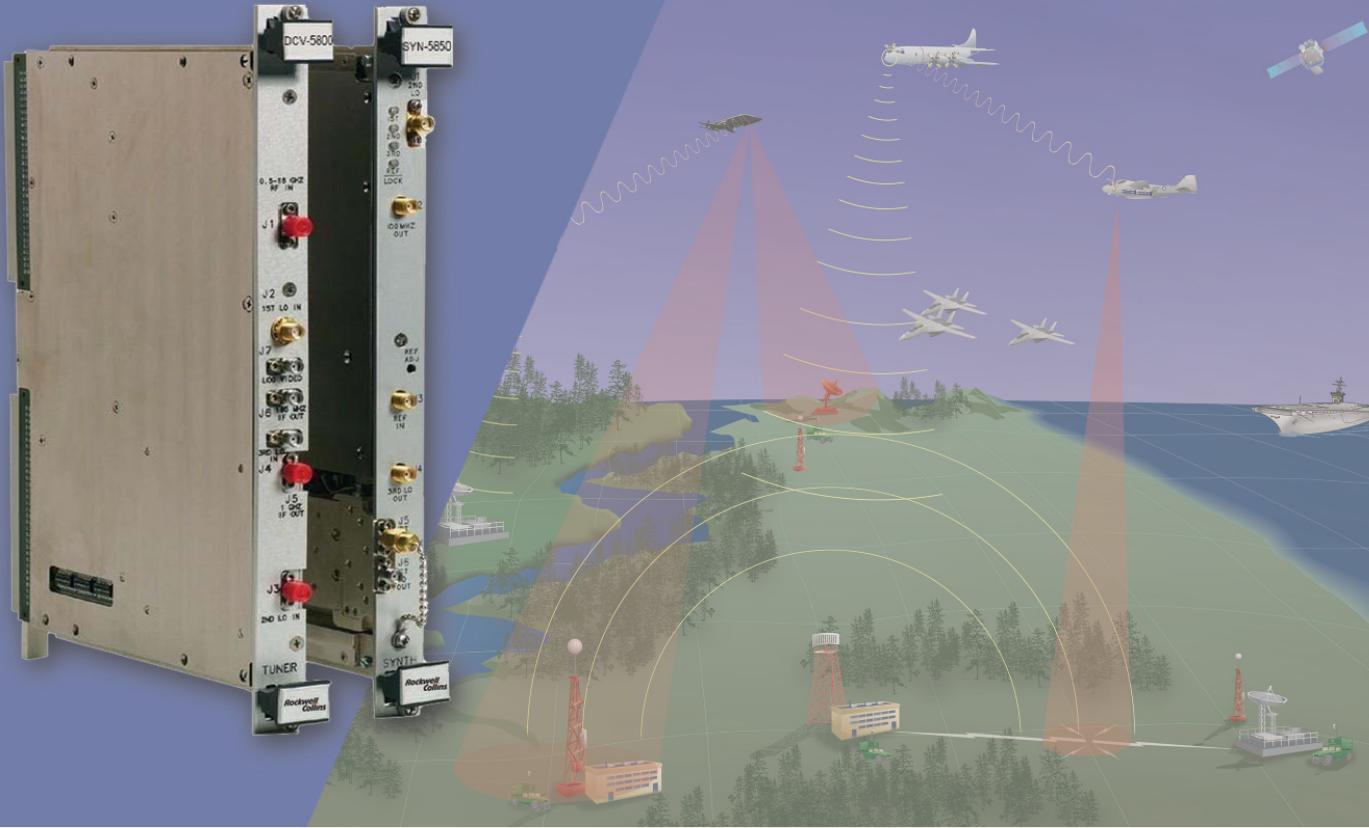


# RC-5850 Fast Tuning Microwave Receiver



The RC-5850 is a high performance, fast tuning microwave receiver covering the 0.5 - 18 GHz frequency range with 35  $\mu$ s tuning time.

