Model RF-SE19

Application
- Transmitter monitoring
- Modulation quality and parameter measurements
- Mobile measurements
- RSCI logging and analysis
- High accuracy field strength measurement
- Content verification
- Integration into RFmonitor network

Mechanical
- All aluminum chassis
- Industrial 19" 1RU, rack mountable
- 430 (463) x 220 x 44mm
- Weight: 2kg
- Operating temperature: 0 - 40°C
- Humidity: 20 - 80% non-condensing.
- RF in: BNC

Features
- Alarm system
- Integrated RSCI long-term logging and analysis
- User interface: LCD, remote web-interface, remote via RSCI

Model RF-SE12

Application
- Transmitter monitoring
- Modulation quality and parameter measurements
- Spectrum monitoring
- RSCI logging and analysis
- High accuracy field strength measurement
- Content verification
- Long term measurement logging and analysis
- Integration into RFmonitor network

Mechanical
- All aluminum chassis
- 435 x 220 x 390mm
- 12.1" TFT touch screen display,
- 1280x800 resolution
- Weight: 12kg
- Operating temperature: 0 - 40°C
- Humidity: 20 - 80% non-condensing.
- RF in: N

Features
- Built-in loudspeaker
- Alarm system
- Integrated RSCI long-term logging and analysis
- User interface: Touchscreen, remote web-interface, remote via RSCI

About us

RFmondial offers professional products and services for digital broadcasting. This covers stand alone products for transmitting, receiving, and monitoring of digital broadcasts as well as IP core implementations and services in the field of digital radio technology. As a DRM consortium member RFmondial possesses a wide record of experience and know-how in the field of digital audio broadcasting. DRM30 and DRM+ measurement campaigns as well as technologies like receiver diversity for digital receivers are part of its innovative portfolio.

The DRM standards family: DRM30 and DRM+

DRM, Digital Radio Mondiale, the international consortium founded in 1998, developed a digital transmission system for the AM-bands, i.e. for long-, medium- and short waves up to 30 MHz (DRM30) and launched this system worldwide. The extension of the DRM system family to upper frequency bands above 30MHz (DRM+) is a possible system to enhance and/or replace analog FM radio transmission. A close placement of a DRM+ signal to an FM signal is possible and can be flexibly configured depending on the existing use of spectrum. In this way, DRM+ may be introduced into the FM frequency bands and the analog distribution can be kept.
RF-SE is a professional digital radio monitoring and measurement receiver, which is available in different models depending on the desired application. The outstanding reception characteristics are based on a high-performance frontend with preselector filter banks and a digital direct-down conversion system approach. After the well-proven digital base-band decoder various modular blocks like RSCI capability, audio and multimedia decoder, alarm feature, web-interface, RFmonitor connector are available to suite the specific needs of the desired application.

**Basic Features**
- Demodulation: DRM, AM, SSB
- Highly reliable embedded platform
- Proven long term stability
- Available languages: English, Russian
- RSCI compatible to ETSI TS 102 349

**Application Decoder**
- Audio: AAC, XHE-AAC, all with SBR, HVXC, CELP, all with SBR (optional)
- Data: Service information, TextMessages, Journaline, Emergency Warning Functionality, Slideshow, Broadcast Website

**Measurements**
- RSCI measurements, e.g. bit error rate (BER), signal to noise ratio (SNR >45dB), modulation error ratio (MER >45dB), audio frame error rate, power spectral density (PSD), delay spread, Doppler spread, frequency offset, field strength
- Additional measurements, e.g. channel impulse response, channel estimation, QAM constellation, spectrum waterfall, carrier SNR, time sync

**Alarm System (optional)**
- Flexible alarm rules, e.g. spectrum mask violation, Audio drop-out / silence, low signal strength / SNR, MDI errors

**DRM Demodulation (depending on model)**
- DRM30: below 30MHz, including the SW, MW and LW bands
  - Robustness modes A, B, C, D
  - Spectrum occupancy
  - 4.5, 5, 9, 10, 18, 20kHz
  - MSC modes 16 QAM, 64 QAM, and hierarchical (HMMix, HMASym)
  - SDC modes 4 QAM and 16 QAM
  - Interleaver depth 0.4s and 2s
  - EEP and UEP with all protection ratios / code rates
- DRM+: above 30 MHz, incl. the VHF broadcast bands I, II (FM) and III
  - Robustness mode E
  - Spectrum occupancy 96kHz
  - MSC modes 4 and 16 QAM
  - SDC modes 4 QAM, code rates 0.5 & 0.25
  - Interleaver depth 0.6s
  - EEP and UEP with all protection ratios / code rates

**Configuration / remote control**
- Webinterface (via Ethernet)
- Model dependent: Touch TFT Display or LCD
- Receivers can be remotely scheduled, controlled and automatically tuned via RSCI

**System Features**
- Data transmission: connection to RFmonitor network, i.e. Ethernet, WLAN, GSM, analogue modem, or local storage. Encrypted data transfer possible. Failover mechanism if network is temporarily unavailable (optional)
- Mobile measurements: Possible with local data storage and GPS connection

**Interfaces**
- RF inputs 500Ohm
- Ethernet
- USB
- Line out / headphones
- External GPS (optional)
- Built-in loudspeaker (optional)
- Two relay outputs (optional)
- RS232 (optional)
- External loudspeaker out (optional)
- CD/DVD (optional)
- LCD panel (optional)

**Electrical**
- AC Input: 100 - 240V, 50/60Hz

**Specification DRM30 frontend**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input frequency range</td>
<td>100kHz to 30MHz</td>
</tr>
<tr>
<td>Fixed-tuned 11-band pre-selector filter bank</td>
<td></td>
</tr>
<tr>
<td>Input level</td>
<td>-100dBm to +20dBm</td>
</tr>
<tr>
<td>Oscillator accuracy</td>
<td>&lt; 0.01ppm, aging &lt;0.1ppm/year</td>
</tr>
<tr>
<td>Phase noise at ±20kHz</td>
<td>&lt; -125dBc/Hz</td>
</tr>
<tr>
<td>Phase noise at ±20kHz</td>
<td>&lt; -150dBc/Hz</td>
</tr>
<tr>
<td>Field strength accuracy</td>
<td>±1dB (if calibrated)</td>
</tr>
<tr>
<td>RF bandwidth</td>
<td>40kHz, ripples 0.2dB</td>
</tr>
<tr>
<td>Masking</td>
<td>±75kHz</td>
</tr>
<tr>
<td>In-channel IP3</td>
<td>+15dBm (noise figure 15dB)</td>
</tr>
<tr>
<td>Out of band IP3</td>
<td>+30dBm (noise figure 15dB)</td>
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</table>

**Specification DRM+ frontend**

<table>
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<th>Value</th>
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<tr>
<td>Input frequency range</td>
<td>47-230MHz</td>
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<tr>
<td>Fixed-tuned pre-selector filter bank and direct path</td>
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<tr>
<td>Input level</td>
<td>-105dBm to 20dBm</td>
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<tr>
<td>Input impedance</td>
<td>50Ohm</td>
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<tr>
<td>Internal IF frequencies</td>
<td>270MHz / 21.4MHz</td>
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<tr>
<td>Internal IF bandwidth</td>
<td>120kHz</td>
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<tr>
<td>Combination of crystal and SAW IF filter</td>
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