



0.5 to 18GHz High Performance Receiver

The QR026 high performance receiver provides a new approach for ESM / ELINT applications incorporating patented features offering wide band synthesised capability from 500MHz to 18 GHz, with frequency extensions available up to 40 GHz. The QR026 builds on the concept developed for the QR010 receiver family and uses standard, interchangeable modules for maximum system flexibility.

The QR026 offers high pre-selection selectivity, but without the drawbacks of slow tune speeds and high DC power requirements associated with conventional YIG based receivers. Tune speeds of $<125\mu\text{sec}$ are achievable over the full tuning range. Amplitude and group delay characteristics are excellent over the full 500MHz IF bandwidth, with even higher performance over the middle 80% (400MHz) bandwidth. Performance over the central

100MHz is exceptional (better than 1ns group delay), offering the lowest colouration for high quality ELINT signal collection. User control is via front panel Ethernet 10 / 100 Base T.

The temperature compensated unit exhibits low noise figure, high IP3 performance and consumes <80 Watts in single channel configuration.

The modular architecture of the receiver allows it to be configured as a single, dual, triple or quad channel unit with phase & amplitude matched performance across all channels. The receiver provides IF outputs at 960 and 160MHz, with user selectable IF bandwidths available. A 1GHz IF output is available as an option. The receiver can be supplied as an integrated rack or as cards for integration in a customer system.

FEATURES

- Full Band Coverage (options to $>40\text{GHz}$) Fast Tune Speed
- High Spurious Free Dynamic Range Low Colouration
- Simultaneous ELINT & ESM operation
Frequency Selective RF Protection Compact, Expandable Architecture Low power consumption
- Optional 1GHz IF

APPLICATIONS

- Electronic Intelligence (ELINT)
- Electronic Support Measures (ESM)
- Defensive Aids Suites (ECM Set-on)
- Combined ELINT / ESM Sensors
- Ground, Airborne & Naval Environments

See restrictions on published datasheets at www.teledynedefence.co.uk/

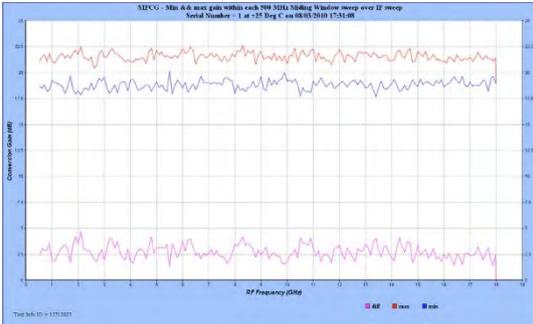
ELECTRICAL SPECIFICATION

Parameter	Specification
RF Input Frequency Range: Optional extensions to > 40GHz	0.5-18GHz
Maximum Input CW	+15dBm
LO Re-radiation	-90dBm Max
Gain 20dB nom. (960MHz IF) 28dB nom. (160MHz IF)	
Gain Variation (500MHz IF BW) signal in the IF bandwidth	+/-3dB max for any tune frequency and any RF
Gain Variation (any 100MHz of IF BW)	+/-1.25dB max
Group Delay Variation (500MHz IF BW)	6ns over the central 80% BW; 10ns over the full bandwidth; 3ns typ, <1ns in central 100 MHz
Input Attenuator	20dB (single step)
IF Attenuator	15dB Min, 1dB step size
VSWR (RF in/IF out)	2.5:1
Noise Figure	16dB max (Typically 13.5dB)
Input P1dB	-12dBm
Input IP3	-2dBm (Typically 0dBm)
Single Tone SFDR	60dB min (500MHz BW)
In-band 2 Tone SFDR	50dB min (500MHz BW)
Internally Generated Spurious	-70dBm max equiv. Input power
Tune Speed	125µs max – input tune command to Valid IF Output
Tune Accuracy	2kHz
Tune Resolution	1MHz (1kHz capable)
Phase Noise 1kHz 10kHz 100kHz 1MHz 10MHz	-88dBc/Hz -90dBc/Hz -95dBc/Hz -95dBc/Hz -115dBc/Hz
Size	19 in rack x 2U high (single channel)
Total Power Consumption:	<80W in full rack configuration
Input Power Supply	94 – 253 VAC, 47 – 63 Hz
Weight:	< 12kg
Operating Temperature Range	-10°C to +60°C
Options	<ul style="list-style-type: none"> • Frequency Extension to beyond 40GHz • Single, Dual or Quad Tracked Channels • Digital IFM(s) with hi-POI PDW outputs • Alternative Speed / Accuracy Oscillators • Alternative IF Outputs (3GHz, 1GHz, 70MHz) • Alternative rack configurations or individual cards in transit frame for integration in customer rack

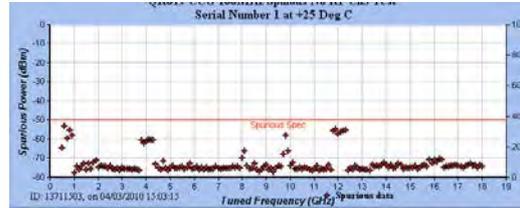
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ELECTRICAL PERFORMANCE

Conversion Gain and GaN Variation



Internally Generated Spurs



-50dBm at IF Output equivalent to -70dBm at RF Input, allowing for 20db receiver gain. Spur frequencies are typical.

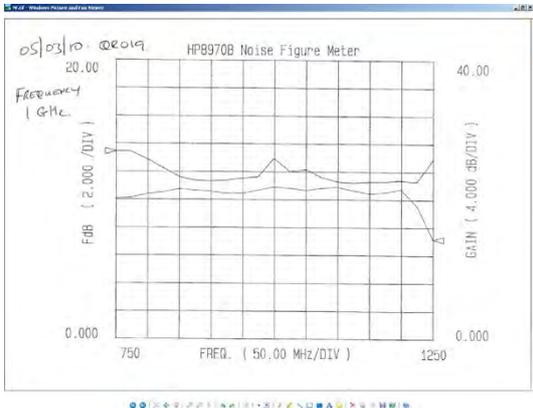
Group Delay and IF Filter Response – Wide IF Bandwidth



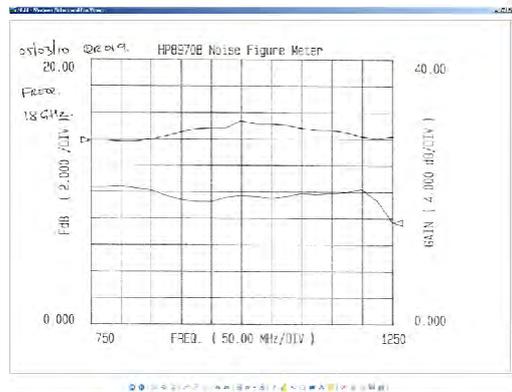
Group Delay and IF Filter Response – Narrow IF Bandwidth



Noise Figure
Low RF, 500MHz IF Bandwidth



High RF, 500MHz IF Bandwidth



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