

**MAGICSTRAP®**



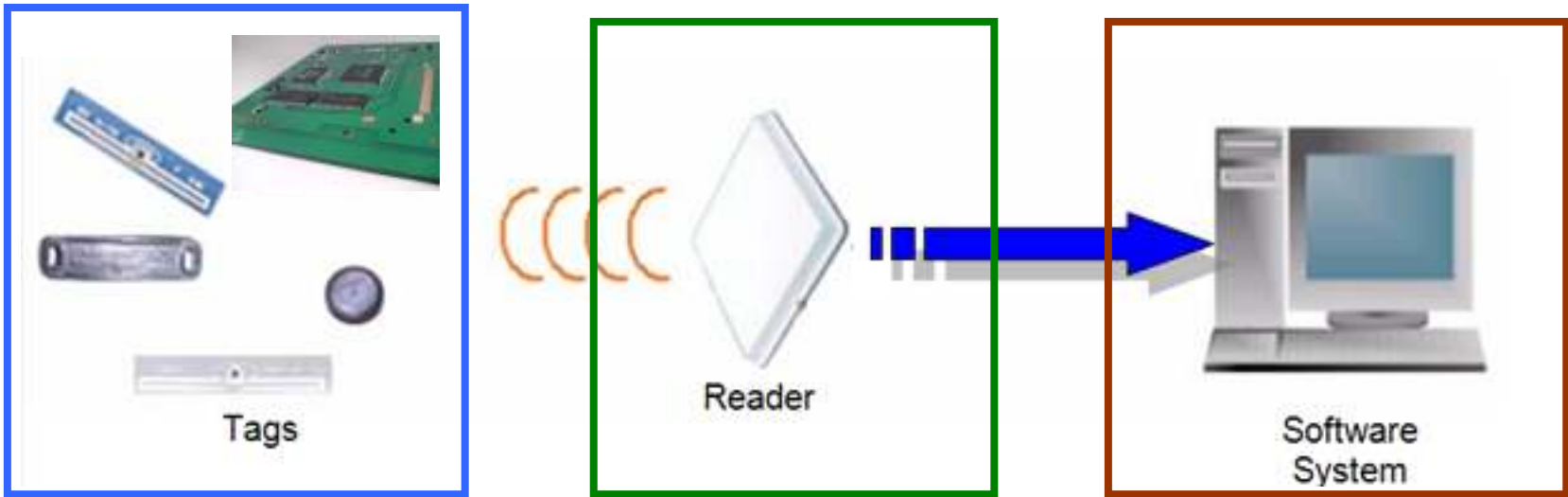
**for UHF RFID  
PCB Tags**

We can't change  
the world  
without magic.



