

Key Management Centre and ETCS System Integration Testing

By digitalising railway systems (e.g. ETCS implementation), cyber attacks and cyber threats have become important issues and concerns that any railway infrastructure manager now faces.

Thus, it is important to equip the railway system with a **Key Management Centre (KMC)** that provides keys enabling the encryption and decryption of communications between the ETCS onboard and the ETCS trackside subsystems. However, testing and simulating such a new element, from product development by the KMC providers to system reception by the railway infrastructure manager/operator, is challenging. At Multitel, we can provide a complete solution to you to deal with all KMC communication chain aspects.

Multitel has developed a **KMC Emulator (KMC-EMU)** which is fully compliant with Subset-137 (online) and Subset-114 (offline). The KMC-EMU can handle also KMC-KMC communications. This product has been used in lab tests and lab integrations in the United Kingdom, South Korea and China. Moreover, Multitel has also developed the **KMC Test Bench (KMC-TB)** for the ETCS EVC SRS

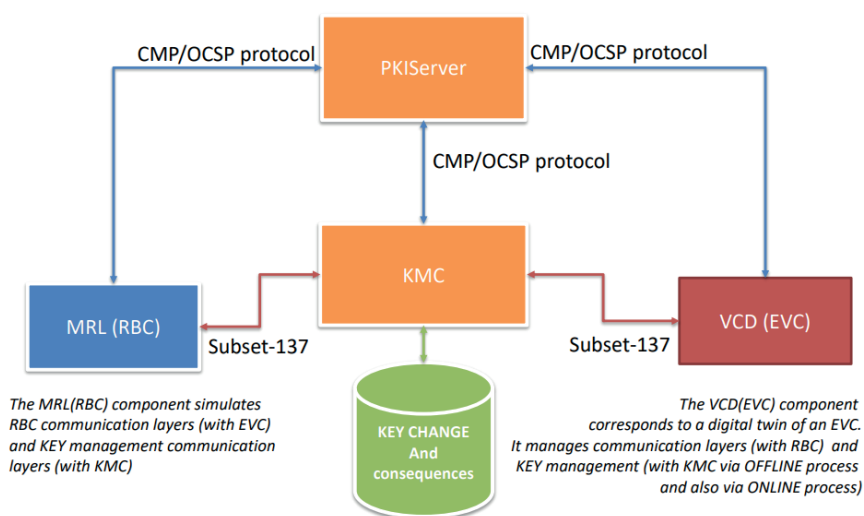


Figure 1 KMC-EMU online use case scheme

Subset-137 (Subset-KMC, test method and database) and is accredited ISO17025 (427-TEST) by BELAC for **Subset-KMC®** test. **We are the only laboratory in the world to have obtained this accreditation for such tests!**

Multitel also provides simulation environments of both onboard and trackside for KMC development tests.

Multitel's railway test system is complete and capable of performing system integration tests / system compatibility, train / track and line validations. Indeed, Multitel is accredited ISO17025 (427-TEST) by BELAC for **Subset-ESC®** test. Multitel's ISO17025 accreditation test scopes also cover ETCS subsystem tests for both

onboard and trackside units. We hold 8 EVC test benches, 2 RBC test benches, 2 Eurobalise/BTM/LTM test benches, 3 KMC test benches and 1 MSILAB (system level test). Enjoying this numerical advantage, we are able to test several customers in parallel and deliver ISO17025 test reports in a very fast lead time.

Multitel also provides test labs, test benches and railway maintenance tools. Multiple Unisig onboard EVC suppliers acquired Multitel's test benches for their own developments. We provided test benches to worldwide trackside suppliers. In 2018, Multitel delivered its first system test bench to China for **CTCS testing**. In 2020, Multitel delivered a **KTCS System level test lab** to South Korea. In 2021, Multitel, in conjunction with Atkins

Limited, was awarded a contract by Network Rail to design, deliver and operate the UK's national ETCS Test Verification, Validation and Integration Laboratory (Test Facility) for 10 years. This first-of-a-kind facility provides **operational signalling fault diagnostics, product acceptance and systems integration of ETCS signalling deployments** across the UK.

The delivery of this Test Facility to Network Rail/Atkins demonstrates the maturity of Multitel's **MSILAB** technology. Indeed, MSILAB is not only compatible with IoP (Subset-110, Subset-111 and Subset-112) but also offers wider test ranges thanks to its capability to test and validate subsystems at the real physical interface level. Furthermore, MSILAB is flexible enough for new updates or upgrades, so that it is compatible with the next generation of digital signalling technology (FRMCS, ATO and C-DAS).

Advantages of Choosing Multitel's Solutions and Services

- Multitel provides a large test service and also test tools, test lab and on-demand test solutions
- Multitel's solutions and expertise are not limited to ETCS standards but also include KTCS and CTCS standards
- Multitel's solutions are modifiable and compatible with new updates and upgrades due to next generation of signalling technologies (FRMCS, ATO and C-DAS)
- Multitel has a versatile and skilled team to support your projects (developments, tests, validation)

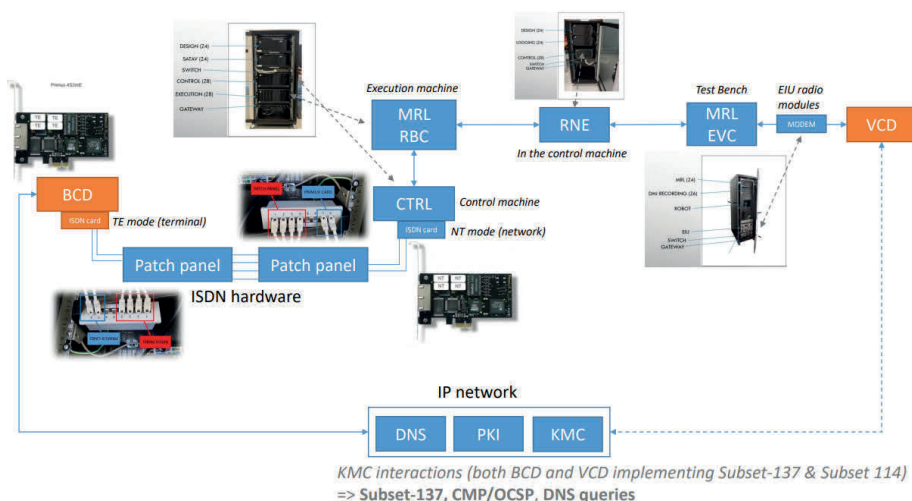


Figure 2 Multitel's railway radio simulation test system chain including KMC interactions

- Multitel works beyond the state of the art and is already prepared for the test purposes of the next TSI 2022 release

About Multitel

Located in Mons, Belgium, Multitel is a research centre specialised in information and communications technology (ICT). Multitel has more than 15 years of experience in providing ERTMS testing services, ERTMS test tools and test solutions.

Multitel's is ISO17025 accredited by BELAC (427-TEST) for:

- Subset-076, Subset-094 (European Vital Computer test)
- Subset-085 and Subset-116 (Eurobalise/Balise Transmission Module test)

- Subset-103 (Loop Transmission Module test)
- Subset-RBC® (Radio Block Centre test)
- Subset-ESC® (ETCS System Compatibility test) using M-SILAB solution (test bench and test methodology)
- Subset-KMC® (EVC test following Subset-137)

Visit our website for more information railways.multitel.be

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