFI, EAS.	• 2-way mutual authentication with 64-bit key. • 2 keys per sector enable hierarchical key management. • Multi-level security structure possible. • Individual access rights for each key within a sector of each page. • Only one sector can be accessed at a time. • 32 bit message authentication code (MAC) verifies data integrity. • Unique serial number for each device (64 bits). • Transport key on chip delivery

2.1 Basic Range

FXT0.1-SLI (4330 034 10111)	**Non metal items identification**	**Bare tag**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology
	**MECHANICAL PROPERTIES** • 15.5 x 8 x 2.5 mm -- 2 grams. • Storage temperature: -40ºC to +150ºC **APPLICATIONS** Due to its reduced dimensions is perfect to be fixed in small places safe from dirt and hits or to be inserted in a moulded case.			

FXT0.2-SLI (4330 034 10091)	**On metal tuning**	**Bare tag**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 15.5 x 8 x 2.5 mm -- 2 grams.
- Storage temperature: -40ºC to +150ºC.
- Identified with paint to be differentiate from FXT0.1-SLI

APPLICATIONS

Due to its reduced dimensions is perfect to be fixed in small places safe from dirt and hits or to be inserted in a moulded case.

It is recommended to protect the bare tag with some kind of isolation before placing it on a metal surface; otherwise, the use of our ***FXT0.2-SLI-R*** is advisable.

FXT0.2-SLI-R (4330 034 10231)	**On metal tuning**	**Rubber**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 16.5 x 9 x 3.5 mm – 1.3 grams.
- Storage & Operating temperature: -25ºC to +105ºC.
- Protected with thermo-shrink rubber

APPLICATIONS

Thanks to its thermo-shrink rubber coating, it can be placed directly over the metallic surface avoiding the possibility of short circuit in its antenna.

FXT1.1-SLI-S (4330 034 10021)	**Non metal items identification**	**Silicone sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 25 x 12.5 x 5 mm -- 2.5 grams.
- **BLACK** POLYAMIDE 66 UL94-V0 (IP68 degree of protection).
- Storage temperature: -40ºC to +150ºC

APPLICATIONS

Designed for non metal items identification in harsh environments. It is specially recommended for applications where extreme humidity is present; the silicone sealant guaranties its best performance even inside liquids.

- Wood pallets.
- Plastic boxes

To be attached to the identified item preferably by screwing it.

FXT1.1-SLI-X (4330 034 10041)	**Non metal items identification**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 25 x 12.5 x 5 mm -- 2.5 grams.
- **BLUE** POLYAMIDE 66 UL94-V0 (IP68 degree of protection).
- Storage temperature: -40ºC to +150ºC

APPLICATIONS

Designed for non metal items identification in harsh environments. Thanks to the hard epoxy sealant, it is specially recommended for applications where the tag is glued to the identified object.

- Food supply chain.
- Wood pallets.
- Plastic boxes.

*Also available with self-adhesive tape (FXT1.1-SLI-X**T**).*

FXT1.2-SLI-S (4330 034 10011)	**On metal tuning**	**Silicone sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 25 x 12.5 x 5 mm -- 2.5 grams.
- **BROWN** POLYAMIDE 66 UL94-V0 (IP68 degree of protection).
- Storage temperature: -40ºC to +180ºC

APPLICATIONS

Designed for metal items identification in harsh environments. It is specially recommended for applications where extreme humidity is present; silicone seal guaranties its best performance even inside liquids.

- Metal pallets.
- Beer kegs.

To be attached to the identified item preferably by screwing it.

FXT1.2-SLI-X (4330 034 10031)	**On metal tuning**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 25 x 12.5 x 5 mm -- 2.5 grams.
- **WHITE** POLYAMIDE 66 UL94-V0 (IP68 degree of protection).
- Storage temperature: -40ºC to +150ºC

APPLICATIONS

Designed for metal items identification in harsh environments. Thanks to the hard epoxy sealant, it is specially recommended for applications where the tag is glued to the identified object.

- Metal pallets.
- Industrial containers.
- Beer kegs.