**muRata**

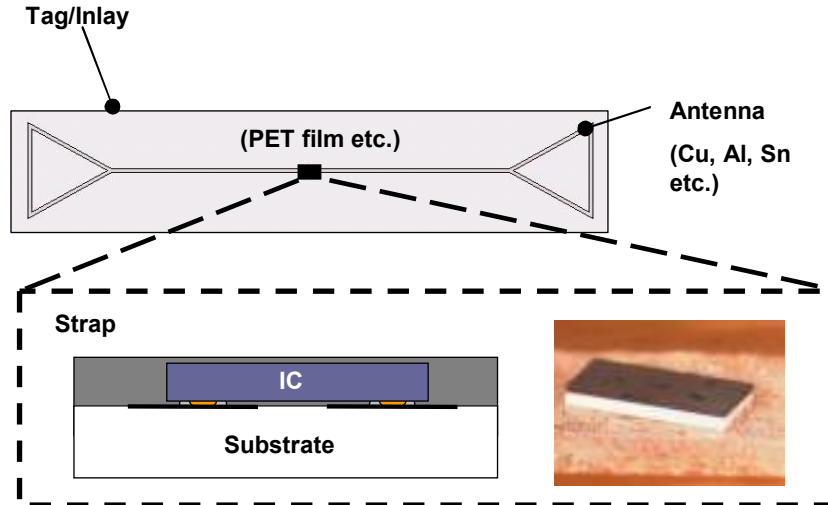
エレクトロニクスで世界を変えよう。村田製作所



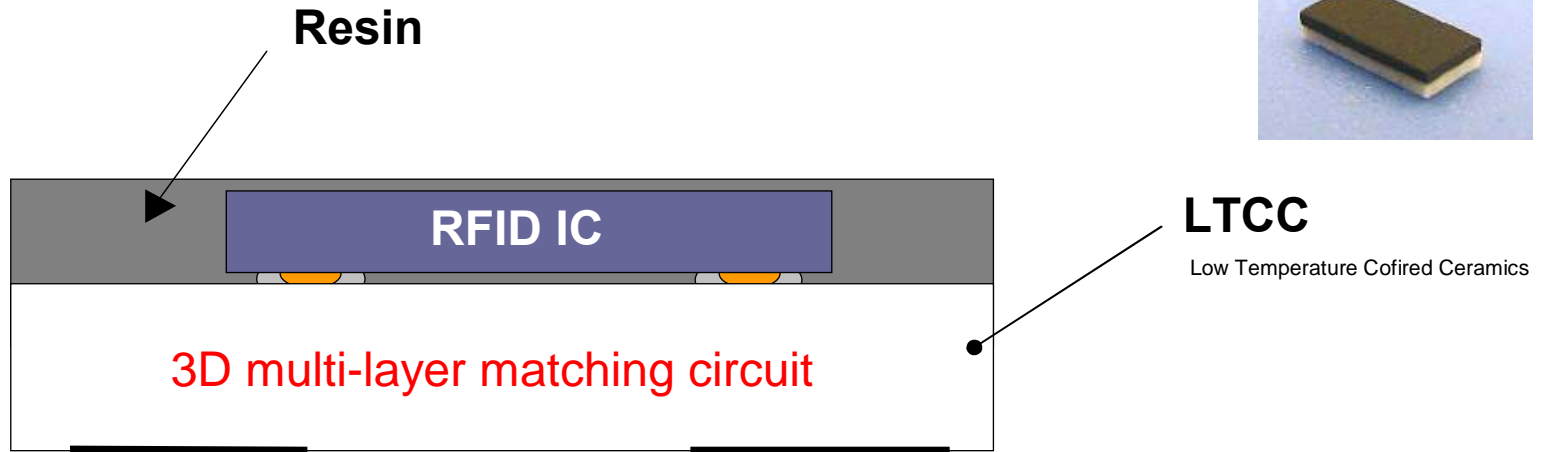
## 3 Elements of an RFID System



# MAGICSTRAP® is a Tag Component

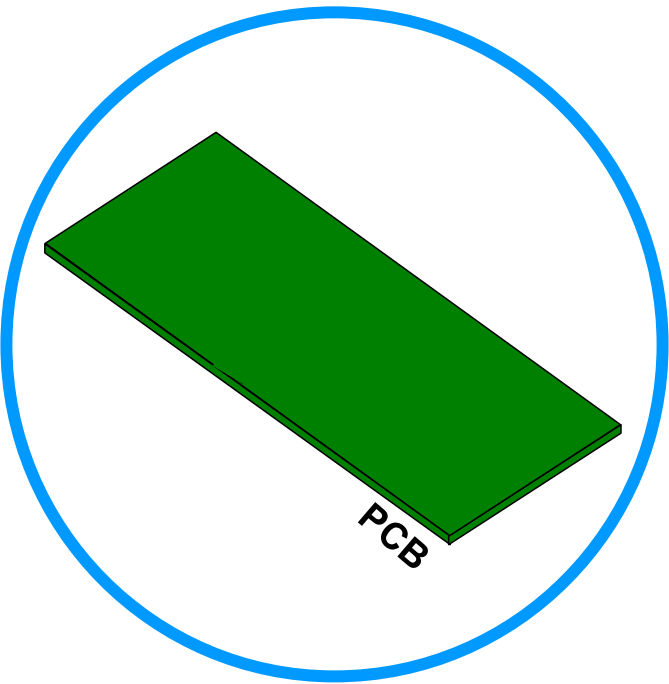


a  
UHF - IC Module



- RFID IC
- Antenna filter: covers worldwide RFID frequencies (EU, US and Japan)
- Antenna matching circuit
- ESD protection (<10kV)

