Anritsu Advancing beyond

Accelerate FRMCS Device Validation from Design to Production

Radio Communication Test Station MT8000A

Build confidence in FRMCS device verification using a 5G-based test platform for standards-based RF testing, end-to-end network emulation, and production line testing.

Validating RF performance, protocol behavior, and network interoperability is essential for FRMCS device developers and railway communication equipment manufacturers.

What is FRMCS?

FRMCS (Future Railway Mobile Communication System) is the 5G-based successor to GSM-R for railway communications. It is designed to support voice, data, and video services for railway operations while enabling coexistence with GSM-R during the migration phase.

Why Testing Matters

- Reduce FRMCS design validation time
- Verify compliance before field trials
- Reproduce railway network conditions in the lab
- Identify issues earlier in development
- Create a seamless path from validation to production testing

Technical Challenges

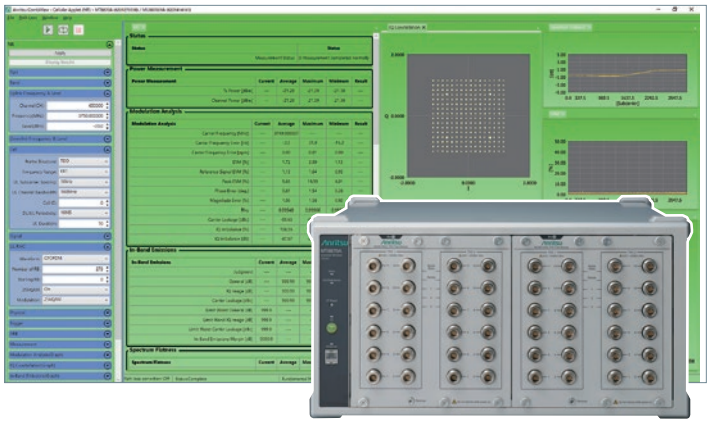
Challenges	Why it matters	Typical FRMCS context
GSM-R and FRMCS coexistence	During the migration phase, devices must operate reliably in environments where GSM-R and FRMCS networks run side by side. Testing is essential to ensure seamless communication and avoid interoperability issues.	Transition from GSM-R to FRMCS
Dedicated FRMCS spectrum	FRMCS uses railway-specific frequency bands such as n100 and n101 with limited bandwidth allocations. Test systems must accurately emulate these operating conditions to verify device performance and compliance.	n100 (RMR 900) FDD and n101 (RMR 1900) TDD
Multiple device types and power classes	FRMCS deployments include different device categories, each with unique RF performance and transmit power requirements. Test environments must reflect the intended application to ensure reliable operation in the field.	Cab radios, handheld terminals, trackside and onboard devices

Use Cases and Solutions

Platform for FRMCS design validation

Radio Communication Test Station MT8000A with Anritsu MX800010A RF measurement software

Platform for high volume production line testing



Wireless Connectivity Test Set MT8870A

Use case	Objective	Recommended solution	Key product
FRMCS RF validation and compliance testing	Validate device compliance with ETSI, 3GPP, and FRMCS performance requirements before deployment, reducing the risk of costly design changes later.	Recreate FRMCS operating conditions, including railway-specific frequency bands, bandwidths and duplex configurations, to perform comprehensive RF validation.	MT8000A with MX800010A RF measurement software
End-to-end network and application validation	Confirm reliable communication behavior and IP connectivity across the complete FRMCS ecosystem, beyond RF conformance alone.	Emulate a 5G-based FRMCS network environment to evaluate device performance, connectivity and interoperability under controlled conditions.	MT8000A with SmartStudio NR
Production testing and manufacturing verification	Ensure every device leaving production line meets required performance criteria while maintaining manufacturing volume and quality.	Leverage a streamlined production test platform that aligns with development and validation workflows, enabling efficient high-volume testing.	MT8870A

Why Anritsu for FRMCS?

With 130 years of experience in communications test and measurement, Anritsu is a trusted partner for wireless, optical, microwave/RF, and digital solutions across R&D, manufacturing, deployment, and network optimization. For FRMCS, Anritsu combines proven 5G expertise with dedicated support for FRMCS frequency bands n100 and n101, helping railway communication equipment manufacturers validate devices from early development through production and field deployment.

As a single supplier for lab and field test solutions, Anritsu enables a consistent path from design validation to deployment, supported by solutions already trusted by leading wireless infrastructure vendors.

Anritsu supports the complete FRMCS lifecycle:

Phase	Solutions
Device design	MT8000A
RF validation	MT8000A
Manufacturing	MT8870A
Field deployment	MS2090A MS2089A
Network optimization	MS2090A MS2089A