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Radio Monitoring & Analysis System MRMS 3000

Flyer

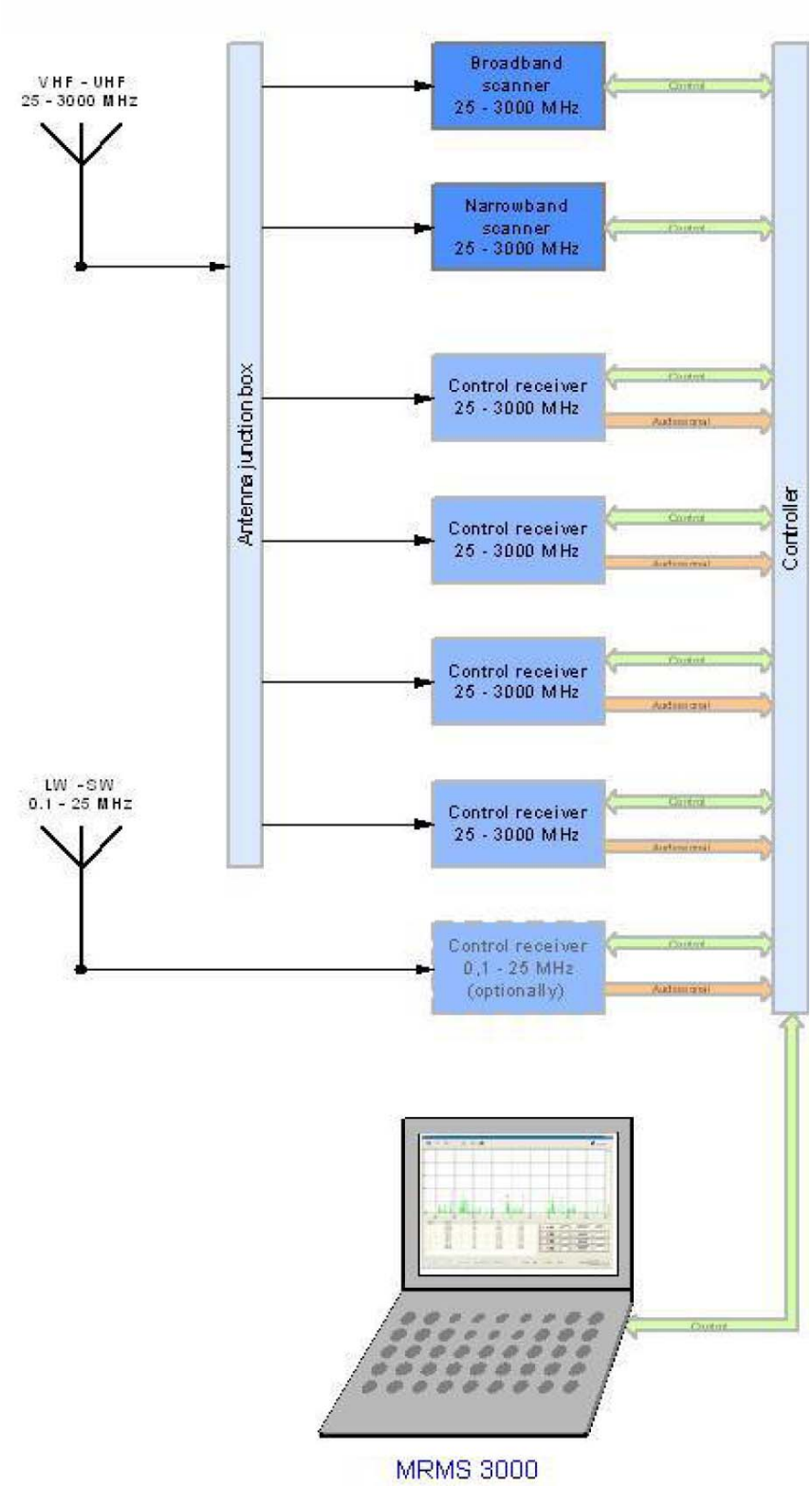
Radio Monitoring & Analysis System - MRMS 3000

The radio monitoring & analysis system MRMS 3000 has been developed for operational services. It has got a modular set-up and is used for swift radio monitoring within a frequency range from 25 MHz to 3 GHz.
Rapid FFT analysis allows of high-speed search run of ca. 20 MHz/s. Downstream monitoring receivers enable listening-in and recording of up to four signals simultaneously. Minimum response time between start of search run and activation of monitoring receiver is ca. one second.
By adding another search receiver, the frequency band can be extended to the 100 kHz to 25 MHZ range. Within this range, the search run speed is only 45 steps/s (i.e. step size of 12.5 kHz at 562.5 search run speed).