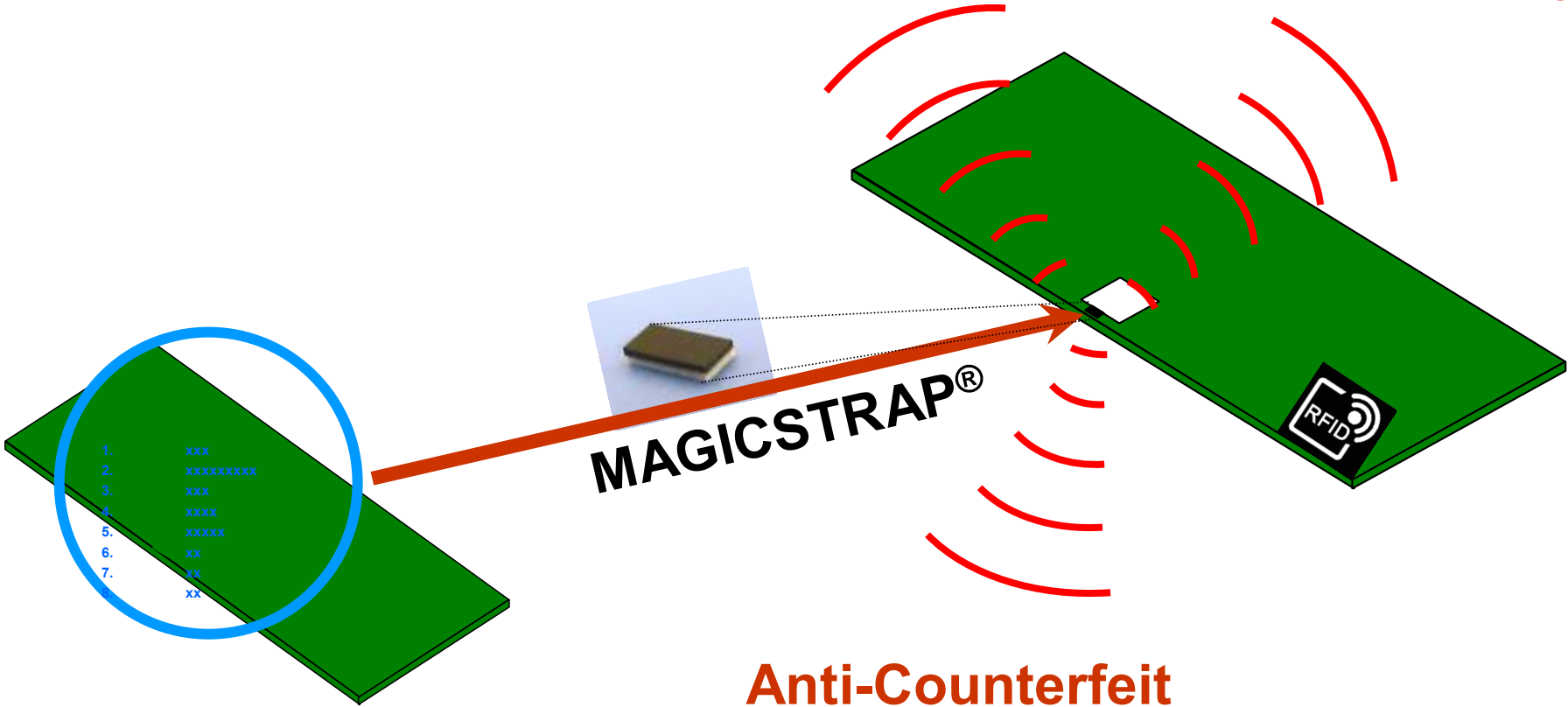
Environmental Friendly: 100% **GREEN** materials



1. My product is copied by pirates
2. I need traceability
3. Problems with barcode labels
4. I want to reduce wrong deliveries
5. I want to reduce my stock
6. There are too many manual operations in my process
7. ...

