

2303 Stabilock®

TETRA Mobile Station Tester

AEROFLEX
A passion for performance.



Users of TETRA radios in the police, fire brigades, paramedics and railways fully rely on their communication devices in critical situations. TETRA radios are heavily used and exposed to an aggressive environment such as heat, vibration, shock or liquids. The lifetime and the performance of TETRA mobiles may heavily be affected by this usage, as frequency stability and receiver sensitivity are degrading. These effects result in failing radio connections.

In order to help these organizations provide maximum safety and reliability to their users, Aeroflex designed the 2303 Stabilock®. It is the first TETRA mobile station tester, which was specifically made for testing TETRA radios in the service environment.

Highlights

- Supports TETRA radio tests relevant for service
- Intuitive and failsafe user interface
- Made for the PMR service environment
- Bright screen and robust case
- Portable, lightweight and compact
- Optional battery operation
- Proven Stabilock® quality and precision with a 40-year tradition

A New Tester – Tailor-Made for TETRA Service

The 2303 Stabilock® delivers precise results the fast way. No matter if Trunked Mode or Direct Mode (optional), 400 or 800 MHz band: After setting up network parameters and frequency range, the tester is ready for operation. The large, high contrast color display is split into four sections for clear reading of test results in numeric or graphic format. All settings and commands are accessible via six softkeys or with one-hand operation using the turn-and-push dial. Reducing TETRA complexity to what is really needed in service – with this operational concept, users can operate the instrument easily by just pressing a few keys on the Stabilock's high-quality click-type keyboard. Alternatively, a standard USB mouse provides access to all screen elements, giving the Stabilock a PC-like interface.



Complete Measurement Functionality to Provide the Full Picture

In order to be able to test as close as possible to real life operation, the Aeroflex 2303 Stabilock TETRA Mobile Station Tester supports the testing of all major communication modes in modern TETRA networks: Trunked Mode (TMO), Direct Mode (DMO, optional), SDS and LIP. Depending on the type of MS under test, the receiver sensitivity can be measured precisely by either single ended or loopback BER in the TETRA Test (TT) mode. Paging sensitivity provides an easy work around if an MS cannot be put into test mode.

All TETRA call types and call setup types are supported for detailed tests similar to the real application. The instrument is capable of sending and receiving SDS in different formats: User-defined, Status SDS (TETRA MoU) and Location Information Protocol (LIP) messages.

The Generator-Analyzer mode of the 2303 forms a useful tool for aligning mobile radios in production or service. Users can select between eight different TETRA test signals on the downlink while the 2303 analyzes the incoming continuous TETRA carrier.



With the optional BS test function, the 2303 Stabilock is also capable of testing the transmitter and the receiver of TETRA base stations, helping to maintain a nearly 100% uptime not only for terminals, but also for the network.

Necessary TETRA measurements defined in ETSI standard EN 300 394:

Transmitter Measurements

- RF power
- Carrier frequency offset
- Burst power profile over time
- Timing error
- Residual carrier power
- Unwanted output power
- Error vector magnitude (RMS, Peak)
- Modulation spectrum
- Constellation diagram

Receiver Measurements

- Single ended BER
- Loopback BER
- Paging sensitivity

Future-Proof Interfaces

The 2303 Stabilock has a full set of interfaces, which can be used to connect it with a PC and other equipment: USB flash memory can be connected through the USB connectors; remote control and firmware updates from a PC are enabled over the LAN through a TCP/IP connection; and a standard RS-232 port enables communication with other instruments. Files with test results, MS type information and screenshots can easily be stored on an internal or external drive.

For maximum frequency accuracy, the 2303 can either be connected to an external reference frequency standard or equipped with the 2360 OCXO option. A bidirectional frame sync connector allows precise triggering on the active time slot and can be used to synchronize either other instruments for further analysis, or for synchronization of two testers, or the test set with a BS for receiver measurements without the transmitter being active.

With its wide AC power supply range, the 2303 Stabilock is a universally deployable tester. Users gain additional flexibility with the DC voltage input as it allows them to connect the 2303 to a car battery. With the optional battery, the Stabilock can be operated in the field, making it possible to take measurements any time, anywhere.



Options

Expand Testing Capabilities to TETRA Direct Mode Operation

With the 2330 DMO option installed, the 2303 Stabilock also understands and analyzes the TETRA DMO protocol for direct communication between two TETRA radios. This enables the user to test the single-frequency operation and approve correct MS performance for this mode.

Base Station Maintenance Made Easy with the Portable 2303 Stabilock

With the 2332 TETRA base station test option, the intuitive way of testing TETRA devices is now available to all TETRA site technicians. The 2303 supports all BS measurements, including that of the bit error rate, on equipment with one RF path, and up to 10 W of RF power. It can synchronize over the air interface or an external sync signal. If you have a demand for two RF ports and a higher RF power measurement capability, please ask your local Aeroflex sales manager for the 2305 Stabilock TETRA Test Set.

