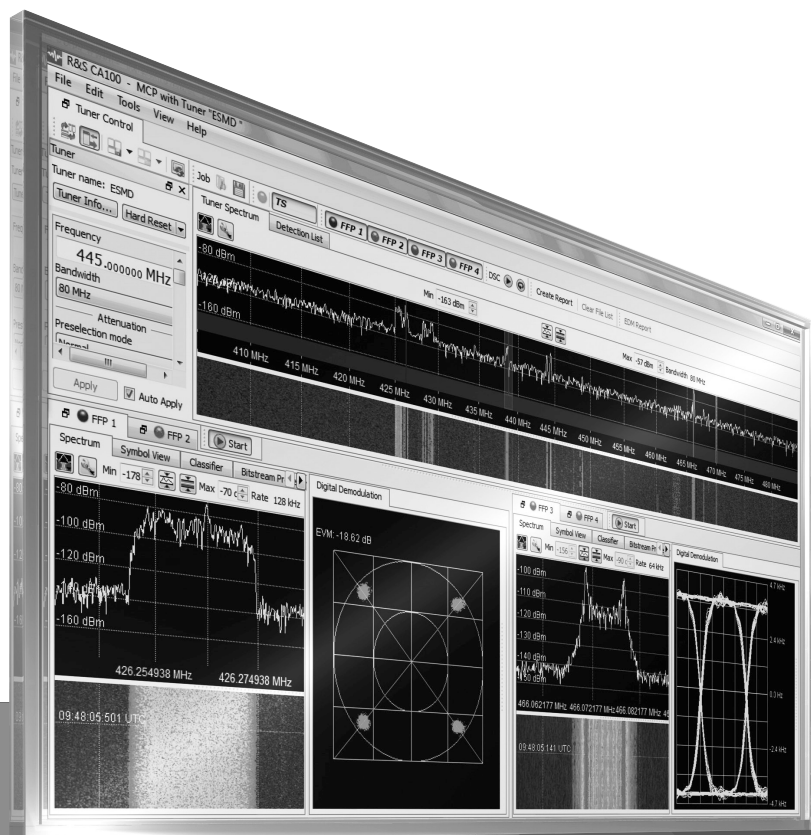


R&S®CA100

PC BASED SIGNAL ANALYSIS AND

SIGNAL PROCESSING SOFTWARE

Specifications



Specifications
Version 16.00

ROHDE & SCHWARZ

Make ideas real



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Definitions

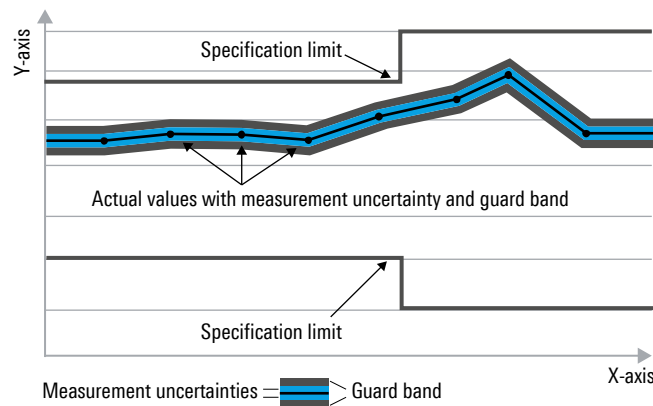
General

Product data applies under the following conditions:

- Three hours of storage at ambient temperature followed by 30 minutes of warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

Specifications with limits

Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as $<$, \leq , $>$, \geq , \pm or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



Non-traceable specifications with limits (n. trc.)

Represent product performance that is specified and tested as described under “Specifications with limits” above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Rohde & Schwarz laboratories.

Specifications without limits

Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value, e.g. dimensions or resolution of a setting parameter. Compliance is ensured by design.

Typical data (typ.)

Characterizes product performance by means of representative information for the given parameter. When marked with $<$, $>$ or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

Nominal values (nom.)

Characterize product performance by means of a representative value for the given parameter, e.g. nominal impedance. In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Measured values (meas.)

Characterize expected product performance by means of measurement results gained from individual samples.

Uncertainties

Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are designated with the format “parameter: value”.

Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

In line with the 3GPP standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bit per second (Gbps), million bit per second (Mbps), thousand bit per second (kbps), million symbols per second (MSPS) or thousand symbols per second (ksps), and sample rates are specified in million samples per second (Msample/s). Gbps, Mcps, Mbps, MSPS, kbps, ksps and Msample/s are not SI units.

Definitions for R&S®CA100 signal processing properties

Subcarrier frequency

Subcarrier frequency is the carrier frequency after the primary analog modulation is removed from the signal.

Sample rate

The sample rate is determined by the receiver. It depends on the bandwidth, the receiver and the receiver interface. Due to the fact that the sample rate is an external receiver parameter, some R&S®CA100 restrictions can only be described as a function of the sample rate. The table shows different bandwidths and the corresponding sample rates for Rohde & Schwarz receivers. The bandwidths highlighted in gray are the bandwidths recommended for achieving optimum operating results using R&S®CA100.

Bandwidth in Hz	Sample rate of I/Q data in Hz (R&S®ESMD/R&S®ESME)	Sample rate of I/Q data in Hz (R&S®EB500)	Recommended usage
10 000	32 000	32 000	
12 000	32 000	32 000	
15 000	32 000	32 000	HF range
25 000	64 000	64 000	
30 000	64 000	64 000	
50 000	128 000	64 000	
75 000	128 000	128 000	
100 000	320 000	320 000	
120 000	320 000	320 000	
150 000	320 000	320 000	
250 000	320 000	320 000	VHF/UHF range
300 000	640 000	640 000	
500 000	640 000	640 000	
800 000	1 280 000	1 280 000	
1 000 000	1 280 000	1 280 000	overview

The value ranges in this specifications document indicate realistic minimum and maximum values that have been successfully tested. Most demodulators are also able to demodulate outside the defined value range. The maximum values depend on the hardware used and the network load.