Supply Chain Management

Traceability



Anti-Counterfeit

*Add MAGICSTRAP® and your PCB will become a full RFID Tag!*

**Traceability**

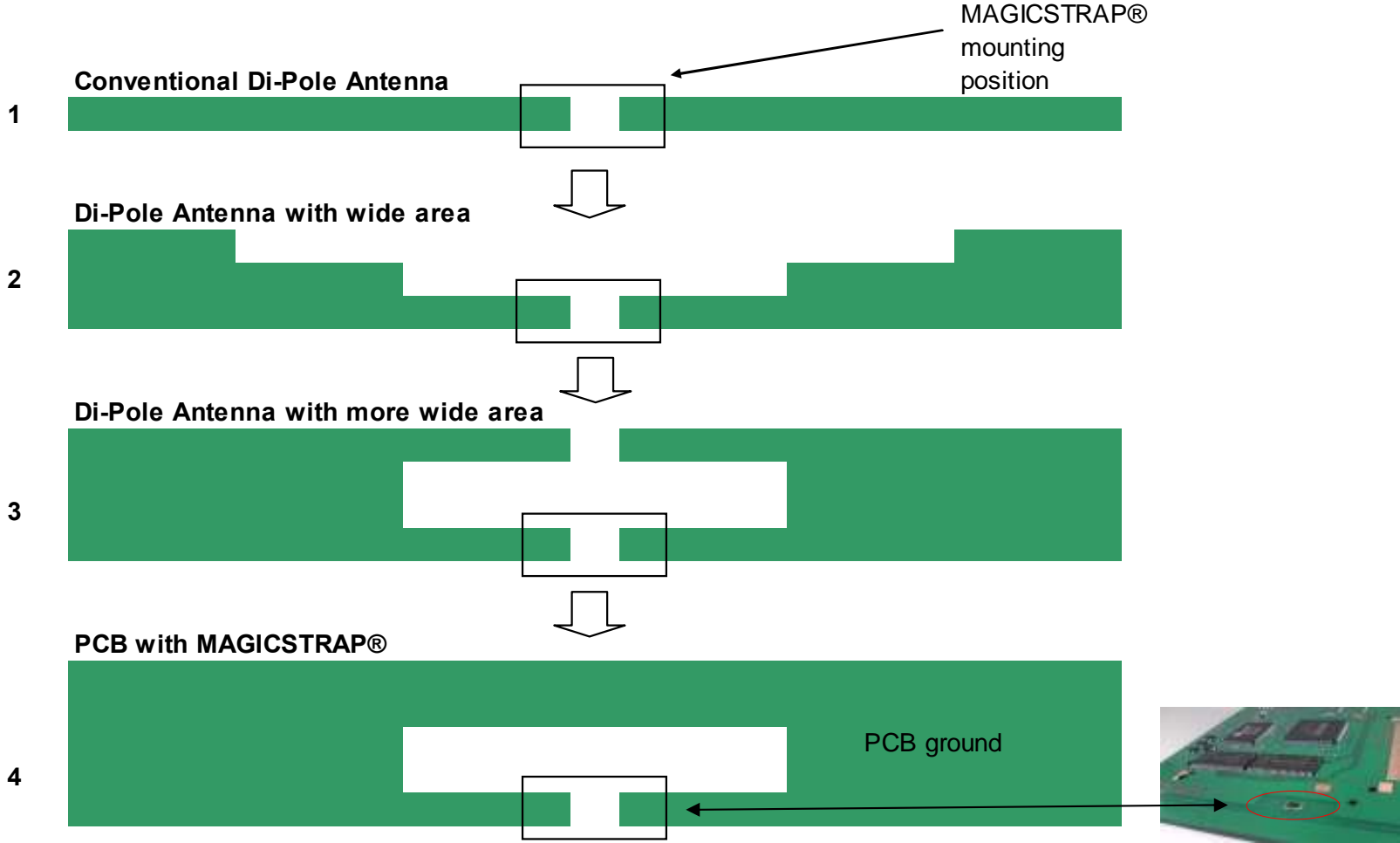
**Supply Chain Management**



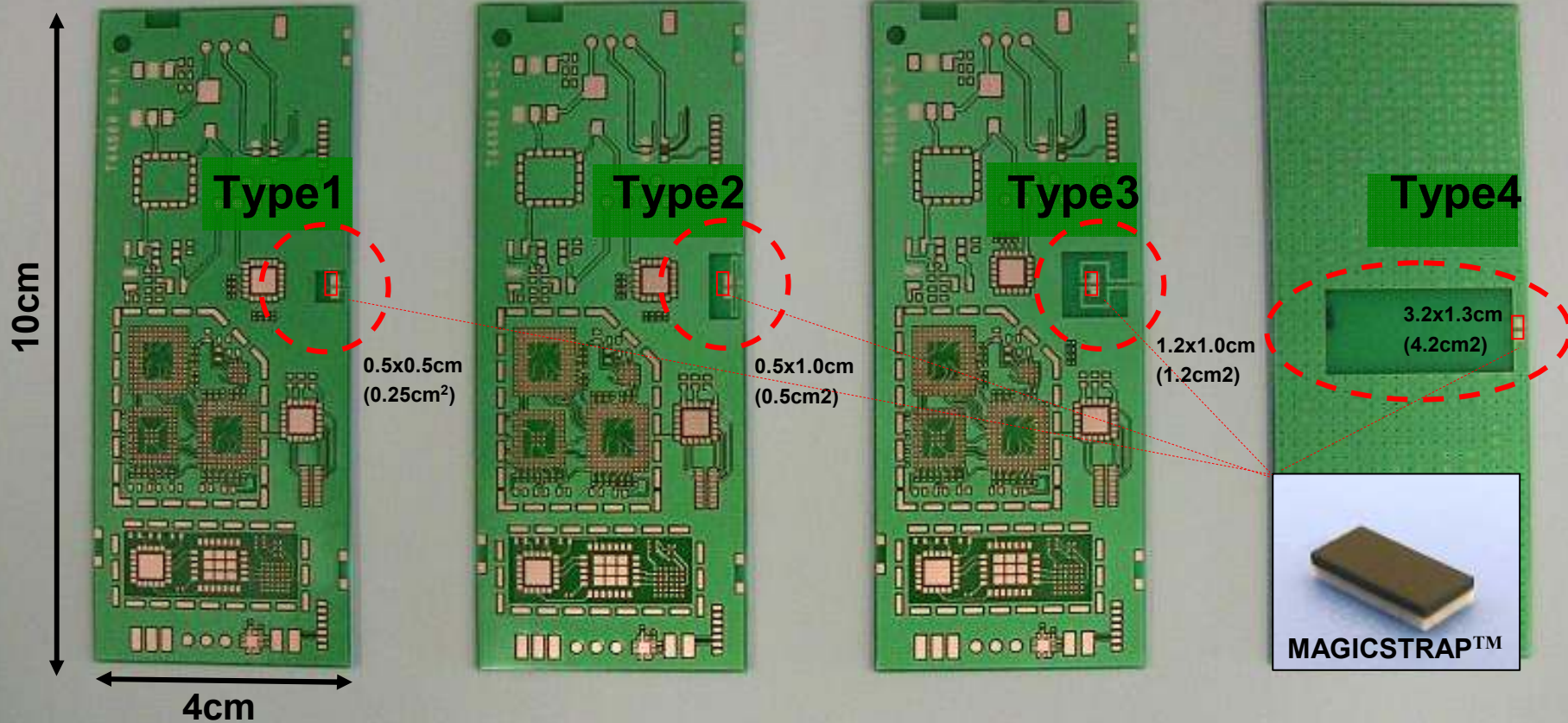
**MAGICSTRAP®**  
*inside!*

**Anti-Counterfeit**

***Your product will become a full RFID Tag over the whole supply chain!***



**MAGICSTRAP® recognizes the PCB as a dipole antenna**



**Read range**

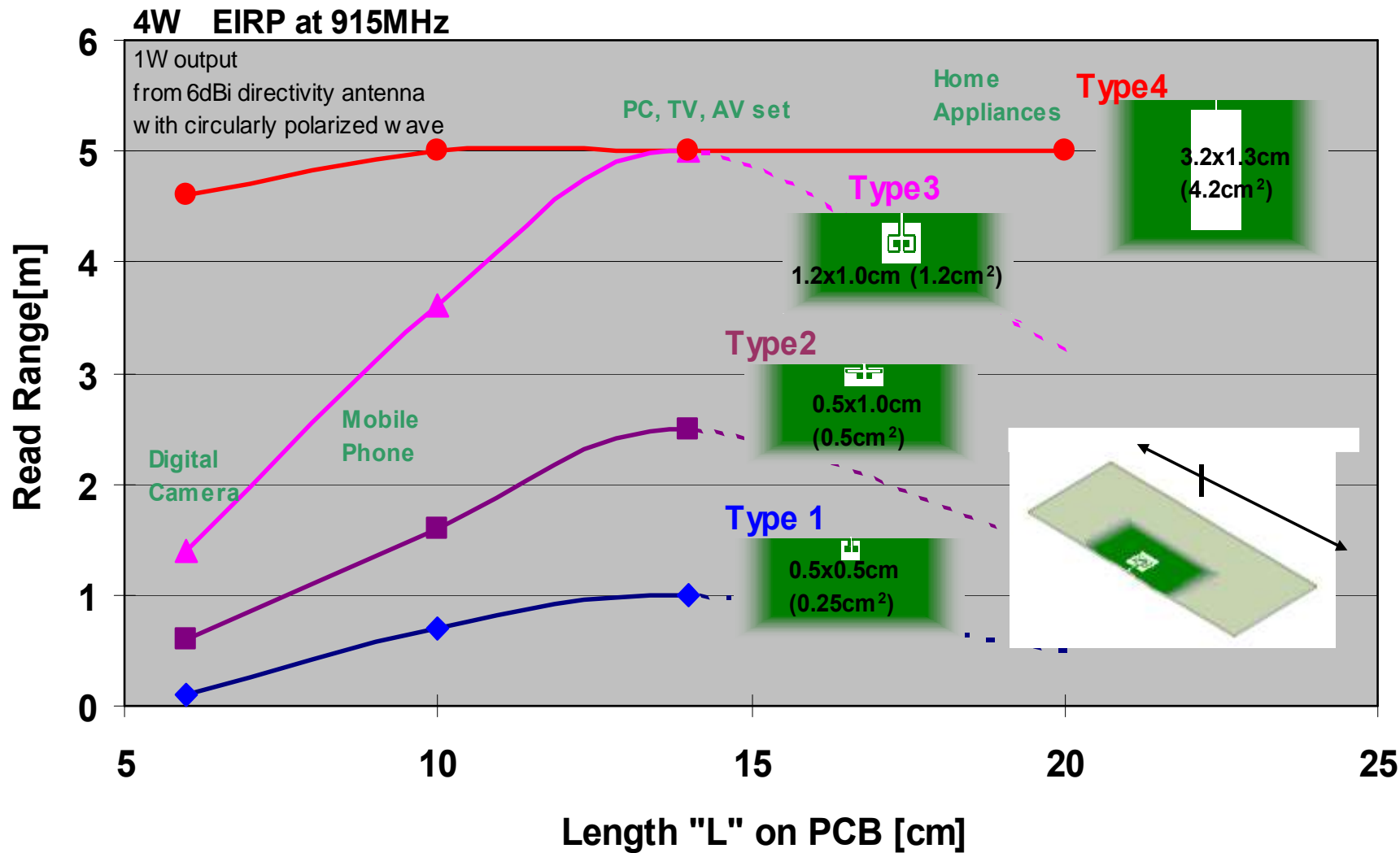
**0.7m**

**1.6m**

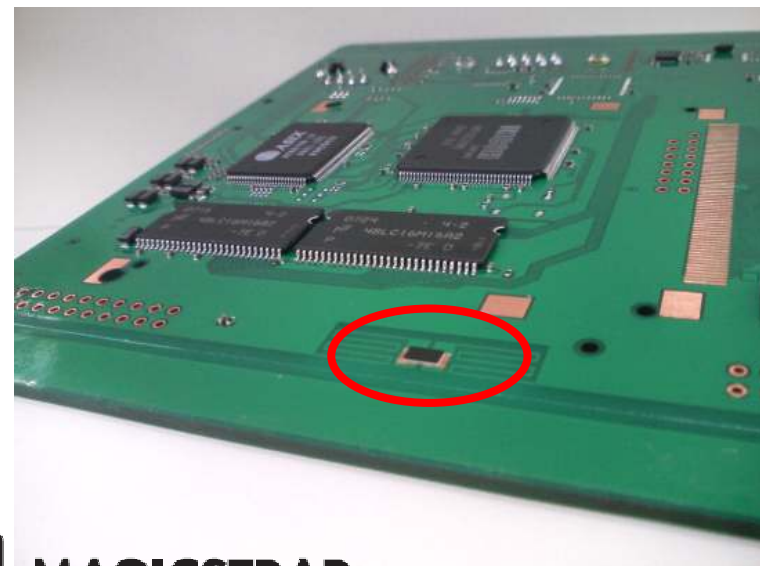
**3.6m**

**5m**

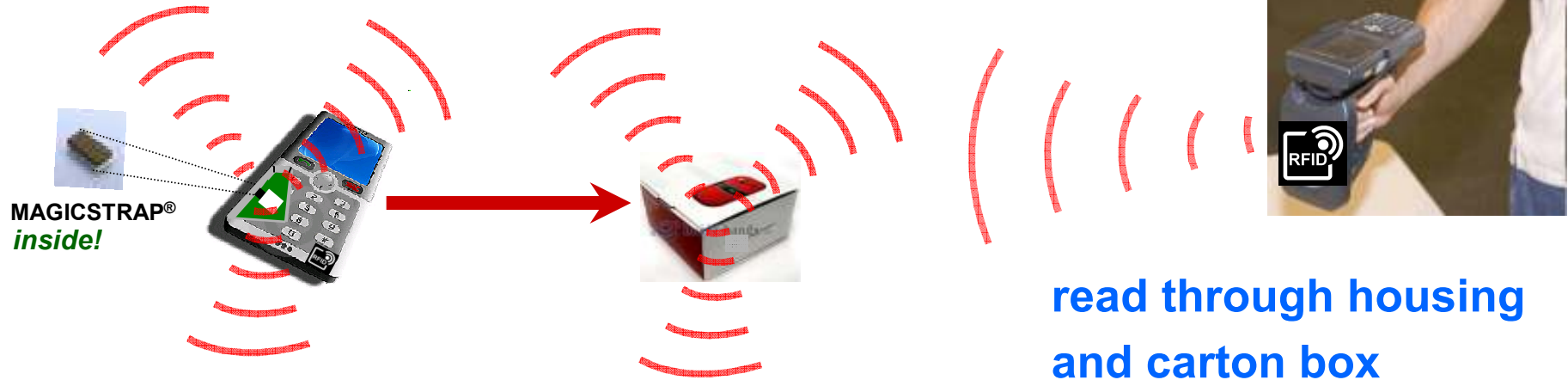
(at 4W EIRP, 915MHz, with 6dBi directivity antenna and circularly polarized wave)



