

Printing and Encoding On-Metal Tags with an RFID Printer

Tag Constructions and Considerations, Printer Considerations

Personal Introduction



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RFID Subject Matter Expert

- 20+ years in the Auto ID industry
- Joined Printronix Auto ID in 2019
- Focused on RFID market and technologies
- Active member of RAIN RFID Alliance

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Agenda

- Basic Definitions
- On-Metal Tag Constructions and Considerations
- RFID Printer Considerations

Basic Definitions



1. Smart Labels



2. On-Metals
(anti-metal, mount-on-metal, metal-mount)

Basic Definitions



3. RFID Printer



**4. RAIN RFID
(UHF Passive, EPC Gen2 v2, ISO 18000-63)**

On-Metal Tag Constructions and Considerations

- Application: Work with an on-metal tag manufacturer!
 - Chip requirements and specifications
 - Surface material
 - Sub-materials (aqueous, petroleum, air, other)
 - Curvature: Both axes
 - Read range
 - Temperature range
 - Other considerations? Check with the manufacturer.



Service yard asset tracking



IT asset tracking

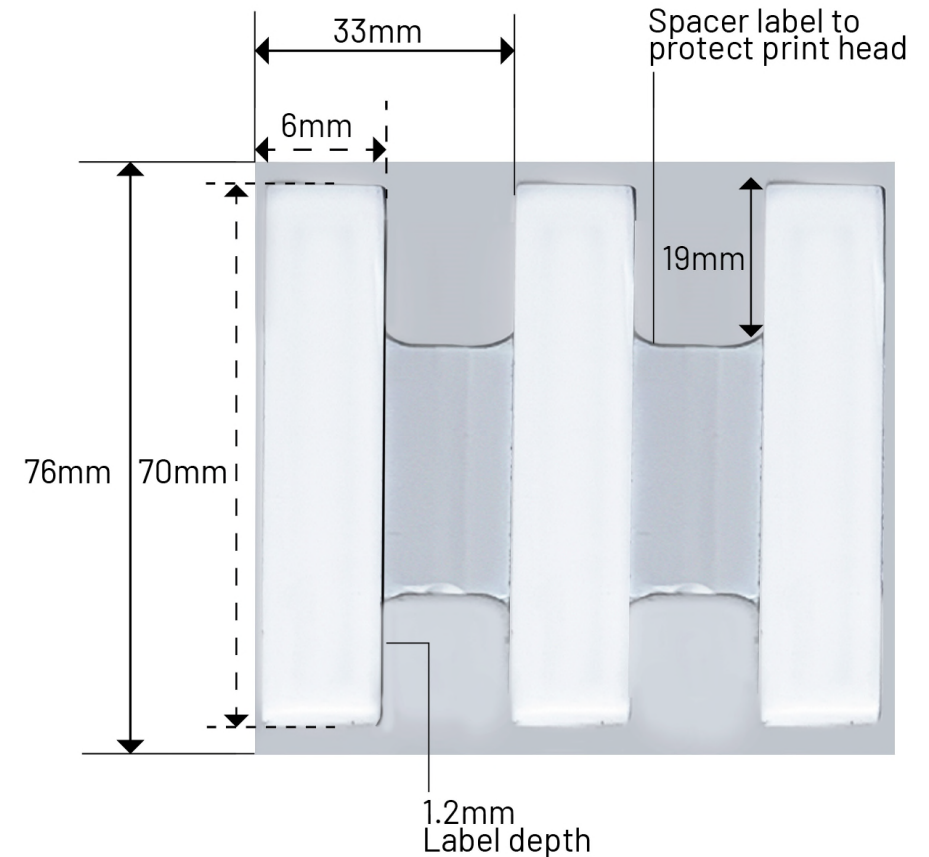


Aviation parts marking, ATA Spec 2000

On-Metal Tag Constructions and Considerations

- Tag dimensions:
 - Width
 - Height
 - THICKNESS: 0.8 mm to 2.2 mm

- Traditional, non-RFID media considerations:
 - Facestock
 - Adhesive
 - Environment (UV, temperature, moisture, etc.)



