

The new Test and Measurement standard for FM...



The NAVIGATOR Modulation Analyzer analyzes an FM signal from audio source to antenna! RF, MPX and audio signals are digitized as soon as they enter the equipment; the only processing done in the equipment is to create the analysis. From the RF input, this acquisition is done using an accurate high speed converter, directly from the FM transmitter or generator, without mixing.

Digitalizing right from the input gives the equipment measurement reproducibility over time, as well as from one device to another: the same signal applied to two devices will give the same result. The accuracy of the digital filters used in this equipment, enables the FM multiplex signal components to be accurately and reproducibly isolated from one another, incurring no time drift.

The calculation power which this equipment puts at the user's disposal, enables all the measurements to be refreshed simultaneously and synchronously, thereby allowing for coherent readings of all the Multiplex FM signal components, while viewing the 4 available spectra and maintaining a review of the decoded RDS.

Navigator Modulation Analyzer FM functions



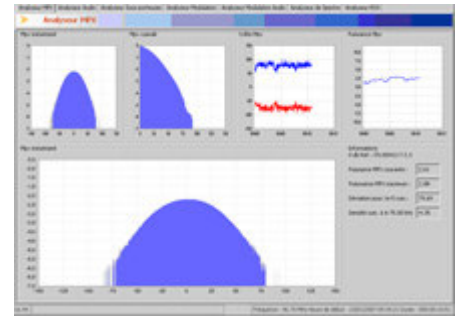
ACCURACY

The Navigator-Modulation analyzer uses 100% digital technology. All measurements are performed algorithms of demodulation decoding, filtering, and weighting. Computations are independent of the material.

Except for the D/A and A/D converters which are some of the best on the market, the precision of the measurements is dependant only on the precision of the calculations.

For instance, it is possible to compute the excursion of a modulated signal with a precision better than 0.5% (typically 0.2%).

This product can be used as a reference for the quality control of a program using the digital AES-EBU output just because between the RF input and the digital output, the signal is always digital.



MPX Analyzer

APPLICATION SOFTWARE ERGONOMICS

- Some measurements are done on the front panel with a touch screen (for field measurements), or via a PC software (for lab measurements), which can be adapted to a variety of uses.
- Clear, accurate and integrated view of the required parameters for controlling and adjusting the FM transmission chain.



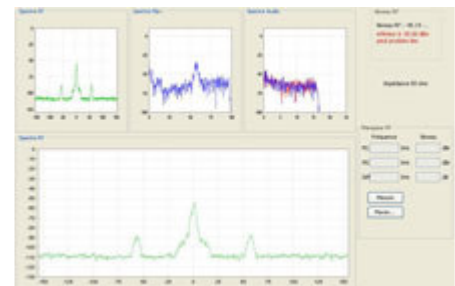
Modulation analyzer

INPUTS / OUTPUTS

Through a variety of interfaces, Modulation Analyzer can be used at any point of the transmission chain.

Inputs:

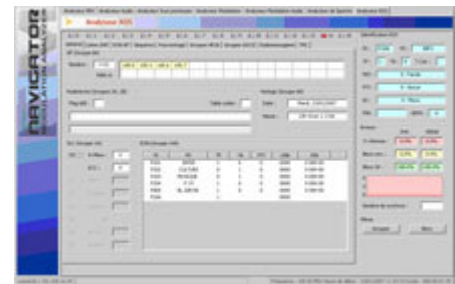
- Stereo analogic and stereo digital (AES-EBU) to analyze studio output, listen to AES-EBU input (with headphone).
- Composite input to check levels at audio processor output, stereo encoder, RDS encoders, and also to check RDS data.
- RF input to check RF power and spectrum, and also every level of the composite signal.



Spectrum analyzer

Outputs:

- Digital (AES-EBU) and analogic L/R output to check the modulated audio signal.
- 2 configurable analogic composite outputs to make specific control, compare performances, linearity.
- A programmable headphone output to listen to audio during measurements.