- up to 5m read range
- SMT device, reflow soldering possible
- miniature size 3.2 x 1.6mm x 0.5mm h
- 4 generic Antenna designs available
- data retention >10 years



**MAGICSTRAP®**



# 1. Cost Saving

- Faster data capture (very short read time)
- Read multiple tags at once (>100 tags / s)
- Elimination of manual operation

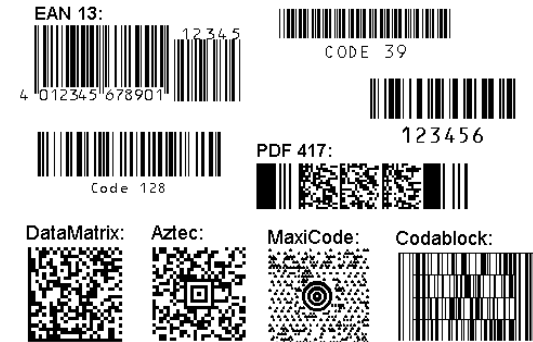


# 2. Reliability

- Higher reading accuracy
- Less manual operations needed

# 3. Flexibility

- No visual connection needed: read through package!
- Information stored in MAGICSTRAP® can be altered
- Additional user memory available (e.g. indicate software version, maintenance information...)
- Wide „Read“ angle
- Less space on PCB occupied (replace multiple Barcode Labels)



# 4. Simplicity

- One Standard accepted world wide (EPC Global)



# 1. 100% compatible to EPC Global C1G2



- Standard Product Number for World Wide use
- Compatible to any EPC Global C1G2 compliant equipment
- 240 bit EPC for serial#

Header	Filter	Partition	EPC Manager	Object Class	Serial Number
8 bits	3 bits	3 bits	20-40 bits	24-4 bits	38 bits
0011 0000	000	5 (decimal)	4012345 (decimal)	012345 (decimal)	123456789123 (decimal)

# 2. Additional Memory – 512 bit

- Freely add your own information (production date, version ID...)
- Keep your own numbering system internally

