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Navigator Guides Analysis Tasks

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Launched at the 2007 International Broadcast Convention (IBC), the Audemat Navigator is a self-contained comprehensive modulation analyzer.

It provides all the facilities required to measure and assess an FM transmission chain all the way from audio input through to the RF output.

Intended for use by equipment manufacturers and broadcasters alike, the Navigator is portable and designed to be easy to use.

Reproducible results

A fully digital design, developed to deliver stable, accurate and consistently reproducible results, the Navigator weighs in at approximately 6.1 kilograms, including case and accessories, and will fit into a standard 3 rackunit, 19-inch rack space.

To avoid problems of rack access, all the controls and connectors are front-panel mounted, the only item on the rear panel being a ventilation grille for the internal cooling fan.

For field use, the Navigator is designed to work from within its padded carry-case, which features meshed top and rear-ventilation and a fully removable Velcro front cover.

The Audemat analyzer operates from an external power source of between 11 V DC and 20 V DC.

XLR connectors are also used for audio, left and right, and for AES/EBU digital connections, three-pin female sockets for inputs and male sockets for outputs.

RF input, MPX input and output, together with an auxiliary output are all via BNC sockets, while computer connectivity is via USB, RS-232 and Ethernet ports. The final front-panel connector is a 6.3

millimeter stereo jack socket for monitor headphone use.

Real-time testing

The main control interface is a front-panel, color LCD touchscreen measuring 7 centimeters x 5 centimeters, which the user can switch off when not needed. This is accompanied by six touchpad buttons and three LED indicators. A stylus input device

as passwords, system time and network configuration.

Real-time testing of a transmitter with the Navigator is a straightforward affair. Simply supply the unit with a source — RF or composite MPX at the appropriate input — and then select one of three options, Spectrum Analyzer, Modulation Monitoring or RDS, via the front-panel display.

ITEM	DETAILS INCLUDE
MPX	Instantaneous Log, Cumulated Log, Peak KHz over time, Peak dB over time etc.
AudioM	channel kHz over time, S Channel kHz over time, Left audio kHz over time, Right audio kHz over time
Sub-carriers	Pilot kHz over time, RDS, kHz over time, SCA, kHz over time
Modulation	MPX (kHz), M (kHz), Pilot (kHz), S (kHz), RDS (kHz) SCA (kHz), Decoded AF levels (DBr) (L+R, L-R, L, R)
Spectrum	RF Spectrum (dBm/kHz), MPX Spectrum (dBu/kHz), Audio Spectrum (dBu/kHz)
Oscilloscope	MPX (V/ms), Audio (L and R channels)
THD	Left Audio / Right Audio (dBu/kHz) Harmonics (dB)
Filters	MPX, Observed against reference comparing L+R, L-R, Left, Right, Display of spot frequencies (RF, Pilot, RDS)
RDS	Comprehensive RDS information including AF lists, EON AF, Radio-paging, TMC, hexadecimal and ASCII, PI, PS, TP, TA, PTY etc. and error ratios etc

Table: The Audemat Navigator Modulation Analyzer software allows the user to examine in detail a wide range of signal parameters.

— attached to the unit so that it is hard to lose — is provided for use with the screen.

On power-up, the Navigator boots up and then presents the user with a menu screen through which to access various internal parameters.

Using the front-panel Ethernet port, it is easy to connect a laptop computer and then access and change parameters such

In Spectrum Analyzer mode, provided the user has selected the correct frequency, the Navigator will display spectral occupancy, both real-time and maximum (peak deviation over time).

Switching to Modulation Monitoring allows the Navigator to show MPX modulation, RDS and pilot injection levels, left, right, L+R and L-R audio levels. In RDS

mode, the unit summarizes RDS information including PI code, PS code, PTY code, TP and TA flags, as well as instantaneous and global error totals.

Future analysis

As well as such real-time testing, the Navigator is configurable to control third-party equipment such as signal generators for automated testing.

In addition, after running required tests, it is possible to set up the unit to automatically generate a report for future analysis, remotely retrievable via IP.

Contained within the Navigator is a Java application, the Navigator Modulation Analyzer, downloadable via a standard Internet browser.

Once downloaded, this application can provide considerably more information about the transmissions being analyzed. The user can view information in real-time, taken over a specific period and stored in word processor files as evidence of completed testing and for future analysis and reference.

The Navigator software provides a wide range of functions, allowing the user to examine in detail a wide range of signal parameters relating to items such as MPX, audio, subcarriers, modulation, spectrum, THD and RDS.

The user can access each item via its own software "tab" or by simply pressing the relevant function key.

In many instances, for example MPX, audio subcarrier, spectrum, oscilloscope and THD, it is possible to select a particular item of information for display in a large

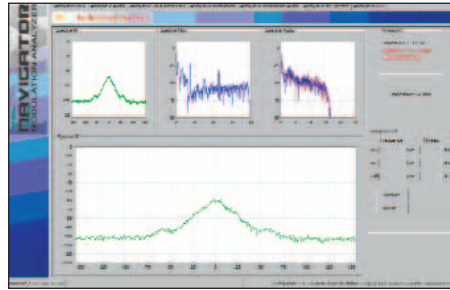
er window at the bottom of the computer screen.

The user can then magnify or "zoom in" on this information so as to examine it visually in more detail.

When running a transmitter test, it is possible to generate a report, that is then stored on the test



Audemat Navigator Hardware



A Navigator Screenshot

computer hard drive in the desired word processor format.

Four separate measurement reports are retrievable, covering MPX power analysis, RDS measurement analysis, audio analysis and RF spectrum analysis, each of them several pages long.

The information, including "screen grab" pictures of the test results obtained, is automatically formatted as a report available for distribution to interested parties, such as manufacturers, regulators and operators.

It is difficult to fully assess such a complex item of test equipment within a short article. However, from the tests carried

out, it is quite clear that the Audemat Navigator together with its associated Modulation Analyzer software provide comprehensive facilities for testing the various parameters of FM broadcast transmissions.

The fact that the unit is lightweight and portable, making it suitable for field testing, is a useful bonus.

It is perhaps, however, the provision of comprehensive printed reports at the touch of a button that makes the Navigator such a productive piece of test equipment.

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