*Also available with self-adhesive tape (FXT1.2-SLI-X**T**).*

FXT1.2-SRF-X (4330 034 10451)	**On metal tuning**	**Epoxy sealed**	INFINEON SRF 55V10S	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 25 x 12.5 x 5 mm -- 2.5 grams.
- **WHITE** POLYAMIDE 66 UL94-V0 (IP68 degree of protection).
- Storage temperature: -40ºC to +150ºC

APPLICATIONS

Designed for metal items identification in harsh environments, with increased security features and larger as well as more flexible memory bank.

Thanks to the hard epoxy sealant, it is specially recommended for applications where the tag is glued to the identified object.

- Metal pallets.
- Industrial containers.
- Beer kegs.

*Also available with self-adhesive tape (FXT1.2-SRF-X**T**).*

FXT2.1-SLI-BARCODE (4330 034 10061)	**Non metal items identification**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 42 x 20 x 12 mm -- 3.5 grams.
- **BLACK** ABS (IP68 degree of protection).
- Storage & Operating temperature: -25ºC to +60ºC.

APPLICATIONS

Tag´s unique identifier has been captured in a bar code label and attached to the tag´s case. This allows fast automatic reading through RFID technology, keeping the possibility to read it also with a standard bar code reader. RFID and optical identification complement each other in this Ferroxtag with Bar Code.

- Plastic boxes and containers.
- **Medicine boxes.**

2.2 ATEX certified tags

FXT1.2-SLI-X-ATEX (4330 034 10121)	**On metal tuning**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 25 x 12.5 x 5 mm -- 2.5 grams.
- **WHITE** POLYAMIDE 66 UL94-V0 (IP68 degree of protection).
- Storage temperature: -40ºC to +150ºC
- Operating temperature: -25ºC to +130ºC

ATEX CERTIFIED
Designed for metal items identification in potentially explosive atmospheres.

II 1GD
EX ia IIC T6
EX iaD 20 T85 ºC

APPLICATIONS
Fixation method: screws, rivets, glue.

- Cylinders tracking.
- Filling stations.
- Chemical industry.

FXTH.2-SLI-X-ATEX (4330 034 10181)	**On metal tuning**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

MECHANICAL PROPERTIES

- 26.3 x 23 x 5 mm -- 3 grams.
- **WHITE** POLYAMIDE 66 UL94-V0 (IP68 degree of protection).
- Storage temperature: -40ºC to +150ºC
- Operating temperature: -25ºC to +130ºC

ATEX CERTIFIED
Designed for metal items identification in potentially explosive atmospheres.

II 1GD
EX ia IIC T6
EX iaD 20 T85 ºC

APPLICATIONS
Fixation method: glue.

- Cylinders tracking.
- Filling stations.
- Chemical industry.

2.3 Tags for in metal notch applications

FXT0.3-SLI-R (4330 034 10191)	**Tuned to be densely surrounded by metal**	**Rubber**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

FEATURES

- 16.5 x 9 x 3.5 mm – 1.3 grams.
- Storage & Operating temperature: -25ºC to +105ºC.
- Protected with thermo-shrink rubber
- Passive resonance frequency at the air 11.7MHz ± 300 KHz.

APPLICATIONS

Due to its reduced dimensions and its special tuning, this tag is perfect to be fixed inside small holes or grooves made on metal y finally sealed with Epoxy based adhesives or silicone. In this way the tag will be safe from dirt and hits, besides thanks to its thermo-shrink rubber coating, it can be placed directly over the metallic surface avoiding the possibility of short circuit in its antenna.

FXT0.4-SLI-R (4330 034 10171)	**Tuned to be partially surrounded by metal**	**Rubber**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

FEATURES

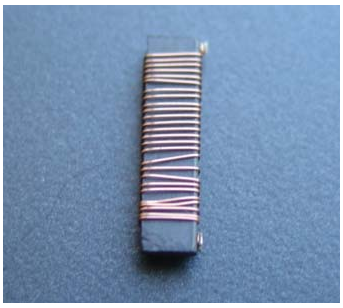
- 16.5 x 9 x 3.5 mm – 1.3 grams.
- Storage & Operating temperature: -25ºC to +105ºC.
- Protected with thermo-shrink rubber
- Passive resonance frequency at the air 12.3MHz ± 300 KHz.

APPLICATIONS

Due to its reduced dimensions and its special tuning, this tag is perfect to be fixed inside small holes or grooves made on metal y finally sealed with Epoxy based adhesives or silicone. In this way the tag will be safe from dirt and hits, besides thanks to its thermo-shrink rubber coating, it can be placed directly over the metallic surface avoiding the possibility of short circuit in its antenna.

