

# HF Transceiver Family



## R&S® XK 2000

## Digitally Tuned RF Selectors R&S® FK 2020/FK 2040

Embedded, automatically tuned pre-/postselectors, 20 dB and 40 dB selectivity

The Digitally Tuned RF Selectors R&S® FK 20xx are plug-in modules and can be retrofitted to the Transceivers/Receivers R&S® XK 2100L, R&S® GX 2900L and R&S® EK 2000. They provide the following functions:

- ◆ Seven-pole lowpass (0 Hz to 30 MHz) for suppressing interference >30 MHz
- ◆ Five-pole lowpass (0 Hz to 1.5 MHz) for suppressing strongly interfering shortwave signals
- ◆ Tunable tracking bandpass filter (1.5 MHz to 30 MHz) with stopband attenuation of 20 dB/40 dB at 10% frequency offset (R&S® FK 2020/FK 2040)
- ◆ Automatic tracking both in reception and transmission mode
- ◆ Remote control on/off (filter in RX direction can be bypassed)
- ◆ Input voltage protection up to 200 V EMF



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The use of the Digitally Tuned RF Selectors R&S®FK20xx is recommended in strongly disturbed RF environments, i.e. for collocation scenarios such as they occur on board ships. The selectors improve both the receiver input selectivity

and the phase noise at the transmitter output.

The R&S®FK20xx is always active in TX direction. In RX direction, it can be bypassed (manually or via remote control).

A high linearity mode can be configured for very difficult receiving conditions.

This, however, reduces the sensitivity of the transceiver/receiver by about 20 dB.

## Specifications (with transceivers/receivers of the R&S®XK2000 family)

	R&S®FK2020	R&S®FK2040
Frequency range	10 kHz to 30 MHz lowpass function for $f < 1.5$ MHz	
Stopband attenuation	20 dB at 10% offset from operating frequency	40 dB at 10% offset from operating frequency
Transmitter phase noise	170 dBc/Hz (typ.) at 10% frequency offset	170 dBc/Hz (typ.) at 5% frequency offset
Receiver sensitivity (tested in radio)	S/N=10 dB, $f = 0.2$ to 30 MHz <b>without preamplifier</b> A1A (CW): typ. 0.4 $\mu$ V EMF, BW = 300 Hz J3E (SSB): typ. 1.1 $\mu$ V EMF, BW = 2700 Hz <b>with preamplifier</b> A1A (CW): typ. 0.3 $\mu$ V EMF, BW = 300 Hz J3E (SSB): typ. 0.9 $\mu$ V EMF, BW = 2700 Hz	
Intercept point (IP3) (tested in radio)	+30 dBm ( $\Delta f > 30$ kHz, interfering signals $2 \times -5$ dBm) +53 dBm (interfering signals at 5% and 10% frequency offset, $2 \times +10$ dBm, <b>without</b> preamplifier)	
	+40 dBm (interfering signals at 5% and 10% frequency offset, $2 \times +10$ dBm, <b>with</b> preamplifier)	+53 dBm (interfering signals at 5% and 10% frequency offset, $2 \times +10$ dBm, <b>with</b> preamplifier)
Image frequency rejection	>130 dB	
IF rejection	>100 dB	>120 dB
Oscillator reradiation	<0.1 $\mu$ V (at antenna input)	
Blocking	< 3 dB signal attenuation (interfering signal at 5% frequency offset, useful signal 2 mV EMF)	
	3 V EMF <b>with</b> preamplifier interfering signal 10 V EMF, <b>without</b> preamplifier	10 V EMF <b>with</b> preamplifier interfering signal 10 V EMF, <b>without</b> preamplifier)
Input power (operation)	typ. 6.3 V EMF	
Input voltage protection	max. 200 V EMF (with $Z_{in} = 50 \Omega$ )	
Tuning time	<10 ms	

## Ordering information

Designation	Type	Order number
Digitally Tuned RF Selector, 20 dB selectivity	R&S®FK2020	6096.9502.02
Digitally Tuned RF Selector, 40 dB selectivity	R&S®FK2040	6096.9902.02



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