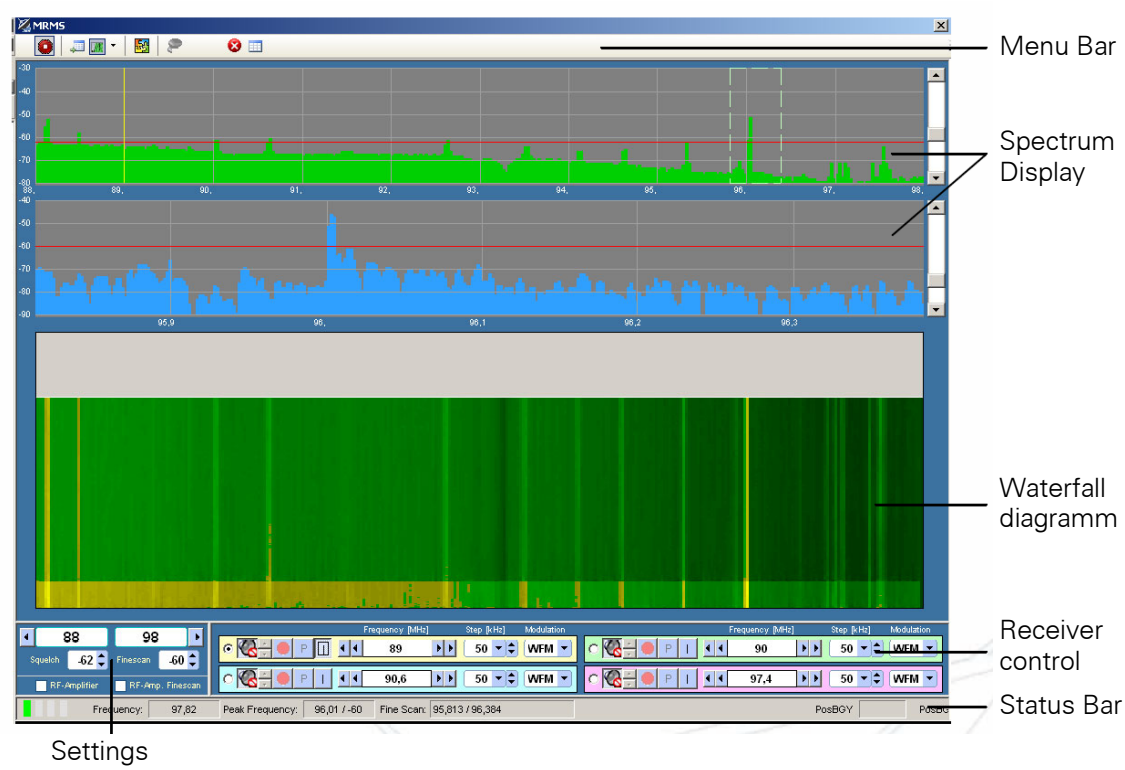
An easily operated software controls the system and assures the following functions:
- frequency band monitoring in search mode (search mode)
- analysis of radio signals
- demodulation and decoding of more than 100 standardised protocols

The system consists of:
- one broadband and narrow band receiver each
- up to 4 monitoring receivers
- a software-based demodulator, decoder and analyser
- a control processor
- aerial units (corresponding to respective frequency range)