RDS analyzer

FUNCTIONS

On production line:

You can qualify your transmitter entirely. Navigator Modulation Analyzer is a complete tool to calibrate, adjust RF

Chemin de la Bergerie 27, boîte postale 35, CH-1806 St-Légier

Tel: +41 21 944 63 94 – Fax: +41 21 944 66 03, E-mail: renaud.delapraz@span.ch

or stereo ports or make a complete check up.

On transmission site:

As measurements are available in real time, you can visualize RF spectral representation but also MPX and Left & Right spectrums. The user can control excursion and every level injections through bargraphs. As the equipment is multi-client, your technician can use the equipment while your expert checks remotely (depending on your network) every available measurement with the same configuration. You will be able to maintain and troubleshoot your equipment faster.

OTHER FUNCTIONS

Communication IP:

The standard application software can be used from a distant PC and send command to the equipment via network. A production or maintenance center can centralize the management of all its Navigator Modulation Analyzers from one or several management center.

Automatic reports:

The application software can generate automatic measurement reports. The user can modify the presentation of these reports, the software offers a standard model with most of the results and also some graphical representation essential for a complete FM broadcast measurement session. All panels are caught and saved on your local hard drive and a txt file including all numeric values is created. The report shows additional information like serial number, revision number, data of calibration.

AVAILABLE MEASUREMENTS

- RF spectrum analyzer 87.5-108MHz
- Multiplex/composite Spectrum analyzer 0-100 kHz
- Audio spectrum analyzer 0-20 kHz (Left and Right)
- Modulation analyzer of the composite signal - before stereo decoding- : MPX, Mono, Stereo, pilot 19kHz
- Modulation analyzer of the decoded audio signal : Left, Right, Left+Right, Left-Right
- Level of the subcarriers between 55kHz and 95kHz
- A complete RDS analyzer taking account of all the groups and sequences
- An oscilloscope allowing a display of the demodulated signal (Lab version)
- A signal generator allowing internal calibration and also useful for "Zero Bessel" method (75 khz deviation calibration) measurements
- Distortion meter

Comparison table

Functions	STANDARD Version	LABORATORY Tools
RF input signal measurement	X	X
RF spectrum analyzer	X	X
RF frequency meter		X
FM deviation measurement	MPX, M, S, Pilot, RDS, AUX	MPX, M, S, Pilot, RDS, AUX
MPX spectrum analyzer	X	X
MPX power measurement	X	X
MPX peaks recorder	X	X
Stereo decoder	X	X

AF spectrum analyzer	X	X
L & R levels measurement	X	X
L+R & L-R level measurement	X	X
L & R AF peak recorder	X	X
AF peak \pm peak/2 detector	X	X
AF RMS detector	X	X
AF distortion meter		X
AF frequency meter		X
Pilot frequency meter		X
Test signal generator (pure sine wave)		X
RDS demodulator	X	X
RDS analyzer	X	X
RDS frequency meter		X
Oscilloscope		X (0 - 200 kHz)
Automatic measurements reports generation	X	X
Remote access ('automation')		X
MPX analog input	X	X
L & R analog inputs	X	X
AES digital input	X	X
MPX analog output	X	X
L & R analog outputs	X	X
AES digital outputs	X	X
AUX output	X	X
Headset AF control output	X	X
Ethernet network port	X	X

TECHNICAL SPECIFICATIONS

[Click here to download detailed technical specification](#)

- MEASUREMENT SPECIFICATIONS USING THE RF INPUT

- RF

- Demodulated signals

- MPX
 - Pilot
 - RDS
 - DARC
 - Power measurement for the MPX channel

- Outputs

- Composite MPX /AUX output
 - AES output

- L and R analog output
- Headphone outputs

- Multiplex decoder / AF stereo signals specifications
- Distortion tool
- L&R channel noise measure
- De-emphasis filters

- INTERNAL GENERATOR SPECIFICATIONS

Communication

Communication ports

- USB port
- IP port

Inputs / Outputs

- 1 analog RF input
- 1 analog MPX input
- 1 analog audio inputs
- 1 stereo AES audio inputs
- 2 analog MPX output
- 2 analog audio outputs
- 1 stereo AES audio outputs
- 1 headphone output