2.4 Reduced format tags

FXT0.1.3-SLI (4330 034 10261)	**Non metal items identification**	**Bare tag**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology



FEATURES

- 15.25 x 3.4 x 2.45 mm – 0.4 grams.
- Storage temperature: -25ºC to +150ºC.

APPLICATIONS
Thanks to its reduced dimensions is perfect to be fixed in small places (safe from dirt and hits) or inserted in a moulded case, plastic box, wood pallet, etc.

FXT0.2.3-SLI (4330 034 10271)	**On metal tuning**	**Bare tag**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

FEATURES

- 15.25 x 3.4 x 2.45 mm – 0.4 grams.
- Storage temperature: -25ºC to +150ºC.
- Identified with paint to be differentiate from FXT0.1.3-SLI

APPLICATIONS
Thanks to its reduced dimensions is perfect to be fixed in small places (safe from dirt and hits) or inserted in a moulded case to be placed on metal. To avoid antenna short circuit, it is recommended to protect the bare tag with any kind of isolation before placing it on metal; otherwise, the use of our *FXT0.2.3-SLI-**R*** is advisable.

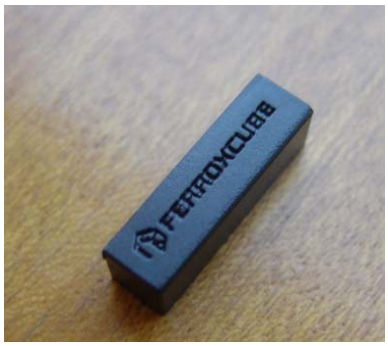
FXT0.2.3-SLI-R (4330 034 10281)	**On metal tuning**	**Rubber**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

FEATURES

- Protected with thermo-shrink rubber (Thickness 0.5mm aprox.)
- 15.25 x 3.4 x 2.45 mm (Bare tag). Mechanical dimensions will be increased by coating.
- Storage & Operating temperature: -25ºC to +105ºC.

APPLICATIONS
Due to its reduced dimensions, this tag is perfect to be fixed in small places (safe from dirt and hits) or even inside a metal notch to be finally sealed with Epoxy or silicone. Thanks to its thermo-shrink rubber coating, it can be placed directly on the metal surface avoiding the possibility of short circuit in its antenna. ***SPECIAL TUNE AVAILABLE FOR IN METAL NOTCH APPLICATIONS*** *(upon request).*

FXT1.1.3-SLI-X (4330 034 10241)	**Non metal items identification**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology



FEATURES

- 20 x 5.6 x 6.1 mm – 1 gram.
- **BLACK** ABS (IP68 degree of protection).
- Storage & Operating temperature: -25ºC to +60ºC.

APPLICATIONS

Designed for non metal items identification in harsh environments, its plastic case protects all tag´s internal circuitry from dust, liquids and mechanical impacts. Thanks to the hard epoxy sealant, it is specially recommended for applications where the tag is glued to the identified object. Also available with high performance ***ADHESIVE TAPE,*** for a fast and reliable fixation (*FXT1.1.3-SLI-X**T***).

FXT1.2.3-SLI-X (4330 034 10251)	**On metal tuning**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

FEATURES

- 20 x 5.6 x 6.1 mm – 1 gram.
- **BLACK** ABS (IP68 degree of protection).
- Storage & Operating temperature: -25ºC to +60ºC.

APPLICATIONS

Designed for metal items identification in harsh environments, its plastic case protects all tag´s internal circuitry from dust, liquids and mechanical impacts. Thanks to the hard epoxy sealant, it is specially recommended for applications where the tag is glued to the identified object. Also available with high performance ***ADHESIVE TAPE,*** for a fast and reliable fixation (*FXT1.2.3-SLI-X**T***).

2.5 ISO metric thread tags

FXT28/2M.1-SLI-X (4330 034 10381)	**Non metal items identification**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

FEATURES

- M28x2 (ø=28; Pitch=2mm); Length=6mm.
- Weight=4 grams.
- Storage & Operating temperature: -25ºC to +100ºC.
- Nylon case (other material upon request)

APPLICATIONS
Due to its reduced height, this tag is perfect to be fixed on low thickness surfaces completely integrated into the identified item.