Specifications

General data

Digital data acquisition	
Digital IF (complex baseband I/Q)	R&S®AMMOS IF format, compatible with R&S®CA120 and R&S®CA210 R&S®PRx00 .riq format
Maximum bandwidth of processed IF data	20 MHz, depends on computer performance
Digital AF	WAV format, 16 bit
Processing of IF from receivers and direction finders	<ul style="list-style-type: none"> • R&S®DDF007 • R&S®DDF205 • R&S®DDF255 • R&S®DDF260 • R&S®DDF550 • R&S®DDF1555 • R&S®EB200 • R&S®EB500 • R&S®EB510 • R&S®EM050 • R&S®EM100 • R&S®EM200 • R&S®EM510 • R&S®EM550 • R&S®ESMB • R&S®ESMD • R&S®ESME • R&S®ESMW • R&S®PR100 • R&S®PR200

Analog data acquisition	
Analog IF	via sound card
Maximum bandwidth	15 kHz, depends on sound card performance

Waterfall	
Resolution of real-time waterfall	128 points to 32 kpoints
Speed of real-time waterfall	up to 1000 lines/s

Manual measurement capabilities	
FFT resolution for modulation analysis spectrum	128 points to 32 kpoints
Display and measurement functions	investigation of instantaneous frequency and envelope; spectrum of envelope; high order spectra (e.g. spectrum of second moment of baseband signals)

Data export	
Digital IF	R&S®AMMOS IF format (complex I/Q baseband)
Digital AF	WAV format, 16 bit
Symbol data	R&S®AMMOS symbol data format (compatible with R&S®CA250)
Decoded text	ASCII format
Reports	XML format (compatible with R&S®RAMON, R&S®ReportEdit)
EU legislation	EU: in line with Data Act – Regulation (EU) 2023/2854 (for details, see user documentation)

Customer-specific tuners, demodulators and decoders	
Development of customer-specific tuners	R&S®CA100 interface structure and steps necessary for programming and installing customer-specific tuners in R&S®CA100 are described in the R&S®CA100 manual. Note: R&S®CA100 supports only the fixed frequency mode for customer-specific tuners.
Development of customer-specific demodulators	R&S®CA100 interface structure and steps necessary for programming and installing customer-specific demodulators in R&S®CA100 are described in the R&S®CA100 manual.
Development of customer-specific decoders	with R&S®GX400ID; R&S®GX400ID supports the following functions: <ul style="list-style-type: none"> framework (C/C++ source code) for decoder development testing and debugging of decoders with recorded symbol data streams
Import of customer modules	via Windows *.dll files

Symbol view
Visualization of symbol data is available for processing HF and VHF/UHF modulation types, see page 6, R&S®CA100DM option.

Analog demodulators			
Demodulator	Pseudonym	Frequency band	Value range/comment
CW		HF	bandwidth > 150 Hz
AM DSB-TC	A3E	HF	bandwidth > 150 Hz
AM DSB-TC	A3E	VHF/UHF	bandwidth > 150 Hz; also supports demodulation of ATIS-AIR
AM DSB-TC-ISB	A3E	HF	bandwidth > 150 Hz
AM DSB-TC-ISB	A3E	VHF/UHF	bandwidth > 150 Hz
AM SSB-LSB	J3E (LSB)	HF	bandwidth > 150 Hz
AM SSB-LSB	J3E (LSB)	VHF/UHF	bandwidth > 150 Hz
AM SSB-USB	J3E (USB)	HF	bandwidth > 150 Hz
AM SSB-USB	J3E (USB)	VHF/UHF	bandwidth > 150 Hz
ANALOG_VIDEO_NTSC	analog TV system	VHF/UHF	bandwidth > 150 Hz
ANALOG_VIDEO_PAL	analog TV system	VHF/UHF	bandwidth > 150 Hz
FM	F3E	HF	bandwidth > 150 Hz
FM	F3E	VHF/UHF	bandwidth > 150 Hz

Recommended PC	
Operating system	Windows 11
CPU (minimum)	one core per channel with Intel Skylake architecture
Memory (minimum)	16 Gbyte
Graphic card	OpenGL 2.0
Hard disk capacity (minimum)	100 Gbyte (for installation of R&S®CA100)
Screen resolution (minimum)	1280 × 1024 pixel
Interface for digital IF input from receiver	fast Ethernet
Interface for analog IF input from receiver	sound card

Single-channel processing options

R&S®CA100DM option

Option for demodulation of digital signals

Demodulator	Pseudonym	Value range/comment
ASK2		baud rate: 6 Bd to 25 kBd; 6.66 < sample rate/ baud rate < 5333.33
FSK2		baud rate: 20 Bd to 25 kBd; sideband: LSB, USB; block cycle: 0 s to 3 s; block length: 0 s to 2 s; variant: auto, discriminator, matched filter; dependencies: 6.66 < sample rate/ baud rate < 1600; 0.5 ≤ shift/ baud rate ≤ 25; also supports demodulation of STANAG 4281 FSK signals
FSK4		baud rate: 20 Bd to 25 kBd; sideband: LSB, USB; block cycle: 0 s to 3 s; block length: 0 s to 2 s; variant: auto, discriminator, matched filter; dependencies: 6.66 < sample rate/ baud rate < 1600; 0.5 ≤ shift(i)/ baud rate ≤ 25, i = 0, 1, 2
MSK		baud rate: 20 Bd to 25 kBd; sideband: LSB, USB; block cycle: 0 s to 3 s; block length: 0 s to 2 s; variant: discriminator; dependency: 6.66 < sample rate/ baud rate < 1600
PSK2 A/B	BPSK = PSK2A, $\pi/2$ -BPSK = PSK2B	baud rate: 30 Bd to 4800 Bd; sideband: LSB, USB; FFE order: 1 to 48; dependency: 2.05 < sample rate/ baud rate < 1600
PSK2 Absolute		filter: lowpass, cosine, root cosine; 0.15 < rolloff factor ≤ 1; equalizer: off, SSE symbol spaced equalizer, FSE fractionally spaced equalizer; dependency: 4.0 < sample rate/ baud rate < 16
PSK4 A/B	QPSK = PSK4A, $\pi/4$ -QPSK = PSK4B	baud rate: 30 Bd to 4800 Bd; sideband: LSB, USB; FFE order: 1 to 48; dependency: 2.05 < sample rate/ baud rate < 1600
PSK4 Absolute		filter: lowpass, cosine, root cosine; 0.15 < rolloff factor ≤ 1; equalizer: off, SSE symbol spaced equalizer, FSE fractionally spaced equalizer; dependency: 4.0 < sample rate/ baud rate < 16
PSK8 A/B		baud rate: 30 Bd to 4800 Bd; sideband: LSB, USB; FFE order: 1 to 48; dependency: 2.05 < sample rate/ baud rate < 1600