Rockwell Collins' RC-5850 is a high performance microwave tuner covering the center tune frequency range from 0.5 - 18 GHz for demanding applications that require exceptional tuning speed and phase noise in a compact tuner. The RC-5850 builds on the success of the field-proven RC-5800 with an advanced synthesizer design capable of 35  $\mu$ s tuning times.

The RC-5850 consists of two separate VME (6U) modules designated as the synthesizer module (SYN-5850) and the RF module (DCV-5800). This functional partitioning allows the tuner to support N-Channel coherent DF application for phase interferometry applications. This modular design also allows existing RC-5800 installations to be upgraded to RC-5850 performance by replacing only the synthesizer module.

The tuner accepts RF input signals ranging from 0.25 GHz to 18.25 GHz and provides output signals at the IF center frequencies of 1.0 GHz and 160 MHz. The minimum 3 dB bandwidth of the 1.0 GHz IF output is 500 MHz. The minimum 3 dB bandwidth of the 160 MHz IF is 70 MHz. The RF tuner module provides continuous frequency coverage of 500 MHz across the full input frequency range.

The RC-5850 provides front panel digital IO for direct control of external RF switching networks or external up/downconverters.

### DCV-5800 RF MODULE SPECIFICATIONS

Input frequency range	0.25 - 18.250 GHz
Center tune RF	0.5 - 18.0 GHz input range
Connector type(s)	SMA female (all input/outputs)
Input VSWR	2.5:1 maximum, input impedance 50 ohms
Maximum input	+23 dBm (without damage)
L.O. re-radiation	<-80 dBm (0.5 - 18 GHz)
Noise figure (at 25°C)	15 dB maximum at center tune frequency and 13 dB typical
Input 1 dB compression point	-10 dBm minimum

### Wideband IF output

Center frequency	1.0 GHz
Bandwidth 3 dB	±250 MHz
RF to IF gain	+8.5 dB ±2.5 dB
Instantaneous linear dynamic range	95 dB typical (1 MHz ref BW)
Output VSWR	91 dB minimum
Group delay variation	<2.0:1
Spectral presentation	<3 nsec typical across 80% 3 dB BW Non-inverted

### Narrowband IF output

Center frequency	160 MHz
Bandwidth 3 dB	±35 MHz
RF insertion gain	+11.0 dB ±3.0 dB
Instantaneous linear dynamic range	90 dB typical (1 MHz ref BW)
Output VSWR	<2.0:1
Group delay variation	<4 nsec typical across 80% 3 dB BW Non-inverted
Image rejection	70 dB minimum
IF rejection	70 dB minimum
Internally generated spurious	-90 dBm equivalent input, typically -80 dBm maximum
RF/IF gain flatness	±1 dB (80% bandwidth)
Spectral presentation	

### Log video output

Detected 160 MHz output	0.2 to +2.0 VDC typically
Detected RF bandwidth	15 MHz centered at 160 MHz
Video detection bandwidth	7.5 MHz, 1/2 IF bandwidth
Dynamic range	80 dB typically, 60 dB minimum
Output impedance	50/100 ohms

### SYN-5850 SYNTHESIZER MODULE

1st L.O. sample output	Front panel (SMA female)
1st L.O. sample	-15 dBm ±3 dB output level
1st L.O. tuning resolution	100 kHz (other lower step sizes available)
Tuning time	35 μsec maximum
Total impressed integrated phase noise	1.0 degrees RMS maximum
Total impressed composite phase noise	Profile at 18 GHz from all local oscillators sources (typical)
Frequency offset	Phase noise density
100 Hz	-65 dBc/Hz
1 kHz	-86 dBc/Hz
10 kHz	-88 dBc/Hz
100 kHz	-98 dBc/Hz
1 MHz	-115 dBc/Hz
10 MHz	-128 dBc/Hz

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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### For more information contact:

Rockwell Collins  
3200 East Renner Road  
Richardson, TX 75082-2420  
Phone: 972.705.1438  
Fax: 972.705.1436  
email: [ewsigint@rockwellcollins.com](mailto:ewsigint@rockwellcollins.com)  
[www.rockwellcollins.com/ewsigint](http://www.rockwellcollins.com/ewsigint)

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