# 3. ISO 18000-6 compliant

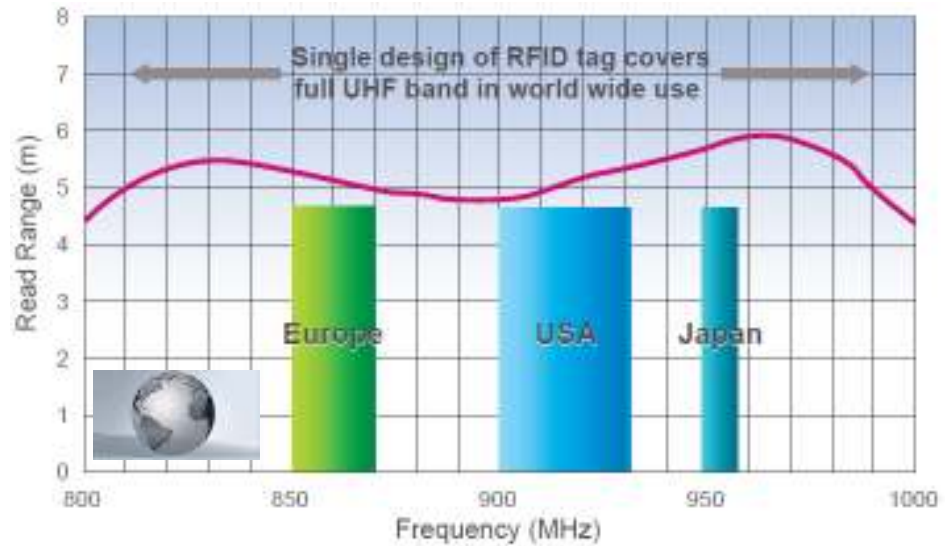
- UHF Air interface standardized



● Measurement condition

— Free Air

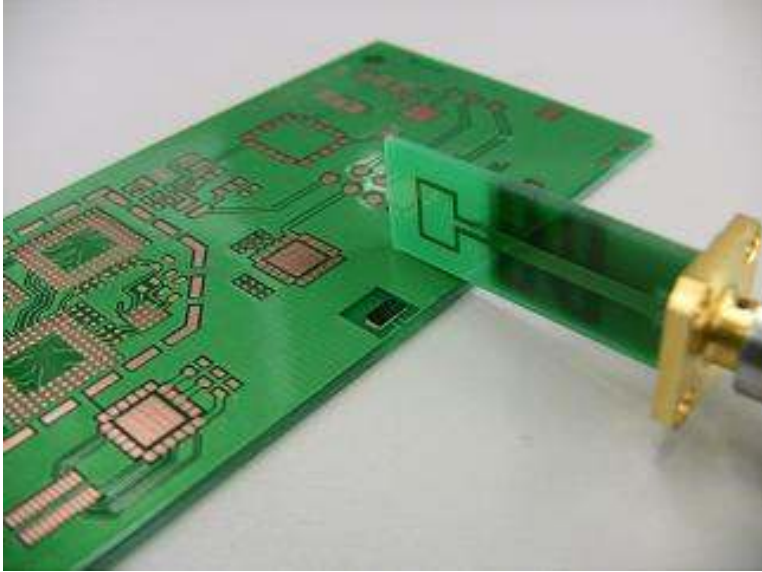
● Antenna : 4 inch for SCM



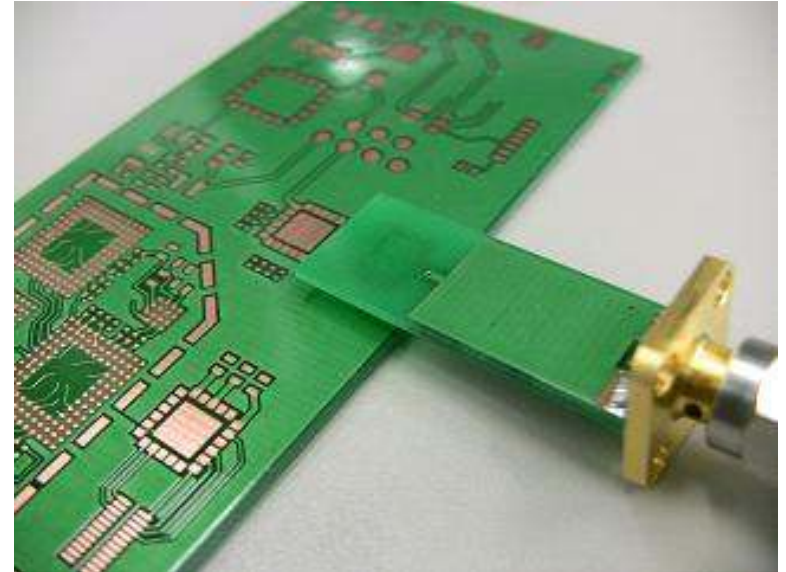
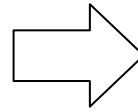
**Cost Saving: One Tag for anywhere in the world!**