Demodulator	Pseudonym	Value range/comment
PSK8 Absolute		filter: lowpass, cosine, root cosine; 0.15 < rolloff factor ≤ 1; equalizer: off, SSE symbol spaced equalizer, FSE fractionally spaced equalizer; dependency: 4.0 < sample rate/ baud rate < 16
OFDM	OFDM differential	modulation: PSK 2/4/8 (A/B); number of samples useful part (NFFT): 16 to 8192 (time duration $T_u = \text{NFFT}/\text{sample rate}$); number of samples guard interval (NGuard): 4 to 8192 (time duration $T_g = \text{NGuard}/\text{sample rate}$); max. number of used channels: 8192; symbol order: natural order, Gray coded; guard interval based symbol and frequency synchronization (FFT shift): 0 to 1.0; also supports demodulation of CIS-45, CIS-60, CIS-93, CIS-112, CIS-128 signals
QAM16		5 < sample rate/ baud rate < 1024 ¹
QAM64		5 < sample rate/ baud rate < 1024 ¹
QAM 256		5 < sample rate/ baud rate < 1024 ¹
OQPSK		sideband: LSB, USB; dependency: 2.05 < sample rate/ baud rate < 1600 ²
AM-FSK2		baud rate: 800 Bd to 2400 Bd; primary modulation bandwidth: 8333 Hz, 10000 Hz, 12500 Hz, 20000 Hz, 25000 Hz; sideband: LSB, USB; subcarrier frequency: 0 Hz to 3000 Hz; variant: auto, discriminator, matched filter; dependencies: 6.66 < sample rate/ baud rate < 1600; 0.5 ≤ shift/ baud rate ≤ 25
FM-FSK2		baud rate: 800 Bd to 2400 Bd; primary modulation bandwidth: 8333 Hz, 10000 Hz, 12500 Hz, 20000 Hz, 25000 Hz; sideband: LSB, USB; subcarrier frequency: 0 Hz to 3000 Hz; variant: auto, discriminator, matched filter; dependencies: 6.66 < sample rate/ baud rate < 1600; 0.5 ≤ shift/ baud rate ≤ 25
FM-PSK		baud rate: 800 Bd to 2400 Bd; primary modulation bandwidth: 8333 Hz, 10000 Hz, 12500 Hz, 20000 Hz, 25000 Hz; sideband: LSB, USB; subcarrier frequency: 0 Hz to 3000 Hz; variant: auto, discriminator, matched filter; dependencies: 6.66 < sample rate/ baud rate < 1600; 0.5 ≤ shift/ baud rate ≤ 25
GFSK		
GMSK		can be demodulated with the GFSK demodulator
MT_MSFK	multitone MSFK	modulation index: 1 to 4 (integer only); tone count: 5 to 128; active tone count: 1 to 8; dependency: active tone count ≤ 0.5 × tone count

¹ Demodulation without equalizer. Demodulation is coherent with 90° ambiguity. For further processing in a decoding module, soft decision symbols are to be used.

² Demodulation without equalizer. Demodulation result symbols have a 180° phase ambiguity as well as ambiguity regarding in-phase and quadrature component. This has to be taken into consideration for further processing in a decoding module.

Demodulator	Pseudonym	Value range/comment
Multitone		tone count: 6 to 64; tone duration: 0.2 ms to 500 ms; tone spacing: 2 Hz to 10 000 Hz; sideband: LSB, USB; dependencies: tone count × tone spacing < sample rate; sample rate × (tone duration/1000) < 2048; tone count/(tone duration/1000) < 38400 (can impact performance if not fulfilled); $1 \leq \text{tone spacing} \times (\text{tone duration}/1000) \leq 2$
Multichannel FSK2		baud rate: 4 Bd to 1000 Bd; channel count: 2 to 64; sideband: LSB, USB; shift: 2 Hz to 1000 Hz; variant: auto, discriminator, matched filter; dependencies: channel count × baud rate ≤ 200 kBd; sum of entries in channel spacing list < 200 kHz; sum of entries in channel spacing list < sample rate; sample rate/ baud rate < 8112.4; $0.5 \leq \text{shift}/\text{baud rate} \leq 4$; 10 Hz ≤ channel spacing < to 1000 Hz; visualization channel: 0 to (channel count – 1)
Multichannel PSK2 A/B		baud rate: 4 Bd to 240 Bd; channel count: 2 to 128; sideband: LSB, USB; dependencies: channel count × baud rate ≤ 4800 Bd; sum of entries in channel spacing list < 8200 kHz; sum of entries in channel spacing list < sample rate; sample rate/ baud rate < 5726.4; $1.2 \leq ((\text{mean of entries in channel spacing list})/\text{baud rate}) \leq 3.0$; also supports demodulation of CIS-12 signals
Multichannel PSK4 A/B		baud rate: 4 Bd to 240 Bd; channel count: 2 to 128; sideband: LSB, USB; dependencies: channel count × baud rate ≤ 4800 Bd; sum of entries in channel spacing list < 8200 kHz; sum of entries in channel spacing list < sample rate; sample rate/ baud rate < 5726.4; $1.2 \leq ((\text{mean of entries in channel spacing list})/\text{baud rate}) \leq 3.0$; also supports demodulation of CIS-12 signals
ANALOG_VIDEO		black and white

R&S®CA100CL option

Option for classification of analog/digital signals

Data output interface

The firmware module measures the following technical parameters (where applicable):

- Center frequency
- Bandwidth
- Signal power
- SNR
- Start time
- Analog demodulation type
- Digital demodulation type
- PSK variant A/B
- Modulation
- Primary modulation
- Modulation level
- Shift
- Symbol rate
- Channel spacing
- Number of channels
- Burst length
- Confidence level
- Transmission system name

Supported modulation types, decoders and transmission systems

Analog modulation	Pseudonym	Frequency band	Value range/comment
AM DSB-TC	A3E	HF	
		VHF/UHF	
AM DSB-SC		HF	
		VHF/UHF	
AM SSB-LSB	J3E (LSB)	HF	
AM SSB-USB	J3E (USB)	HF	
ANALOG_VIDEO_NTSC		VHF/UHF	
ANALOG_VIDEO_PAL		VHF/UHF	
FM	F3E	HF	
		VHF/UHF	

Digital modulation	Pseudonym	Frequency band	Value range/comment
CARRIER		HF	
		VHF/UHF	
ASK2		HF	6 Bd to 100 Bd
		VHF/UHF	1200 Bd to 25 kBd
FSK2		HF	20 Bd to 4800 Bd; 0.5 ≤ shift/ baud rate ≤ 25
		VHF/UHF	1200 Bd to 25 kBd; 0.5 ≤ shift/ baud rate ≤ 10
FSK4		HF	20 Bd to 3000 Bd; 0.5 ≤ shift(i)/ baud rate ≤ 4, i = 0, 1, 2
		VHF/UHF	1200 Bd to 25 kBd; 0.5 ≤ shift(i)/ baud rate ≤ 4, i = 0, 1, 2
MSK		HF	20 Bd to 4800 Bd
		VHF/UHF	1200 Bd to 25 kBd
GMSK		HF	20 Bd to 4800 Bd; BT 0.25 to 1; GMSK is reported as MSK
		VHF/UHF	400 Bd to 25 kBd; BT 0.25 to 1; GMSK is reported as MSK