System Overview



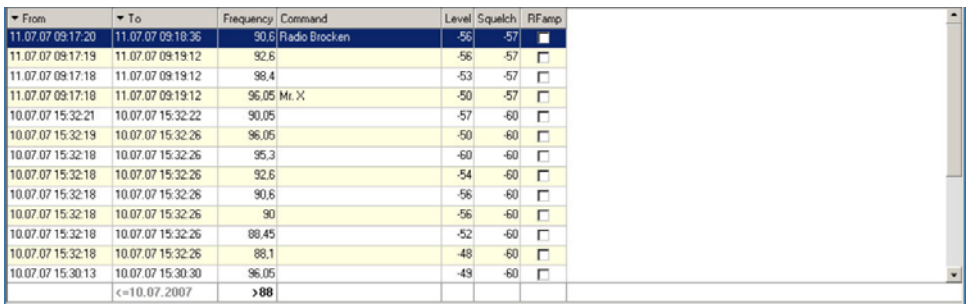
Programm Window



Operating modes

1. Search mode

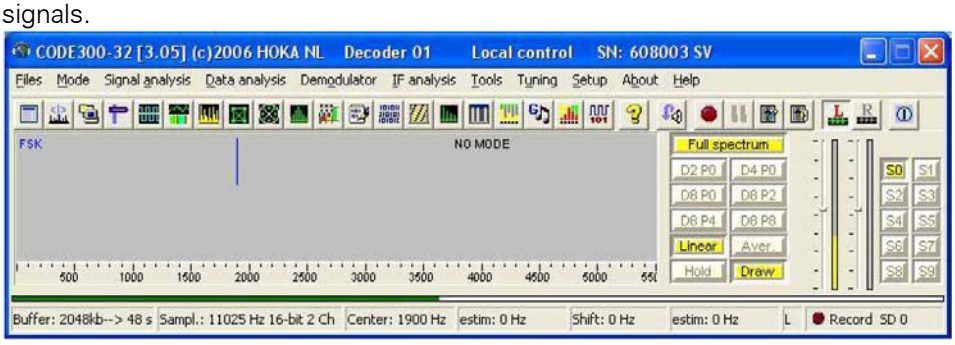
Frequency search run with two adjustable cut-off frequencies. Parameters are modifiable (step size, reception level). Found reception signals will be stored in a frequency table.



From	To	Frequency	Command	Level	Squelch	RFamp
11.07.07 09:17:20	11.07.07 09:18:36	90,6	Radio Brocken	-56	-57	
11.07.07 09:17:19	11.07.07 09:19:12	92,6		-56	-57	
11.07.07 09:17:18	11.07.07 09:19:12	98,4		-53	-57	
11.07.07 09:17:18	11.07.07 09:19:12	96,05	Mr. X	-50	-57	
10.07.07 15:32:21	10.07.07 15:32:22	90,05		-57	-60	
10.07.07 15:32:19	10.07.07 15:32:26	96,05		-50	-60	
10.07.07 15:32:18	10.07.07 15:32:26	95,3		-60	-60	
10.07.07 15:32:18	10.07.07 15:32:26	92,6		-54	-60	
10.07.07 15:32:18	10.07.07 15:32:26	90,6		-56	-60	
10.07.07 15:32:18	10.07.07 15:32:26	90		-56	-60	
10.07.07 15:32:18	10.07.07 15:32:26	88,45		-52	-60	
10.07.07 15:32:18	10.07.07 15:32:26	88,1		-48	-60	
10.07.07 15:30:13	10.07.07 15:30:30	96,05		-49	-60	
	<=10.07.2007	>88				

2. Analysis of radio signals

A special software decoder takes on the analysis and demodulation of radio signals.



3. *Demodulation and decoding*

Demodulation and decoding are carried out by means of a special software. Supported codecs are the following:

