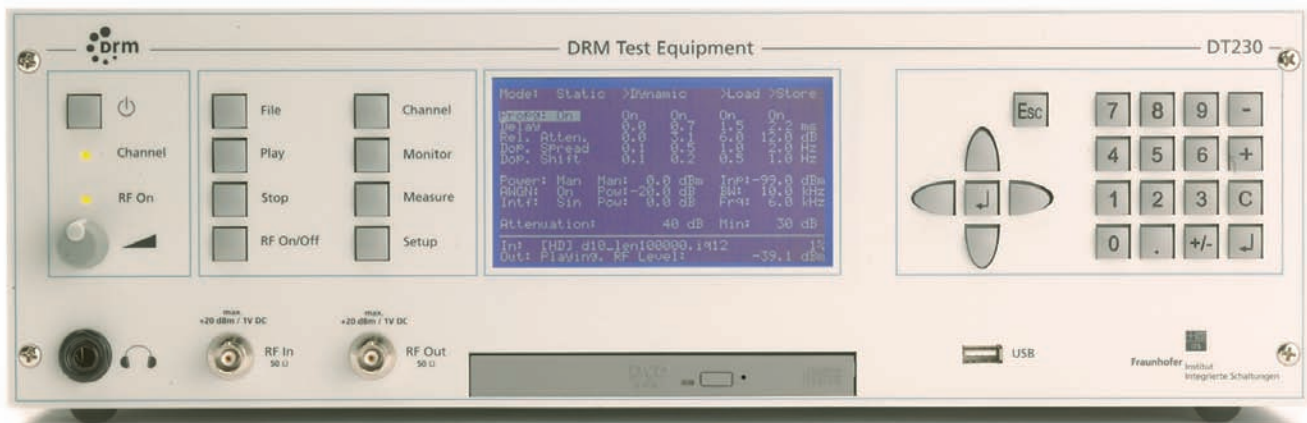


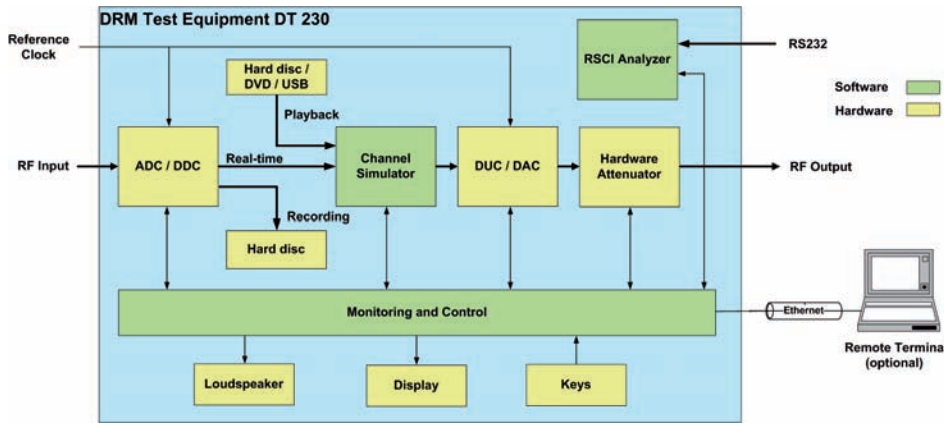


DRM Test Equipment DT 230

- Playback of DRM Signals
- Recording of DRM Signals
- Channel Simulation
- Receiver Analysis



DRM Test Equipment DT 230



Architecture of DRM Test Equipment DT 230

Professional Test Equipment for the DRM System

- Stand-alone unit
- Easy to use due to comfortable LCD menus
- Software update via built-in DVD drive
- Full remote control by remote PC via Ethernet
- 10 MHz reference input
- Available with different options
- Upgrade of options possible
- Availability: three months after receipt of order

Applications

- DRM signal playback for
 - Demonstration purposes
 - Transmitter tests
 - Receiver tests
- DRM signal recorder for
 - Generation of “real-world” patterns
 - Recording of signals for further analysis
- DRM signal playback and channel simulator for
 - Development of DRM front-ends

- Development of DRM baseband decoders
- DRM signal playback, channel simulator and RSCI (Receiver Status and Control) analyzer for
 - Performance tests of DRM receivers

Concept

DRM Test Equipment DT 230 is a professional piece of test equipment for the DRM system. It can play back complex baseband DRM signals (signal playback) and record DRM RF bandpass signals (signal recording) by using a direct sampling A/D and D/A solution for the frequency range from 100 kHz up to 27.4 MHz.