Digital modulation	Pseudonym	Frequency band	Value range/comment
PSK2 A/B	BPSK = PSK2A, $\pi/2$ -BPSK = PSK2B	HF	30 Bd to 4800 Bd
		VHF/UHF	> 1200 Bd ³
PSK4 A/B	QPSK = PSK4A, $\pi/4$ -QPSK = PSK4B	HF	30 Bd to 4800 Bd
		VHF/UHF	> 1200 Bd ³
PSK8 A/B		HF	30 Bd to 4800 Bd
		VHF/UHF	> 1200 Bd ³
PSK16 A		HF	100 Bd to 4800 Bd
		VHF/UHF	> 1200 Bd ³
QAM8_V29		VHF/UHF	
QAM16		HF	100 Bd to 4800 Bd
		VHF/UHF	1200 Bd to 25 kBd
QAM16_V29		VHF/UHF	
QAM32		VHF/UHF	
QAM64		VHF/UHF	
QAM128		VHF/UHF	
QAM256		VHF/UHF	
OQPSK		HF	30 Bd to 4800 Bd
OQPSK	SQPSK	VHF/UHF	> 2400 Bd ³
OFDM		HF	bandwidth: 500 Hz to 10000 Hz; DRM: 20000 Hz; number of channels: 14 to 512; subcarrier spacing ($1/T_U$): 15 Hz to 250 Hz; user length T_U : 0.4 ms to 66.67 ms; symbol length: $T_S = T_U + T_G$; guard interval length: T_G ; $T_U/T_S = 0.5$ to 0.95 ; limitations: estimated number of channels (est_ch) deviates from actual number of channels (act_ch) as follows: $abs(est_ch - act_ch) < 1 + 0.01 \times act_ch$
		VHF/UHF	bandwidth: 0.5 MHz to 20 MHz; number of channels: 24 to 8192; subcarrier spacing ($1/T_U$): 0.5 kHz to 500 kHz; user length T_U : 2 μ s to 2000 μ s; symbol length: $T_S = T_U + T_G$; guard interval length: T_G ; $T_U/T_S = 0.5$ to 0.95 ; limitations: continuous OFDM transmissions only
AM-FSK2		VHF/UHF	800 Bd to 2400 Bd; 1400 Hz \leq subcarrier \leq 1800 Hz
FM-FSK2		VHF/UHF	800 Bd to 2400 Bd; 1300 Hz \leq subcarrier \leq 1900 Hz
Multitone		HF	6 tones to 32 tones; 5 Bd to 330 Bd; $1.0 \leq$ tone spacing/baud rate ≤ 3.3
		VHF/UHF	6 tones to 32 tones; 20 Bd to 330 Bd; $1.0 \leq$ tone spacing/baud rate ≤ 3.3
Multichannel FSK2		HF	2 channels to 64 channels; 30 Bd to 4800 Bd (sum); up to 240 Bd per channel; $1.5 \leq$ channel spacing/(baud rate + shift) ≤ 3.0

³ Successful classification of live signals with high baud rates is only possible if the receiver and the computer support these high bandwidths. This restriction does not apply to recorded scenarios. R&S®CA100 offers the possibility to classify live signals of these types with the R&S®CA100WSN option. For details, see the R&S®CA100WSN section in this specifications document.

Digital modulation	Pseudonym	Frequency band	Value range/comment
Multichannel PSK2 A/B		HF	2 channels to 64 channels; 40 Bd to 4800 Bd (sum); 20 Bd to 240 Bd per channel; $1.2 \leq \text{channel spacing}/(\text{baud rate} + \text{shift}) \leq 3.0$
Multichannel PSK4 A/B		HF	2 channels to 64 channels; 40 Bd to 4800 Bd (sum); 20 Bd to 240 Bd per channel; $1.2 \leq (\text{channel spacing}/\text{baud rate}) \leq 3.0$

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
ACARS-VHF/UHF	ACARS SITA, ACARS ARINC, ARINC 618, ACARS	VHF/UHF	
ACARS-HF	HF-Datalink (HFDL), ARINC 635	HF	
ADS-B		VHF/UHF	downlink formats: DF11 (all-call reply), DF17, DF18 (non transponder), mode-S extended squitter (1090 MHz)
AIS	UAIS	VHF/UHF	
AKULA	CIS-AKULA, CIS 500/1000	HF	
ALE400	ARQ-FAE	HF	
ALIS	RS-ARQ	HF	
ALIS-2	RS-ARQ II, MERLIN, RS-ARQ 240	HF	
APCO-25	Project 25, P25	VHF/UHF	phase 1: direct mode operation (DMO)
APCO_PHASE2_ OUTBOUND		VHF/UHF	
APCO_PHASE2_ INBOUND		VHF/UHF	
ARQ-E	ARQ 1000D	HF	
ARQ-E3		HF	
ARQ-M2 242	ARQ TDM 242	HF	
ARQ-M2 342	ARQ TDM 342	HF	
ARQ-M4 242	ARQM 2, ARQ 28	HF	
ARQ-M4 342	ARQM 4, ARQ 56, CCIR 342-2	HF	
ARQ-N	ARQ 1000	HF	
ARQ-S	SI-ARQ, ARQ 1000S, Siemens ARQ 1000	HF	
ARQ 6-70	CCIR 476 variant	HF	
ARQ 6-90	CCIR 476 variant	HF	
ARQ 6-98	CCIR 476 variant	HF	
ASCII	RTTY7, IRA-ARQ	HF	
ATIS		VHF/UHF	
AUTOSPEC	Spread-1	HF	
AZART	R-187	VUHF/UHF	20k hop mode
BAUDOT	RTTY5	HF	
BR6028	BARRIE, USA 7-channel modem	HF	
BULG-ASCII		HF	
C4FM		VHF/UHF	voice/data mode type 2, voice full rate
CCIR-1	ITU-R-1	VHF/UHF	
CCIR-2	ITU-R-2	VHF/UHF	
CCITT	ITU-TT	VHF/UHF	
CH4+4 modem		HF	