## Near Field Transmission with Loop Antenna



Reader Loop Antenna Shape



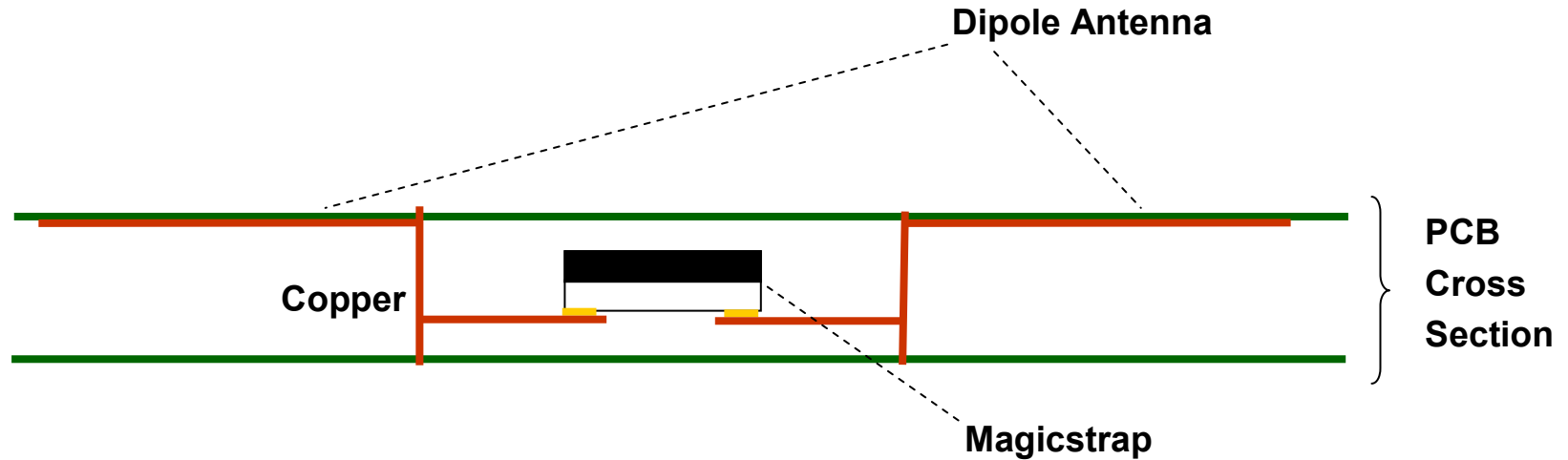
Read / Write *7mm read range*

***No Additional Antenna on PCB Required!***

***Easily control your process !***



# Embed MAGICSTRAP<sup>®</sup> into the PCB and make it invisible

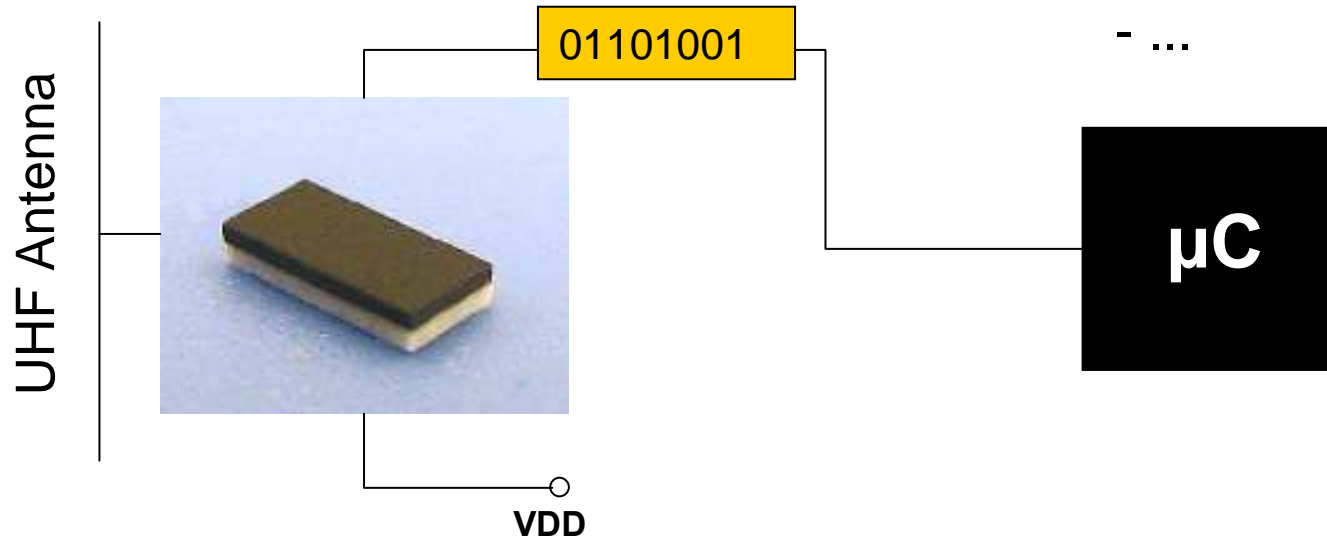


1. Copy protection perfectly invisible
2. Space saving



# Serial interface to $\mu\text{C}$

- Firmware update
- Activation switch
- ...



VDD in (Battery etc.)

- increased read range!



# Elektra 08

European Electronics Industry Awards

The Giants of European Excellence  
10th November 2008, Hilton Munich Park, Munich



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## Passive & Electromechanical Product of the Year

AVX – Low ESL multi-anode Mirror tantalum capacitor  
Bel Stewart Connector - ARJ45 – Category 7A connector  
Ebm-papst Automotive & Drives UK - The S-Force cooling fan

### **Murata - MAGICSTRAP RFID module**

Vishay Intertechnology Inc - Electro-pyrotechnic initiator  
chip resistor



*Excellence for your excellent products!*

*Electron d'Or  
June 2009*



# Take a RFIDe with me...