An optional channel simulator module models all relevant properties of the short wave ionospheric propagation channel according to the stationary Watterson model approach (ITU-R F. 1487). Simulations may be used for the evaluation of the DRM receiver’s performance namely its front-end and baseband decoding under controlled conditions. A dynamic profile option makes it possible to change all simulator para-

eters dynamically and allows the introduction of configurable interferers. A further option (O3) features an automatic evaluation of receiver performance. A Perl-based framework set-up for the automatic generation of test reports is provided.

Mechanical Specifications

- Size:
 - Width 43.2 cm
 - Height 13.3 cm, 14.5 cm with pedestals
 - Depth 40.6 cm, 46 cm with connectors
- Weight 10 kg
- 19” rack mounting possible with mounting rails supplied

Transportation

- Transport case for DT-series available

For more information please ask for our leaflet

Environmental Specifications

Operating Range

- Temperature Range: 10–30° C
- Humidity: 20–80 % non-condensing

Power supply

- Voltage range: 110–230 V, 50 – 60 Hz AC
- Input power consumption 230 V, max. 3 A 110 V, max. 6 A
- Average power consumption 150 W, Power Factor 0.9

Interfaces

Internal Properties

- Frequency stability ± 20 ppm using internal oscillator
- Synchronization of Test Equipment to external 10 MHz reference clock possible

RF Input

- BNC connector, impedance 50 Ω
- Center frequency range 100 kHz up to 27.4 MHz
- Input level full scale at 0 dBm sinus
- Level accuracy : ± 0.3 dB for input signals -40 dBm up to 0 dBm
- Analog bandwidth within ± 0.1 dB ripple: 40 kHz

RF Output

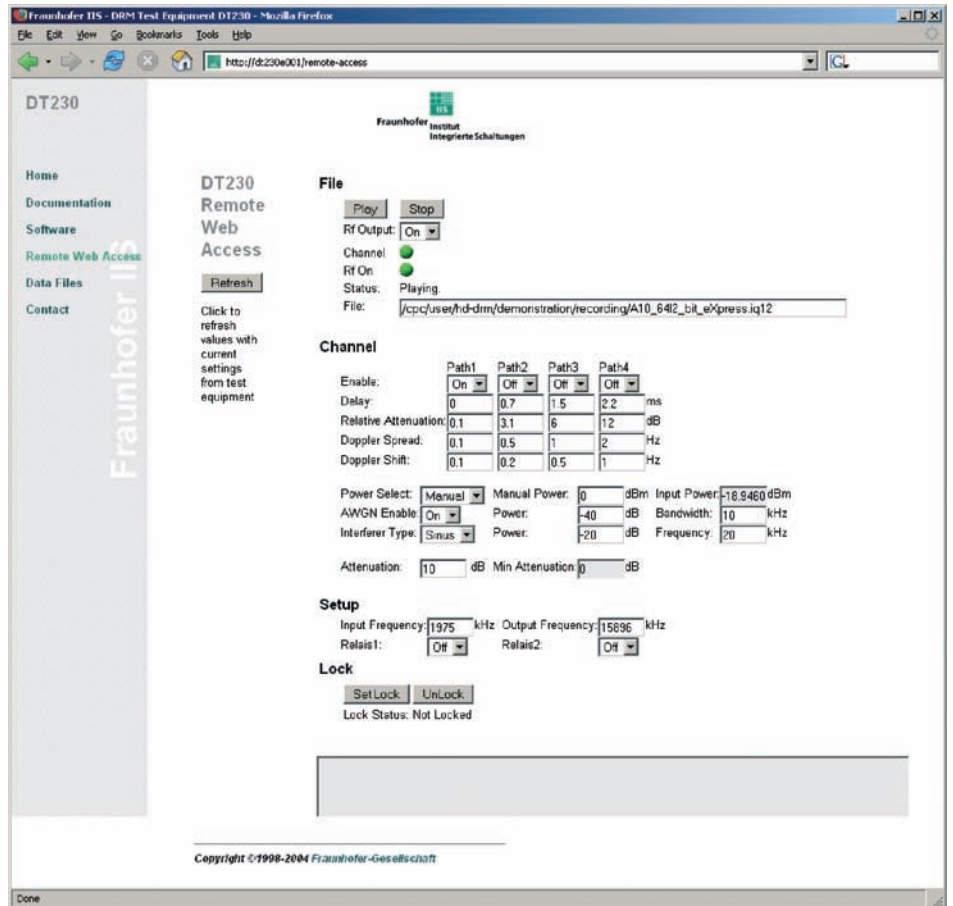
- BNC connector, impedance 50 Ω
- Center frequency range 100 kHz up to 27.4 MHz
- Output level 0 dBm for full scale sinus signals
- Built-in hardware attenuator 0 dB to 120 dB
- Level accuracy ± 0.5 dB
- 40 kHz analog bandwidth with ± 0.1 dB ripple
- Spurious free dynamic range better than 60 dB at 0 dBm sine output
- First harmonic below 45 dBc at 0 dBm sine output
- Fulfills DRM spectrum mask using filtered DRM files