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
CIS-11	TORG 10/11	HF	
CIS-12	FIRE, MS5	HF	
CIS-14	AMOR, AMOR 96, CIS-96, PARITY 14, TORG 14	HF	
CIS-36	CROWD 36, RUSSIAN PICCOLO, URS MULTITONE, CIS 10-11-11 MFSK	HF	
CLOVER-2	CLOVER	HF	
CLOVER-2000		HF	
CLOVER-2500		HF	
CODAN 3012	CODAN 16 tone	HF	
CODAN 3212		HF	
CODAN 8580	CODAN 8580 SELCAL, CCIR/ITU-R M493-4 compatible	HF	
CODAN_CHIRP		HF	
COQUELET 8	Mk 2	HF	
CODAN_CHIRP		HF	
COQUELET 13	Mk 1	HF	
COQUELET 80	COQUELET 8 FEC	HF	
DGPS		HF	
DMR	ETSI TS 102 361, MOTOTRBO (Motorola)	VHF/UHF	
DPMR	ETSI TS 102 490	VHF/UHF	
DRM		HF	A mode, 10 kHz; B mode, 9 kHz and 10 kHz
DSTAR		VHF/UHF	
DTMF		VHF/UHF	
DUP-ARQ	ARQ DUPLEX, ARTRAC	HF	
DUP-ARQ 2		HF	
DUP-FEC 2	DUP-FEC	HF	
EEA	MPT 1316	VHF/UHF	
EIA		VHF/UHF	
EURO		VHF/UHF	
FEC-A	FEC 100, FEC 100A, FEC 101	HF	
FEC-S	FEC 1000S, SI-FEC	HF	
FLEX		VHF/UHF	
FMS-BOS		VHF/UHF	
GMDSS-HF	GMDSS/DSC-HF	HF	
GMDSS-VHF	GMDSS/DSC-VHF	VHF/UHF	
GSM		VHF/UHF	GSM, GSM downlink, GSM uplink
G-TOR		HF	
GW-FSK		HF	GW-FSK 200 Bd
GW-PSK		HF	GW-PSK 200 Bd
HC-ARQ	Hagelin Crypto ARQ	HF	
HELLSCHREIBER AM	FELD HELL	HF	
HELLSCHREIBER FM	FM HELL	HF	
HF-FAX FM	WEATHER-FAX	HF	
HNG-FEC		HF	
ICAO SELCAL	ARINC ANNEX 10 SELCAL	HF	
INMARSAT-C	INMARSAT-C EGC	VHF/UHF	
JP_8_TONE	Japanese 8 tone	HF	
JP_SLOT_MACHINE	Japanese slot machine	HF	

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
LINK 11	TADIL-A, MIL-STD-188-203-1A, LINK 11 HF, STANAG 5511	HF	
LINK_11_CLEW		VHF/UHF	
LORA		VHF/UHF	bandwidth: 125 kHz: spreading factor: 5, 7, 8, 9, 10, 11, 12; bandwidth: 250 kHz and 500 kHz: spreading factor: 7, 8, 9, 10, 11, 12
METEOSAT	WEFAX, METEOSAT-WEFAX	VHF/UHF	
MFSK_8		HF	
MFSK_16		HF	
MFSK_32		HF	
MIL-STD-188-110A	MIL-STD-188-110A serial	HF	MIL-STD-188-110A, STANAG 4415
MIL-STD-188-110A (Appendix A)	MIL-STD-188-110A parallel tone, MIL-STD-188-110 16 tones	HF	
MIL-STD-188-110A (Appendix B)	MIL-STD-188-110A parallel tone, MIL-STD-188-110 39 tones	HF	
MIL-STD-188-110B (Appendix C)		HF	
MIL-STD-188-141A	MIL-STD-188-141(ALE), MIL-STD-188-141A/ALE, ALE 2G	HF	
MIL-STD-188-141B (Appendix C)	ALE 3G	HF	burst waveform 0, burst waveform 1, burst waveform 2, burst waveform 3, burst waveform 4
MORSE		HF	
MPT-1327		VHF/UHF	
NAMOTKA	R-353NK	VHF/UHF	
NATEL		VHF/UHF	
NXDN	NEXEDGE (Kenwood) IDEN (ICOM)	VHF/UHF	
OLIVIA		HF	
ORLAN_VIDEO		VHF/UHF	
OTHR		HF	frequency modulated continuous wave (FMCW), frequency modulation on pulse (FMOP)
PACTOR I	PACTOR	HF	
PACTOR I FEC		HF	
PACTOR II		HF	PACTOR II ARQ
PACTOR III		HF	
PACTOR IV		HF	
PACKET RADIO 300		HF	
PACKET RADIO 600		HF	
PACKET RADIO 1200		VHF/UHF	
PACKET RADIO 2400		VHF/UHF	
PACKET RADIO 4800		VHF/UHF	
PACKET RADIO 9600		VHF/UHF	
PAL	Analog TV system	VHF/UHF	
PICCOLO MK6	PICCOLO ITA-2	HF	
PICCOLO MK12	PICCOLO ITA-5	HF	
POCSAG	Cityruf, Scall, TelMi, Quix, CCIR 584	VHF/UHF	
POL-ARQ	CCIR 476 variant	HF	RC4
PreCr_PSK4A_207		HF	precarrier PSK4A, 206.8 Bd
PreCr_PSK4A_414			precarrier PSK4A, 413.6 Bd

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
PreCr_PSK4A_827			precarrier PSK4A, 827.2 Bd
PreCr_PSK4A_1654			precarrier PSK4A, 1654.4 Bd
PSK-31		HF	BPSK31, QPSK31
PSK-31 FEC		HF	
PSK-63		HF	BPSK63, QPSK63
PSK-63F		HF	
PSK-125		HF	BPSK125, QPSK125
PSK-125F		HF	
PSK-220		HF	BPSK220, QPSK220
PSK-220F		HF	
PSK-250		HF	
R409	R415, R419	VHF/UHF	
ROBUST PACKET RADIO	RPR	HF	
RUM-FEC	ROU FEC	HF	
SITOR-A	SITOR-ARQ, ARQ 625, AMTOR-ARQ	HF	
SITOR-B	SITOR-FEC, FEC 625, FEC B, NAVTEX, AMTOR-FEC	HF	
SKYFAX	SKYFAX-MSM1250, SKYFAX-HSM	HF	SKFAX-MSM (reported as SKYFAX), SKYFAX-LSM (reported as MTONE or MIL-STD-188-141A), SKYFAX-HSM (reported as STANAG 4285)
SPREAD 11		HF	
SPREAD 21		HF	
SPREAD 51		HF	
STANAG 4285		HF	
STANAG 4415	MIL-STD-188-110A 75 bps	HF	
STANAG 4481 FSK		HF	
STANAG 4481 MCFSK	MIL-STD-188-342	HF	
STANAG 4481 PSK	STANAG 4285, 1200/2400/3600 bps	HF	
STANAG 4529		HF	
STANAG 4538		HF	reported as MIL-STD-188-141B (Appendix C)
SWED-ARQ	ARQ-SWE	HF	
TETRA		VHF/UHF	supported mode: $\pi/4$ -DQPSK uplink and downlink signals
TETRAPOL		VHF/UHF	
TWINPLEX ARQ (F7B)	TWINPLEX Sitor	HF	
TWINPLEX Baudot		HF	
VDEW		VHF/UHF	
VDL 2		VHF/UHF	
XPA	MFSK-20	HF	
ZVEI-1		VHF/UHF	
ZVEI-2		VHF/UHF	
ZVEI-VDEW		VHF/UHF	

The following modulation types can also be classified using the R&S®CA100CL option. Successful classification of live signals with high baud rates is only possible if the receiver and the computer support these high bandwidths. This restriction does not apply to recorded scenarios. R&S®CA100 offers the possibility to classify live signals of these types with the R&S®CA100WSN option. For details, see the R&S®CA100WSN section in this specifications document.