Also available without the screwing groove *(upon request)*.

FXT18/1.5M.1-SLI-X (4330 034 10391)	**Non metal items identification**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

FEATURES

- M18x1.5 (ø=18; Pitch=1.5mm); Length=19.2mm.
- Weight=5.5 grams
- Storage & Operating temperature: -25ºC to +100ºC.
- Nylon case (other material upon request)

APPLICATIONS
FXT18/1.5M.1-SLI-X for the largest operating range.

Also available without the screwing groove *(upon request)*.

FXT12/1.25M.1-SLI-X (4330 034 10401)	**Non metal items identification**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology

FEATURES

- M12x1.25 (ø=12; Pitch=1.25mm); Length=19.2mm.
- Weight=2.4grams
- Storage & Operating temperature: -25ºC to +100ºC.
- Nylon case (other material upon request)

APPLICATIONS
Due to its reduced diameter, this tag is perfect to be fixed on small surfaces completely integrated into the identified item.

Also available without the screwing groove *(upon request)*.

FXT28/2M.2-SLI-X (4330 034 10421)	**Metal tuning**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology
	**FEATURES** • M28x2 (ø=28; Pitch=2mm); Length=6mm. • Weight=4 grams. • Storage & Operating temperature: -25ºC to +100ºC. • Nylon case (other material upon request) **APPLICATIONS** Due to its reduced height, this tag is perfect to be fixed on low thickness surfaces completely integrated into the identified item. **Also available without the screwing groove** *(upon request)*.			

FXT18/1.5M.2-SLI-X (4330 034 10431)	**Metal tuning**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology
	**FEATURES** • M18x1.5 (ø=18; Pitch=1.5mm); Length=19.2mm. • Weight=5.5 grams • Storage & Operating temperature: -25ºC to +100ºC. • Nylon case (other material upon request) **APPLICATIONS** *FXT18/1.5M.2-SLI-X* for the largest operating range. **Also available without the screwing groove** *(upon request)*.			

FXT12/1.25M.2-SLI-X (4330 034 10441)	**Metal tuning**	**Epoxy sealed**	NXP ICODE-SLI	**HF (13.56MHz)** Passive technology
	**FEATURES** • M12x1.25 (ø=12; Pitch=1.25mm); Length=19.2mm. • Weight=2.4grams • Storage & Operating temperature: -25ºC to +100ºC. • Nylon case (other material upon request) **APPLICATIONS** Due to its reduced diameter, this tag is perfect to be fixed on small surfaces completely integrated into the identified item. **Also available without the screwing groove** *(upon request)*.			

3. UHF tags

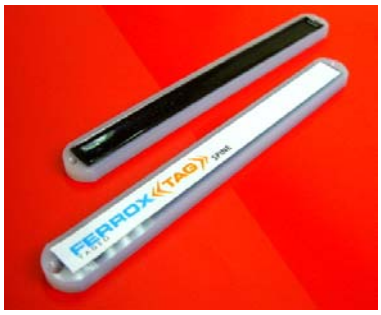
Consisting of a UHF inlay provided with a high performance plastic case and an epoxy or silicone sealing that makes this tags suitable for harsh environments. All details about the available ICs for the UHF tags range are showed next:

IC	Impinj Monza (96-bit)	NXP Ucode

FEATURES	• EPC Gen2
	• Data transfer: 640 Kbits/sec.
	• Operating temperature: -25ºC to +65º.
	• Operating frequency:
	  • 869.4 - 869.56 MHz Europe, 0.5 W ERP
	  • 865.6 - 867.6 MHz Europe, 2 W ERP
	  • 902 - 928 MHz America, 4 W EIRP
		• EPC Gen2
		• Data transfer: 640 Kbits/sec.
		• Operating temperature: -40ºC to +85º.
		• Operating frequency:
		  • 869.4 - 869.56 MHz Europe, 0.5 W ERP
		  • 865.6 - 867.6 MHz Europe, 2 W ERP
		  • 902 - 928 MHz America, 4 W EIRP

MEMORY	• EPC: 96 bits • Tag identifier (TID): 32 bits • Programmable user memory: 0 bits • Access password: 32 bits • Kill password: 32 bits	• EPC: 96 bits • Tag identifier (TID): 64 bits • Programmable user memory: 224 bits • Access password: 32 bits • Kill password: 32 bits