10 MHz Reference Input

- BNC connector, impedance 50 Ω
- PLL locks within ± 10 ppm
- Reference input level 0 dBm to 10 dBm

Relays

- 3pin standard DIN jacks, work as single pole double-throw switch
- Relays can switch 24V AC with 1A



Web interface of DRM Test Equipment DT 230

Control Interfaces

- Ethernet 100 Base T-port
- Two 9 Pin D-SUB Male interfaces (RS232)

Additional Interfaces

- Power plug (110–230 V AC)
- Headphones output with volume control
- Built-in loudspeaker with volume control
- Line output
- Two USB 2.0 connectors

Features

The following features are available as basic model (Basic Model B1):

Signal Playback

- Including 4 GB pre-generated DRM files (about 400) on internal hard disk
- Playback of signals from
 - CD/DVD
 - USB stick
 - Internal hard disk

Signal Recording

- Recording of 48 kHz complex signals with analog input bandwidth 40 kHz

The following features are optional:

Channel Simulator (Option O1)

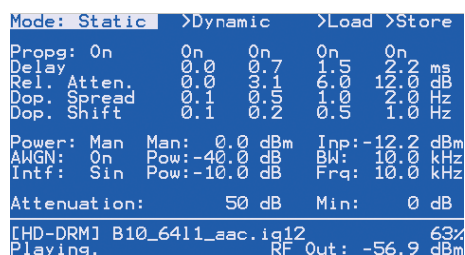
- According to Watterson channel model as defined in ITU-R F.1487
- Bandwidth min. 40 kHz
- 4 Paths, each path features
 - Relative attenuation up to 20 dB
 - Multipath up to 100 ms
 - Doppler shift up to ± 500 Hz
 - Doppler spread up to 20 Hz
- Adjacent or on-channel DRM or AM interferer within bandwidth of channel simulator min. 40 kHz
- AWGN noise generator

Channel Simulator Dynamic Profile (Option O2, requires Option O1)

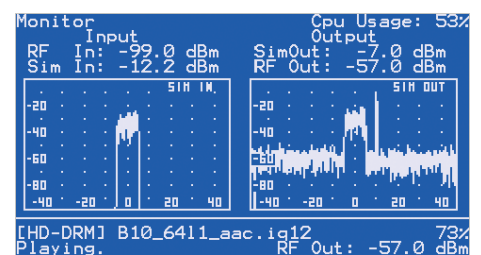
- All parameters of the Channel Simulator can be changed dynamically by user-defined profiles
- Update of all values synchronously every 100 ms, linear interpolation between sampling points
- Freely configurable impulse interferer simulation

Receiver Performance Measurement (Option O3)

- BER analyzer based on evaluation of RS232 RSCI (Receiver Status and Control Interface) input, ETSI TS 102 349 V1.2.1
- Remote control by Ethernet connection to external PC
- Controlled by Perl-based scripts
- Script-based testing with full control over all settings of B1, O1 and O2
- Automatic test report generation using Latex
- Generation of plots using GNU plot



User interface for setting channel simulator parameters



User interface for monitoring of input and channel-simulated output signals

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Customer Service

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For further information visit our web page:
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