Digital modulation with high bandwidths	Pseudonym	Frequency band	Supported modes/value range/comment
Bluetooth®		VHF/UHF	
CMMB	China Mobile Multimedia Broadcasting	VHF/UHF	2k mode, 8k mode
DAB		VHF/UHF	mode1
DECT		VHF/UHF	DECT BS (base station), DECT MS (mobile station)
DVB-T		VHF/UHF	DVB-T 8k mode
DVB-T2		VHF/UHF	bandwidth: 8 MHz; 16k and 32k modes, all guard intervals
IS-95/CDMA2000	TIA-EIA-95, cdmaOne, CDMA2000, IS-95	VHF/UHF	IS-95/CDMA2000
IS-2000	CDMA2000	VHF/UHF	
LTE	E-UTRA	VHF/UHF	FDD downlink, FDD uplink, bandwidths: 1.25/2.5/10/20 MHz, CP (short/long), E-UTRA/LTE DL, E-UTRA/LTE UL, TDD downlink
TD-SCDMA		VHF/UHF	
UMTS_WCDMA		VHF/UHF	only signals with oversampling rate of > 2
WLAN_802_11a/g/n	802.11a, 802.11g, 802.11n (20 MHz), WLAN, Wi-Fi	VHF/UHF	
WLAN_802_11b	802.11b, WLAN, Wi-Fi	VHF/UHF	
WLAN_802_11n	802.11n (40 MHz), WLAN, Wi-Fi	VHF/UHF	

R&S®CA100DEC option

Option for decoding package professional

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
ACARS-HF	HF-Datalink (HFDL), ARINC 635	HF	
ACARS-VUHF	ACARS SITA, ACARS ARINC, ARINC 618, ACARS	VHF/UHF	
ADS-B		VHF/UHF	downlink formats: DF11 (all-call reply), DF17, DF18 (non transponder), mode-S extended squitter (1090 MHz)
AIS	UAIS	VHF/UHF	
AKULA	CIS-AKULA, CIS 500/1000	HF	output of raw message bits and translated codewords
ALE400	ARQ-FAE	HF	
ALIS	RS-ARQ	HF	
ALIS-2	RS-ARQ II, MERLIN, RS-ARQ 240	HF	
ARQ-E	ARQ 1000D	HF	
ARQ-E3		HF	
ARQ-M2 242	ARQ TDM 242	HF	

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
ARQ-M2 342	ARQ TDM 342	HF	
ARQ-M4 242	ARQM 2, ARQ 28	HF	
ARQ-M4 342	ARQM 4, ARQ 56, CCIR 342-2	HF	
ARQ-N	ARQ 1000	HF	
ARQ-S	SI-ARQ, ARQ 1000S, Siemens ARQ 1000	HF	
ARQ 6-70	CCIR 476 variant	HF	
ARQ 6-90	CCIR 476 variant	HF	
ARQ 6-98	CCIR 476 variant	HF	
ASCII	RTTY7, IRA-ARQ	HF	
ATIS		VHF/UHF	
AUM-13		HF	
AUTOSPEC	Spread-1	HF	
BAUDOT	RTTY5	HF	
BULG-ASCII		HF	
CCIR-1	ITU-R-1	VHF/UHF	
CCIR-2	ITU-R-1	VHF/UHF	
CCITT	ITU-TT	VHF/UHF	
CH4+4 modem		HF	
CIS-11	TORG 10/11	HF	
CIS-12	FIRE MS5	HF	output of raw hex output and identified LSFR sequences
CIS-14	AMOR, AMOR 96, CIS-96, PARITY 14, TORG 14	HF	
CIS-36	CROWD 36, RUSSIAN PICCOLO, URS MULTITONE, CIS 10-11-11 MFSK	HF	
CODAN 8580	CODAN 8580 SELCAL, CCIR/ITU-R M493-4 compatible	HF	
CONTESTIA		HF	
COQUELET 8	Mk 2	HF	
COQUELET 13	Mk 1	HF	
COQUELET 80	COQUELET 8 FEC	HF	
CTCSS	MPT1306	VHF/UHF	
DCSS	DCS Selcal MPT1381	VHF/UHF	
DGPS		HF	
DTMF		VHF/UHF	
DUP-ARQ	ARQ DUPLEX, ARTRAC	HF	
DUP-ARQ 2		HF	
DUP-FEC 2	DUP-FEC	HF	
dZVEI		VHF/UHF	
EEA	MPT 1316	VHF/UHF	
EIA		VHF/UHF	
EURO		VHF/UHF	
FEC-A	FEC 100, FEC 100A, FEC 101	HF	
FEC-S	FEC 1000S SI-FEC	HF	
FLEX		VHF/UHF	