Efficient and Time-Saving Checks Through Automated Tests

Aeroflex offers a set of automatic test capabilities for the 2303 Stabilock. The 2331 autotest option allows the capability to run typical test sequences automatically on the instrument, so you can run tests with the push of a button. Test sequences can easily be defined in just a few steps directly on the user interface of the instrument. For autotest operation, no extra hardware is required, as tests are running on the 2303 and the test results are either stored on the internal or an external flash memory. The autotest result file contains all the information required to trace the quality of a specific TETRA radio. This file can be archived and printed straight away.

Looking for more flexibility in test automation? Aeroflex's Lector and Scriptor family of remote control applications provides you with the right tools. Lector enables you to generate and run complex test programs on a PC, controlling the tester remotely and taking care of all testing documentation automatically. For more information on Lector and Scriptor, please ask your Aeroflex sales representative or visit Aeroflex's web site for the separate data sheet.

Increasing Frequency Accuracy

TETRA radios are usually running a reliable AFC (Automatic Frequency Correction) to match frequency offset to the base station. For tests on mobile stations which do not have this feature, Aeroflex offers the 2360 OCXO option to make the reference frequency of the 2303 Stabilock even more accurate.

Lightweight and Mains Power-Independent

No need to spend time dismounting radios installed into vehicles: Take the tester on the road with the 2361 battery option. Using the high-capacity Li-Ion type battery, the 2303 Stabilock becomes independent from other power sources for about two hours. And with accessories like the desk charger and extra batteries, engineers are always prepared for a quick emergency mission.

SPECIFICATIONS

Specifications valid after 30 minutes warm-up time at ambient temperature, specified environmental conditions and typical measurement range within a period of one year after calibration.

The published accuracies are determined in accordance with GUM (Guide to the Expression of Uncertainty in Measurement) and EA (European Co-operation for Accreditation) application document EA4/02: "Expressions of the Uncertainty of Measurements in Calibration".

BASIC RF DATA

Frequency Range

350 to 470 MHz

800 to 960 MHz

Duplex Spacing

Freely definable
(supporting all the values specified in ETSI TS 100 392-15 [version 1.3.1] Chapter 6)

Input Connector

N-type, female

Input Impedance

50 ohms

Input VSWR

<1.5

Reference Frequency Uncertainty

$<1 \times 10^{-6}$

Reference Frequency Aging

$<1 \times 10^{-6}/\text{year}$

EXTERNAL REFERENCE FREQUENCY

Input

BNC, female

Level

0 dBm

Frequencies

5/10/13 MHz $\pm 10^{-5}$

2360 OCXO OPTION

Reference Frequency Uncertainty

$<1 \times 10^{-7}$

Reference Frequency Aging

$<1 \times 10^{-7}/\text{year}$

TETRA SIGNAL GENERATOR

RF Output Level Range

-120 dBm to -40 dBm

RF Output Level Resolution

0.1 dB

RF Output Level Accuracy

-40 to -100 dBm ± 0.8 dB (Typical ± 0.5 dB)

-100 to -120 dBm ± 1.3 dB (Typical ± 1 dB)

Maximum Vector Error (RMS)

3%

Maximum Vector Error (peak)

10%

Maximum Residual Carrier Power

1%

2nd Harmonic Suppression

40 dBc

TETRA ANALYZER**RF Input Level Range**

-20 dBm to +40 dBm

Max. RF Input Level

+43 dBm

RF Power Measurement Uncertainty

±0.8 dB

EVM Measurement Uncertainty (at test signal with 10.7% EVM)

typ. 1.5%

GENERAL DATA**Power Supply**

AC: 100 to 240 V

DC: 11 to 15 V

Power Consumption

<50 W

Operating Temperature Range

+5 to +45°C

Dimensions**Width**

37.7 cm (14.8") (28.7 cm without handles)

Height

16.1 cm (6.3")

Depth

25.9 cm (10.2") (20.5 cm without handles)

Weight

3.5 kg (7.7 lbs.)

Screen

6.5" TFT (165 mm)

BATTERY OPTION**Nominal Battery Voltage**

7.4 V

Nominal Battery Capacity

9 Ah

Operational Time In Idle Mode with Fully Charged Battery

>2 h

STANDARD DELIVERY

2303 Stabilock

Power supply

USB flash drive

Manual pack including printed getting started manual and user's guide on CD

ORDERING INFORMATION

2303 Stabilock TETRA Mobile Station Tester M 100 203

Hardware Options

2360 OCXO Option M 248 715

2361 Battery Option M 205 015

Software Options

2330 DMO Option M 897 400

2331 Autotest Option M 897 401

2332 Base Station Test Option M 897 403

Accessories

7312 Lector Enhanced M 897 310

7315 Scriptor M 897 311

Battery Module, 9 Ah M 205 012

12 V Car Adapter M 860389

Power Supply M 248 328

1500 Battery Charger M 204 097

External charger bundle (battery module, power supply, 1500 battery charger) M 248 972

Trolley Carrying Case M 300 871

Soft Carrying Bag M 241 017

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Our passion for performance is defined by three attributes represented by the icons pictured above: solution-minded, performance-driven and customer-focused.

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