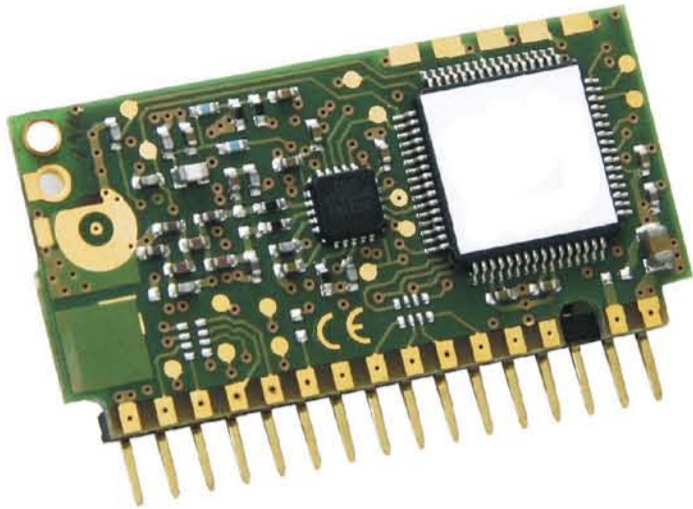


«THE TASK»



■ For a 315MHz wireless transceiver module consisting of a transceiver IC, a micro, an antenna and an electronic periphery the development of an automated test station for a economic and reliable mass production was performed.

■ The main tasks were:

- 100% test of all electrical functions and the complete assembly,
- An ergonomic structure and test procedure,
- A simple and fault protected handling,
- The shortest possible operating and handling time,
- The complete and charge applied documentation of the test results,
- The handling of the product pursuant to DIN EN ISO 9001:2000,
- The verification of test tool ability,
- The simple assignment of repair instructions and recognised errors.

«THE IMPLEMENTATION»

■ The test station is divided into two separate stations:

- Station 1: Programming and Measuring
- Station 2: Final Test

■ The following steps are performed:

■ Station 1:

- Programming the microcontroller,
- Programming the serial number of the module into the microcontroller's flash memory,
- Interface test (inputs and outputs),
- RF transmitter test,
- RF receiver test,
- In case of fault printing of a special label.

■ Station 2:

- Testing the correct assembly of certain capacitors using a charging method,
- Antenna and antenna matching circuit test,
- Activating microcontroller's firmware,
- Printing of the standard label with serial number,
- All results are stored in a MS Access data base.

■ After test a summary of all results of the current working day is performed for consistency check regarding the production job, the daily production and the operator.

■ Printing the serial numbers and the repair instructions of all faulty modules using the database entries.

■ Continuous test tool and charge surveillance using the R&R method (repeatability and reproducibility) and quality measure cards. In case of quality problems a message is created for the process or quality manager.

«THE RESULT»

■ Very short test time of 32 seconds and a handling time of only about 20 seconds for the whole test procedure,

■ Repeatability of 15.2% (allowed 30%),

■ Decrease of repair time for faulty modules using precise repair instructions and labels.

■ A permanent process monitoring allows controlling and optimises the yield and cost of the production.