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
F7W		HF	total signal bandwidth: bandwidth = $1.2 \times \text{baud rate} + \sum(\text{shift}(i))$, $i = 0, 1, 2$; bandwidth ≤ 16000 Hz; baud rate list/baud rate: 1 Bd to 4800 Bd; shift list/shift: 0.1 Hz to 20000 Hz
FMS-BOS		VHF/UHF	
GMDSS-HF	GMDSS/DSC-HF	HF	
GMDSS-VHF	GMDSS/DSC-VUHF	VHF/UHF	
G-TOR		HF	
GW-FSK		HF	supported mode: GW-FSK 200 Bd
GW-PSK		HF	supported mode: GW-PSK 200 Bd
HC-ARQ	Hagelin Crypto ARQ	HF	
HELLSCHREIBER AM	FELD HELL	HF	
HELLSCHREIBER FM	FM HELL	HF	
HF-FAX AM		HF	drum speed: 60 lines to 240 lines per minute; IOC: IOC_288, IOC_352, IOC_576
HF-FAX FM	WEATHER-FAX	HF	drum speed: 60 to 240 lines per minute; IOC: IOC_288, IOC_352, IOC_576; shift: 100 Hz to 2000 Hz
HNG-FEC		HF	
ICAO SELCAL	ARINC ANNEX 10 SELCAL	HF	
METEOSAT	WEFAX, METEOSAT-WEFAX	VHF/UHF	
MFSK_8		HF	
MFSK_16		HF	
MFSK_32		HF	
MODAT		HF	
MORSE		HF	words per minute: 4 to 120
MORSE-FSK		HF	
MPT-1327		VHF/UHF	control channel: 0 to 1024; mode: 12500 Hz, 25000 Hz
MT63		HF	
NATEL		VHF/UHF	
OLIVIA		HF	
PACTOR I	PACTOR	HF	
PACTOR I FEC		HF	
PACKET RADIO 300		HF	
PACKET RADIO 600		HF	
PACKET RADIO 1200		VHF/UHF	
PACKET RADIO 2400		VHF/UHF	
PACKET RADIO 4800		VHF/UHF	
PACKET RADIO 9600		VHF/UHF	
pCCIR		VHF/UHF	
pdZVEI		VHF/UHF	
PICCOLO MK6	PICCOLO ITA-2	HF	
PICCOLO MK12	PICCOLO ITA-5	HF	
POCSAG	Cityruf, Scall, TelMi, Quix, CCIR 584	VHF/UHF	speed unit: 512 Bd, 1200 Bd, 2400 Bd
POL-ARQ	CCIR 476 variant	HF	RC4, RC5, RC6
PRESSFAX		HF	drum speed: 60 to 240 lines per minute; IOC: IOC_288, IOC_352, IOC_576; shift: 100 Hz to 2000 Hz
PSK10		HF	
PSK-31		HF	BPSK31, QPSK31
PSK-31 FEC		HF	
PSK-63		HF	BPSK63, QPSK63
PSK-63F		HF	
PSK-125		HF	BPSK125, QPSK125

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
PSK-125F		HF	
PSK-220		HF	BPSK220, QPSK220
PSK-220F		HF	
PSK-250		HF	
PSKAM_10		HF	
PSKAM_31		HF	
PSKAM_50		HF	
pZVEI		VHF/UHF	
RUM-FEC	ROU FEC	HF	
SITOR-A	SITOR-ARQ, ARQ 625, AMTOR-ARQ	HF	
SITOR-B	SITOR-FEC, FEC 625, FEC B, NAVTEX, AMTOR-FEC	HF	
SKYFAX	SKYFAX-MSM1250, SKYFAX-HSM	HF	SKYFAX-MSM (realized by demodulator SKYFAX), SKYFAX-LSM (realized by demodulator and decoder MTONE and MIL-Std 188-141A), SKYFAX-HSM (realized by demodulator STANAG 4285)
SP-14		HF	
SPREAD 11		HF	
SPREAD 21		HF	
SPREAD 51		HF	
SSTV		HF	SSTV Auto, SSTV Acorn PD 180 YUV, SSTV Acorn PD 290 YUV, SSTV Martin 1&3, SSTV Martin 2&4, SSTV Pasokon TV3, SSTV Pasokon TV5, SSTV Pasokon TV7, SSTV Robot 8 BW, SSTV Robot 12 BW, SSTV Robot 24 BW, SSTV Robot 36 BW, SSTV Robot 43 BW, SSTV Robot 12 YUV, SSTV Robot 24 YUV, SSTV Robot 36 YUV, SSTV Robot 72 YUV, SSTV Scottie 1&3, SSTV Scottie 2&4, SSTV Scottie DX, SSTV Scottie DX2, SSTV Wraase SC-1 8&16 IBW, SSTV Wraase SC-1 16&32, SSTV Wraase SC-1 24 BW, SSTV Wraase SC-1 24&48I, SSTV Wraase SC-1 48&96, SSTV Wraase SC-2 30&60, SSTV Wraase SC-2 120, SSTV Wraase SC-2 180
SWED-ARQ	ARQ-SWE	HF	
THROB		HF	
THROBX		HF	
TWINPLEX ARQ (F7B)	TWINPLEX Sitor	HF	
TWINPLEX Baudot		HF	
VDEW		VHF/UHF	
XPA	MFSK-20	HF	
ZVEI-1		VHF/UHF	

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
ZVEI-2		VHF/UHF	
ZVEI-3		VHF/UHF	
ZVEI-VDEW		VHF/UHF	

R&S®CA100PIII option

Option for decoding of PACTOR II, PACTOR III und PACTOR IV

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
PACTOR II		HF	PACTOR II ARQ, PACTOR II FEC
PACTOR III		HF	
PACTOR IV		HF	

R&S®CA100CV option

Option for decoding CLOVER modems

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
CLOVER-2	CLOVER	HF	
CLOVER-2000		HF	
CLOVER-2500		HF	

R&S®CA100CO option

Option for decoding CODAN modems

Transmission system	Pseudonym	Frequency band	Supported modes/value range/comment
CODAN 3012	CODAN 16 tone	HF	CODAN 3012; frequency offset tolerance: 0 Hz to 75 Hz
CODAN 3212		HF	
CODAN_CHIRP		HF	

R&S®CA100CDT option

Option for the correlative detector

The firmware module is a very robust detector for FSK2 signals starting with an optional precarrier and a preamble consisting of an alternating 0/1 sequence. The modulation parameters of the target signals are user definable.

Parameter	Value range	Comment
Threshold	0.1 to 1	sensitivity of the detector
Baud rate	30 Hz to 600 Hz	baud rate of target signals
Shift	100 Hz to 1200 Hz	shift of target signals

The module delivers the following information for each detected signal: start time, center frequency, length of a possible precarrier in ms, number of preamble symbols, symbol rate of the payload, demodulated payload.

R&S®CA100WSN option

Option for wideband snapshot access

This option allows wideband snapshot access to receivers supporting this functionality. This option automatically and repeatedly triggers the start/stop/reading of an IF snapshot for bandwidths up to the real-time bandwidth of the receiver. The snapshots are forwarded to the classifier of an FFP (requires the R&S®CA100CL option) that allows the classification of signals with a bandwidth between 2 MHz and 20 MHz (linear modulation) or 4 MHz to 40 MHz (OFDM modulation).

Receiver type	Necessary receiver option	Maximum snapshot bandwidth	Comment
ESMD	ESMD-RR	80 MHz	WSN mode may not be activated simultaneously with a 10 Gigabit recording
ESME	ESME-RR	80 MHz	WSN mode may not be activated simultaneously with a 10 Gigabit recording
EM200	CS-IQ	40 MHz	

Multichannel processing options

R&S®CA100MCP option

Option for multichannel processing of input signals of the R&S®EB500, R&S®EB510, R&S®ESMD and R&S®ESME receivers

This option requires the receiver to be equipped with other related options. For more information, see the receivers' specifications.

