

# Eclipse RF™ Products

## RXR6422



The **RXR6422** is a dual-channel wideband tuner and digital receiver packaged in a rugged stand-alone brick module. The receiver is suited for applications requiring the optimal mix of performance and functionality in size, weight and power constrained environments. It can be used alone or packaged in a rack-mount chassis, such as the Eclipse SYS6408.

The RXR6422 is a member of BAE Systems' Eclipse RF™ Products sixth generation of system components. Eclipse has been delivering high-performance open-standards based products to the SIGINT market for more than 25 years.

### Key features and benefits

- 32 narrowband I&Q data streams per channel identify weak signals in the presence of strong in-band and out-of-band interference
- RF delay memory supports a wide variety of operational modes and enables phase coherent and independent operation in harsh electromagnetic environments
- Two RF receiver channels per 3U VPX module are tunable from 100kHz to 6 GHz
- Selectable wideband instantaneous bandwidths up to 80 MHz cover signals of interest
- Excellent tune speed with low phase noise and high spur-free dynamic range
- Modular architecture supports up to 8 channels in a 1U rack-mount chassis
- N-channel coherent operation enables spatial direction-finding and beam-forming applications
- 10 GigE interface supports both control and data
- Small form factor meets low SWaP requirements of deployed environments

# RXR6422 specifications

## Radio frequency (RF)

Tuning frequency range	100 kHz to 6 GHz
RF tuning resolution	1 MHz via first LO
RF tune speed	Consult factory
Analog IF bandwidth	Selectable 80/10 MHz (80/40, 60/10, 60/40 MHz optionally available)
Input impedance	50 ohms
VSWR	Less than 2.5:1
Preselection 100kHz to 90 MHz	Bypass, 100 kHz-20 MHz, 20-30 MHz and 30-90MHz
90MHz to 6 GHz	Suboctave preselectors
Max input level	+ 24 dBm
Image rejection	> 80 dB
IF rejection	> 80 dB
LO re-radiation	< -90 dBm
Noise figure	14 dB typical, 16 dB maximum (from 2MHz to 6GHz)
Third order intercept In-band of final IF (IIP3)	+ 3 dBm min, + 5 dBm typical
Second order intercept	+ 50 dBm min, +50 dBm typical
Single tone SFDR	> 77 dB with tone at -1 dBFS
Internal spurious	< -100 dBm typical
Coherency	Distribution of first and second LOs for N channel operation

## External reference

(Recommended minimum performance specifications)

Frequency	10 MHz +/- 5 PPM or better
Amplitude	0 dBm +/- 3 dBm
Harmonics	-20 dBc maximum
Non-harmonic spurious	-80 dBc maximum
Source VSWR	1.5:1 (reference to 50 ohms)

## Digital specifications

Wideband data	16-bit real or 32-bit complex at selected sample rate
Filtered narrowband	16-bit IQ serial at sample rate determined by selected bandwidth
Output sample rate	Set by selected re-sampler (10, 80, 40 and 12.8 cMSPS)
Narrowband DDCs	32 NB DDCs each accessible by either RF channel (bandwidths >1.2 MHz may reduce this number)
Gain control	AGC and MGC Modes Attenuation range 45 dB with 1 dB steps Fast attack Slow decay Freeze Dump-attack freeze Manual setting (MGC)
Demodulation	Attenuation range 45 dB in 1 dB steps AM, FM, USB, LSB, CW OOK uLaw or aLaw TDM output
Delay memory	250 MB per input channel
Sync I/O	Daisy chained distribution optional
Timing coherency	A/D sample coherency provided by LO daisy chaining

## Mechanical/environmental specifications

Size	8.25 inches (length) x 3.95 inches (wide) x 0.975 inches (height)
Weight	27.5 ounces
Power	45 watts minimum, 72 watts maximum Power dissipation most highly correlated to FPGA function utilization
Cooling	Forced air cooling provided on benchtop or via SYS640x chassis enclosure
Operating temperature	Between -20 to 70 degrees Celsius

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