FXT-SPINE-UHF (4330 034 10331)	**Inlay / IC** Spine/Monza (96bit)	**Epoxy sealed**	Passive technology	**Far field**



FEATURES

- 130 x 14 x 4 mm – 7.5 gram.
- Storage temperature: -40ºC to +85ºC.
- Typical Reading range: 3.8 m. with 27 dBm linearly polarized antenna

APPLICATIONS

The symbol spine antenna utilizes a single dipole design that is optimized for case, carton and pallet tracking. Its orientation sensitivity allows this tag to minimize cross-talk in dense reader environments.

FXT-SPYDER-UHF (4330 034 10321)	**Inlay / IC** RSI Spyder / NXP Ucode	**Epoxy sealed**	Passive technology	**Far & near filed**

FEATURES

- 124 x 22 x 5 mm – 10 gram.
- Storage temperature: -55ºC to +125ºC.
- Typical Reading range: 4.5 m. with 27 dBm linearly polarized antenna

APPLICATIONS

The Spyder is an all purpose high performance single dipole antenna designed specifically for use with NXP Ucode Gen 2 ICs. The Spyder exhibits exceptional performance on plastic, cardboard, and water based products making it ideal for warehouse, logistics and supply chain tracking.

FXT-SATELLITE-UHF (4330 034 10341)	**Inlay / IC** Spine/Monza (96bit)	**Epoxy sealed**	Passive technology	**Far & near filed**

FEATURES

- 66 x 29 x 5 mm – 7.5 gram.
- Storage temperature: -40ºC to +85ºC.
- Typical Reading range: 3.5 m. with 27 dBm linearly polarized antenna

APPLICATIONS

The Satellite antenna design is a high performance inlay that utilizes a loop/dipole hybrid configuration. It is designed for item-level tracking and can be read in both near and far fields.

FXT-PROPELLER-UHF (4330 034 10351)	**Inlay / IC** Spine/Monza (96bit)	**Epoxy sealed**	Passive technology	**Far & near filed**

FEATURES

- 124 x 22 x 5 mm – 10 gram.
- Storage temperature: -40ºC to +85ºC.
- Typical Reading range: 4 m. with 27 dBm linearly polarized antenna

APPLICATIONS

The high-performance dipole Propeller design provides exceptional placement versatility and tag readability.

RF noise interference rejection and dense/multiple reader operation make this inlay ideal for warehouse and logistics applications

FXT-BUTTON-UHF-X (4330 034 10371)	**Inlay / IC** Spine/Monza (96bit)	**Epoxy sealed**	Passive technology	**Near field**

FEATURES

- 25 x 12.5 x 5 mm – 1.5 grams.
- Storage temperature: -40ºC to +85ºC.
- Typical Reading range on metal: 2 cm. with an inductive coupling loop antenna.

APPLICATIONS

FXT-BUTTON-UHF-X is provided with a high performance UHF inlay optimized for item-level applications in the **near field**. This tag is suitable to be attached to either metal or non-metal items.

Thanks to the hard epoxy sealant, it is specially recommended for applications where the tag is glued to the identified object.

FXT-BUTTON-UHF-S (4330 034 10361)	**Inlay** Spine/Monza 1 (96bit)	**Silicone sealed**	Passive technology	**Near field**
	**FEATURES** • 25 x 12.5 x 5 mm – 1.5 grams. • Operating temperature: -40ºC to +65ºC. • Typical Reading range on metal: 2 cm. with an inductive coupling loop antenna. **APPLICATIONS** *FXT-BUTTON-UHF-S* is provided with a high performance UHF inlay optimized for item-level applications in the **near field**. This tag is suitable to be attached to either metal or non-metal items. It is specially recommended for applications where extreme humidity is present; silicone sealing guaranties its best performance even inside liquids.			

3. High performance ferrite antennas.

- Own manufacturing of custom HF ferrite based antennas, engineering, design, prototyping and testing work is separately quoted.
- Own manufacturing of complete reading system, fully compliant with ISO/IES 15693 and ISO/IEC 18000-3 global open standards.

4. Complete ready to work RFID system

- Tags.
- Readers/Antennas.
- RFID server.
- Centre crew training

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