Receiver	Supported channels
R&S®ESMD/R&S®ESME	4
R&S®EB500	3
R&S®EB510	3

R&S®CA100DSC option

Option for detection, search and classification of fixed frequency signals with a minimum burst duration of 500 ms

Parameter	Value range	Comment
Detection search bandwidth	HF	1 Hz to 20 kHz
	VHF/UHF	2 kHz to 200 kHz
	wideband VHF/UHF	20 kHz to 10 MHz
	auto	automatic setting of search bandwidth: HF in the frequency range up to 30 MHz; VHF/UHF in the frequency range above 30 MHz
Detection threshold	sensitive	detection of signals with a measured SNR below 6 dB; improved detection in crowded areas (areas with many signals); noise estimation close to actual noise floor
	robust	measured threshold for signal-to-noise ratio (SNR) is increased by approx. 2 dB to ensure that only strong signals with a higher probability of classification and sufficient demodulation and decoding quality are reported; prevents the detection of weak spurious spikes in the spectrum

R&S®CA100AP option

Automatic processing (demodulation, decoding, recording) of detected signals. The R&S®CA100AP option requires the R&S®CA100DSC option. The R&S®CA100AP option enhances R&S®CA100DSC functionality. It contains all the settings of the R&S®CA100DSC option. For programming the processing rules, Rohde & Schwarz offers the Script Editor tool (supplied with R&S®CA100).

R&S®CA100SDT option

This option requires an R&S®CA100DSC license. The spectral detector permits the collection of spectral shapes, the training of detector profiles and the re-recognition of signals based on their spectral shape.

Typical detection speed	> 1000 signals/s (typ.)
Built-in categories	CW, AM-DSB, FSK2, multichannel (including detecting the presence of multitone signals)

Signal analysis option

R&S®CA100IS option

Analysis of signal scenarios in line with ITU-R SM.1600

Measurement functions	
Analysis of signals	time/frequency segmentation for multisignal scenarios; differentiation between analog signals, digital (C)OFDM signals and digital non-(C)OFDM signals
Measurable parameters for analog signals	<ul style="list-style-type: none"> • bandwidth • center frequency • modulation type
Measurable parameters for digital signals	<ul style="list-style-type: none"> • bandwidth • center frequency • symbol rate • shift or deviation • modulation index • number and spacing of tones/channels • level • time response, frame lengths and cycle times • symbol valency
Measurable parameters for digital (C)OFDM signals	<ul style="list-style-type: none"> • bandwidth • center frequency • number of channels • OFDM symbol duration • length of guard interval
Recognition of known and standardized signals (e.g. GSM, DECT) through correlation with previously recorded signal samples	measurable parameters: <ul style="list-style-type: none"> • preamble • length of guard interval • training sequences and synchronization words

Analysis tools
Spectrogram with zoom function
Harmonic cursor
Spectrum display
envelope
baseband
instantaneous frequency
delay and multiply (DAM)
higher orders (1, 2, 4, 8, 1/h, where h is the modulation index)
Instantaneous data in time domain using histogram (I/Q data, envelope, instantaneous frequency, instantaneous phase)
Zero crossing
Auto-correlation and cross-correlation
Audio output, phase constellation diagram, eye pattern
Equalizer, matched filter

Licensing options

R&S®CA100-U option

Option for licensing R&S®CA100 with an USB dongle with additional memory

Interface		USB 3.1
Dimensions	W × H × D	12.1 mm × 4.5 mm × 22 mm (0.48 in × 0.18 in × 0.87 in)

R&S®CA100-S option

Option for licensing R&S®CA100 with an SD card

Interface		SD card, SDA 2.0
Dimensions	W × H × D	24 mm × 2.11 mm × 32 mm (0.94 in × 0.08 in × 1.26 in)

R&S®CA100-M option

Option for licensing R&S®CA100 with a mini USB dongle

Interface		USB 2.0
Dimensions	W × H × D	12 mm × 4.5 mm × 16.7 mm (0.47 in × 0.18 in × 0.66 in)

Note:

Rohde & Schwarz licenses for R&S®CA100 are stored on a USB dongle, mini USB dongle or SD card. If the dongle or SD card is lost, stolen or misplaced, Rohde & Schwarz will not provide a replacement. All licenses stored on the missing device will have to be purchased again at full price. In the unlikely event that a USB dongle, mini USB dongle or SD card is corrupt or broken, it will be replaced by Rohde & Schwarz only if the defective device is returned to Rohde & Schwarz. A moderate fee will be charged for producing and sending the replacement.

Ordering information

Designation	Type	Order No.
PC based signal analysis and signal processing software, requires one of the following licensing options:	R&S®CA100	4102.0004.02
Licensing options		
Licensing of R&S®CA100 with USB dongle	R&S®CA100-U	4102.0062.02
Licensing of R&S®CA100 with SD card dongle	R&S®CA100-S	4102.0079.02
Licensing of R&S®CA100 with mini USB dongle	R&S®CA100-M	4102.0085.02
Options for single-channel processing		
Processing of digital signals	R&S®CA100DM	4102.0091.02
Classification ⁴	R&S®CA100CL	4102.0104.02
Decoder package professional ⁴	R&S®CA100DEC	4102.0110.02
Decoding of PACTOR II, PACTOR III and PACTOR IV ⁴	R&S®CA100PIII	4102.0133.02
Decoding of CLOVER ⁴	R&S®CA100CV	4102.0140.02
Decoding of CODAN 3012 ⁴	R&S®CA100CO	4102.0156.02
Correlative detector ⁴	R&S®CA100CDT	4102.0256.02
Wideband snapshot access ⁵	R&S®CA100WSN	4102.0240.02
Options for multichannel processing		
Multichannel processing	R&S®CA100MCP	4102.0179.02
Detection, search and classification of fixed frequency signals	R&S®CA100DSC	4102.0185.02
Spectral shape detector ⁶	R&S®CA100SDT	4102.0204.02
Automatic processing of detected signals ⁶	R&S®CA100AP	4102.0191.02
Options for signal analysis		
Analysis of signal scenarios, in line with ITU-R SM.1600	R&S®CA100IS	4102.0210.02
Service option		
Service package, for R&S®CA100, software update (1 year)	R&S®CA100-SP	3705.8134.02

All options require the R&S®CA100 base version.

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⁴ Requires R&S®CA100DM option.

⁵ Requires at least one R&S®CA100CL license and at least one R&S®ESMD with R&S®ESMD-RR option or R&S®DDF255 with R&S®DDF255-RR option.

⁶ Requires R&S®CA100DSC option.

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