Codecs & Protocols

Common Modes		**MFSK Modes**			
ASCII	☑	COQUELET 13	☑	STANAG 4285	☑
AUTOSPEC	☑	COQUELET 8	☑	STANAG 4529	☑
BAUDOT	☑	COQUELET 8 Auto	☑		
BAUDOT SYNCHR	☑	COQUELET 8 Auto Start	☑	**Audio Recording**	
BF6 BAUDOT	☑	COQUELET 8 FEC	☑	Radio Quality	☑
CW	☑	CROWD 36	☑	Telephone Quality	☑
CW II	☑	FIRE	◈		
FAX AM (SAT)	☑	PICCOLO 12	☑	**Signal Analysis**	
FAX FM (HF)	☑	PICCOLO 6	☑	AFP Oscilloscope	☑
HELLSCREIBER	☑			Analogue Oscilloscope	☑
PACKET AX 25	☑	**CIS Modes**		Auto Classification	☑
PACTOR I	☑	405 391	◈	Eye Pattern	☑
PACTOR II	☑	81-29	◈	FFT Special with zoom	☑
PSK 31	☑	81-81	◈	FSK Oscilloscope	☑
SITOR A/B Auto	☑	BAUDOT F7B	☑	Phase Oscilloscope	☑
SSTV	☑	BEE 36-50	◈	Phase Plane	☑
		CIS 11 TORG 10/11	☑	Phase Spectrum	☑
Special Modes		CIS 12 FIRE	◈	Shift & Speed Measurement	☑
AUM 13	◈	CIS 14 TORG 14	☑	Straddle	☑
EPIRB	☑	R 37	◈	Waterfall	☑
GMDSS HF	☑			Waterfall and sonogram	☑
HF Datalink	☑	**Selcall**			
IRA ARQ	☑	ARINC ANNEX 10	☑	**Data Analysis**	
MEROD	☑	CODAN 8500 Selcall	☑	Bit Analysis	☑
NUM 13	◈	CCIR1	☑	Character Analysis Duplex	☑
SKYFAX	◈	CCIR2	☑	Character Analysis Simplex	☑
TWINPLEX	☑	CCITT	☑	Character Count	☑
VISEL	☑	CTCSS	☑	Correlation Bit	☑
GW DATAPLEX	☑	DCSS	☑	Correlation Mode	☑
		DTMF	☑	Correlation VHF	☑
ARQ Modes		EEA	☑	ITA 2 Analysis	☑
ARQ 2 TDM 242	☑	EIA	☑	Speed Bit Analysis	☑
ARQ 4 TDM 342	☑	EURO	☑		
ARQ 6 70	☑	NATEL	☑		
ARQ 6 90/98	☑	TT Classification	⇨	**IF Analysis**	
ARQ 625 SITOR A	☑	VEDW	☑	Spectrum	☑
ARQ DUPLEX	☑	ZVEI 1	☑		
ARQ E	☑	ZVEI 2	☑	**Tools**	
ARQ E3	☑	ZVEI ITA xtone	☑	Audio Inverter	☐
ARQ POL	☑			Data and Text editor	☑
ARQ S ARQ I00S	☑	**VHF / UHF Modes**		DCF 77	☑
ARO SWED	☑	ACARS SITA	☑	RS232 Output	+
HC ARQ	☑	ATIS GMDSS	☑	Generator	☑
RS ARQ	☑	CITYRUF	☑	LMS Filter	☐
RS ARQ MERLIN	☑	ERMES	☑	Modulation Classifier	☑
TOR DIRTY	☑	FLEX	☑	Alphabet Mapping	☑
		FMS BOS	☑	TEXT Scanning	☑
FEC Modes		GOLAY	☐	Editing all code tables	+
FEC 100	☑	MDT	☑	Two channel audio input by lan	+
FEC I00 dirty	☑	MPT 1327	☑	Bit stream out from MIL modes	+
FEC I00 Interleaved	☑	POCSAG	☑	RAW ASCII text save	☑
FEC I00 Raw	☑	INMARSAT-C	☑		
FEC A	☑	INMARSAT-C TDMA	☑		
FEC B SITOR B	☑			Analogue Classifications	⇨
FEC S	☑			Digital Classifications	⇨
HNG FEC	☑				
ROU FEC	☑	**MIL STD 188 Series**			
		MILSTD 188 110 Serial	☑		
		MILSTD 188 110 39 tone	☑		
		MILSTD 188 141 ALE	☑		
Available	☑	In preparation	☐	No information available	◈
Optional	+	Available but not tested	⇨		

Technical Data

Search receiver	2
Receiver type	threefold frequency conversion with rapid FFT analysis
Sensitivity	AM: 25- 225 MHz 0.6 µV (10 dB S/N) 225-1700 MHz 0.8 µV NFM: 25-1700 MHz 0.35 µV (12 dB SiNAD) 1700-2700 MHz 0.6 µV 2700-3000 MHz 1.5 µV WFM: 25-1700 MHz 2.0 µV (12 dB SiNAD)
Search speed	20 MHz/s

Monitoring receiver	max. 4
Receiver type	PLL-controlled with threefold frequency conversion
Sensitivity	AM: 30- 470 MHz 0.32 µV (10 dB S/N) NFM: 30- 470 MHz 0.23 µV (12 dB SiNAD) 470-1000 MHz 0.45 µV 1000-1300 MHz 2.5 µV 1300-2040 MHz 1.7 µV 2040-3000 MHz 15 µV WFM: 30- 470 MHz 1.5 µV (12 dB SiNAD)
Modulation modes	WFM, NFM, SFM, WAM, AM, NAM, USB, LSB, CW
Selectivity (@6dB):	
SSB/NAM	3 kHz
AM/SFM	6 kHz
WAM/NFM	12 kHz
WFM	150 kHz (@3dB)

Power supply	12 VDC 4.0 A AC/DC adaptor 115 ... 230 V AC/50 ... 60 Hz, 300 W (included in scope of delivery)
Dimensions	430 x 340 x 235 mm
Weight	approx. 15 kg

Scope of delivery:	MRMS 3000 Telescope aerial, user's manual, PSU, transport box
Optional:	Frequency band enhancement from 100 kHz, additional aerials

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