On-Metal Tag Constructions and Considerations

- “Bridge” (“spacer”) between labels



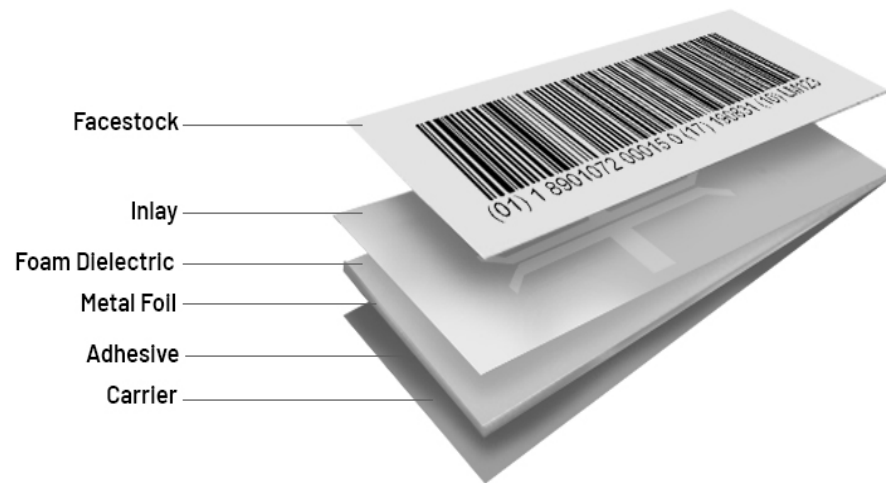
Bridge



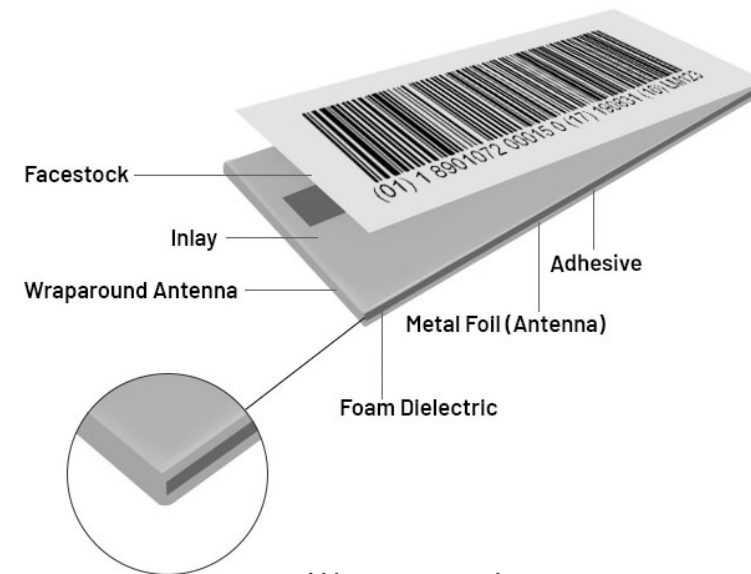
No Bridge

On-Metal Tag Constructions and Considerations

- Different possible constructions: Which will work with which printer?
 - Check with tag and printer manufacturers
 - Standard, “stacked” design
 - “Wraparound” antenna design
 - Notched, Holes



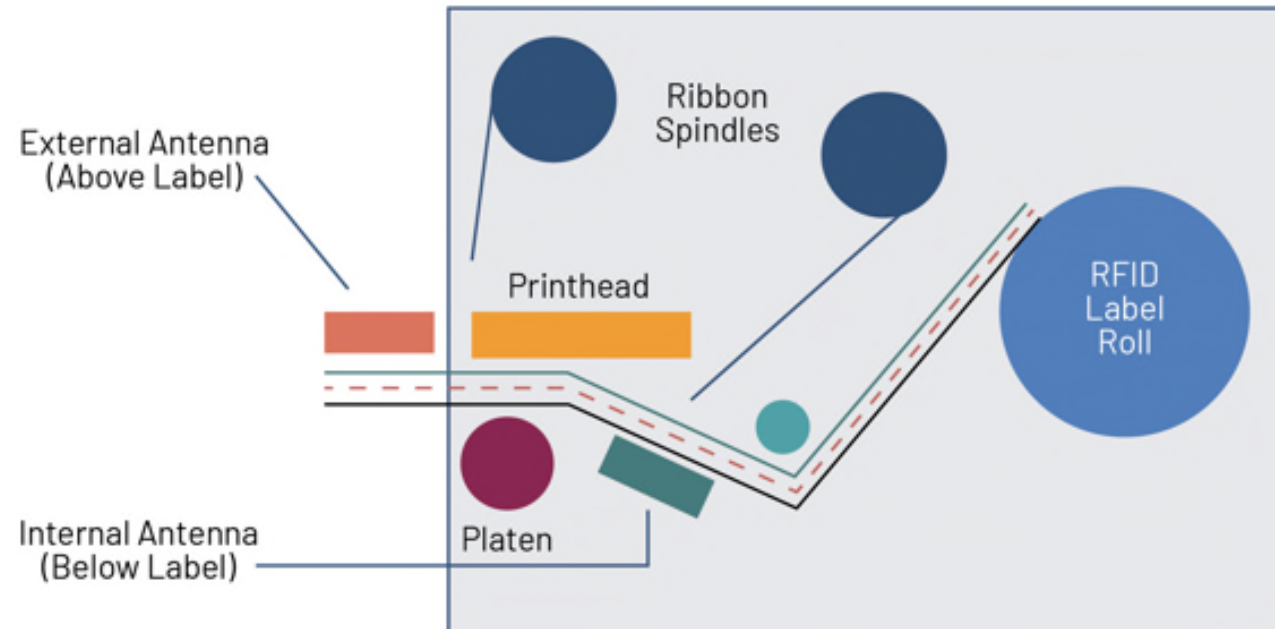
Standard design



Wraparound antenna

RFID Printer Considerations

- Media thickness specifications
- Printer antenna location:
 - Below label-path (traditional design for standard smart labels)
 - Above label-path (best for on-metals)



RFID Printer Considerations

- Label/tag “Pitch”
- RFID Auto Calibration feature
- Printing/encoding sequence:
 - Print then encode
 - Encode then print
 - “Encode during print”
 - Minimizes backfeed and maximizes performance
 - Inlay placement with on-metals “is what it is”
- Support for high-memory chips



RFID Printer Considerations

- Media feed (test!):
 - Both feed and backfeed
 - Abrupt media edges
 - Robust feed mechanisms needed with on-metals
- Ability to handle both on-metals and standard smart labels
 - Simple, fast media changes
- Performance/speed
- Supported printer languages/”emulations”

RFID Printer Considerations

- Print quality:
 - Best ribbon choices: Check with tag manufacturer. Usually Resin or Wax/Resin
 - Best printer settings:
 - Speed
 - “Slew” speed
 - Intensity (“darkness”)
 - Printhead pressure
 - Graphics handling
- Data-reporting functionality: Return RFID and barcode data to host system
- Troubleshooting tools and support





Questions?

Thank You