

RFID / NFC / TPMS Solutions Fact Sheet

Delivering Confidence to Confront the Most Challenging RF Designs

Whether you are involved with banking transactions using Near Field Communications (NFC), inventory logistics using ePC Global RFID technology, or tracking the transport of goods in shipping lanes using other RFID systems, absolute assurance and system integrity in the presence of a dynamic RF environment must be maintained. Nothing less than 100% accuracy of tag/reader operation is acceptable.

Tektronix Real-Time Spectrum Analyzers have the most comprehensive measurement support of industry, international and proprietary standards. Tag and reader / interrogator performance and interaction performance can be completely analyzed with quick and easy measurement setups and deep memory capture. Arbitrary Waveform Generators and Handheld Spectrum Analyzers can also assist with the receiver testing and the field deployment of RFID technologies.

RFID Challenges:

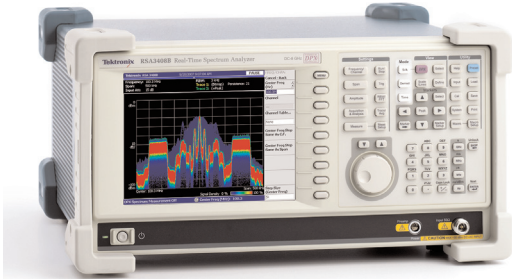
| | |
|--|--|
| Transmitter Design Validation | <ul style="list-style-type: none"> ■ Determining self-jamming of interference with other wireless communications on end-device ■ Determining boundary or margin characterization for tag/reader performance ■ Fully characterizing tag and reader interaction |
| RFID Compliance and Certification | <ul style="list-style-type: none"> ■ Assessing key performance to standards with repeatable setups ■ Generation of expected interference signals to verify blocking and selectivity performance |
| Field Validation | <ul style="list-style-type: none"> ■ Determining collision interaction with multiple co-located independent systems ■ Validating performance in a noisy multi-system environment |

RFID Standards Measurements

| Menu | Measurement | Standard | | | | | |
|----------------------|--|--------------------|---------------------------|------------------------|-------------------|-------------|-------------|
| | | ISO 18000-4 Mode 1 | ISO 18000-6 Type A, B & C | ISO 14443-2 Type A & B | ISO 18092 (424 k) | ISO 15693-2 | ISO 18000-7 |
| Carrier | Carrier Frequency OBW/EBW Ave. Power for Pwr. On | ■ | ■ | ■ | ■ | ■ | ■ |
| Spurious | Spurious | ■ | ■ | ■ | ■ | ■ | ■ |
| ACPR | ACPR | ■ | ■ | ■ | ■ | ■ | ■ |
| Power On/Down | Transmission Power Rise & Fall Time Settling Time Over/Under Shoot Off Level | ■ | ■ | ■ | ■ | ■ | ■ |
| RF Envelope | On/Off Width Duty Cycle (%) On/Off Ripple Rise Time Fall Time | ■ | ■ | ■ | ■ | ■ | ■ |
| FSK Pulse | On/Off Width Period/Duty On/Off Ripple Slope 1, 2, 3 | | | | | | ■ |
| Constellation | Modulation Depth | ■ | ■ | ■ | ■ | ■ | ■ |
| Eye Diagram | Modulation Index | ■ | ■ | ■ | ■ | ■ | ■ |
| Symbol Table | Frequency Error Bit Rate (Measured) Tari Length (0 & 1) Indicated Preamble | ■ | ■ | ■ | ■ | ■ | ■ |
| Marker | Turn Around Time | ■ | ■ | ■ | ■ | ■ | ■ |

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Design Validation and Compliance

RSA Series Real-time Spectrum Analyzers

- Discover elusive spectrum events and device interactions with 100% probability with over 48,000/s spectrum updates
- Trigger and isolate spectrum events with 100% probability using patented frequency mask triggering
- Capture the entire tag and reader interaction across the entire operations bandwidth and communication period
- Get repeatable results faster with standards-based measurements and automatic analysis
- Speed troubleshooting with correlation of frequency, time, modulation, and statistical domain on a single acquisition



Field Validation

H/SA Real-time Spectrum Analyzers

- Discover elusive spectrum events with 100% probability with over 10,000/s spectrum updates
- Trigger and isolate spectrum events mask analysis
- Capture the entire tag and reader interaction across the entire operations bandwidth with up to 20 MHz real-time bandwidth
- Locate interference signals faster with simple Direction Finding tools
- Speed interference troubleshooting with built-in automatic signal classification capability



Receiver test for Design Validation

AWG Series Arbitrary Waveform Generators with RFXpress™ Software

- Generate RFID signals at digital baseband and analog baseband, IF, RF, and microwave signals with versatile multi-channel AWG
- Import or synthesize high dynamic range or hopping pattern signals directly with up to microwave frequencies
- Easy creation of very complex and repeatable RFID signals using RFXpress® software
- Verify component and functional designs by emulating common transmitter impairments
- Quantify blocking and desense receiver performance with direct synthesis of both in-channel and out-of-channel interference

www.tektronix.com/rfid

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