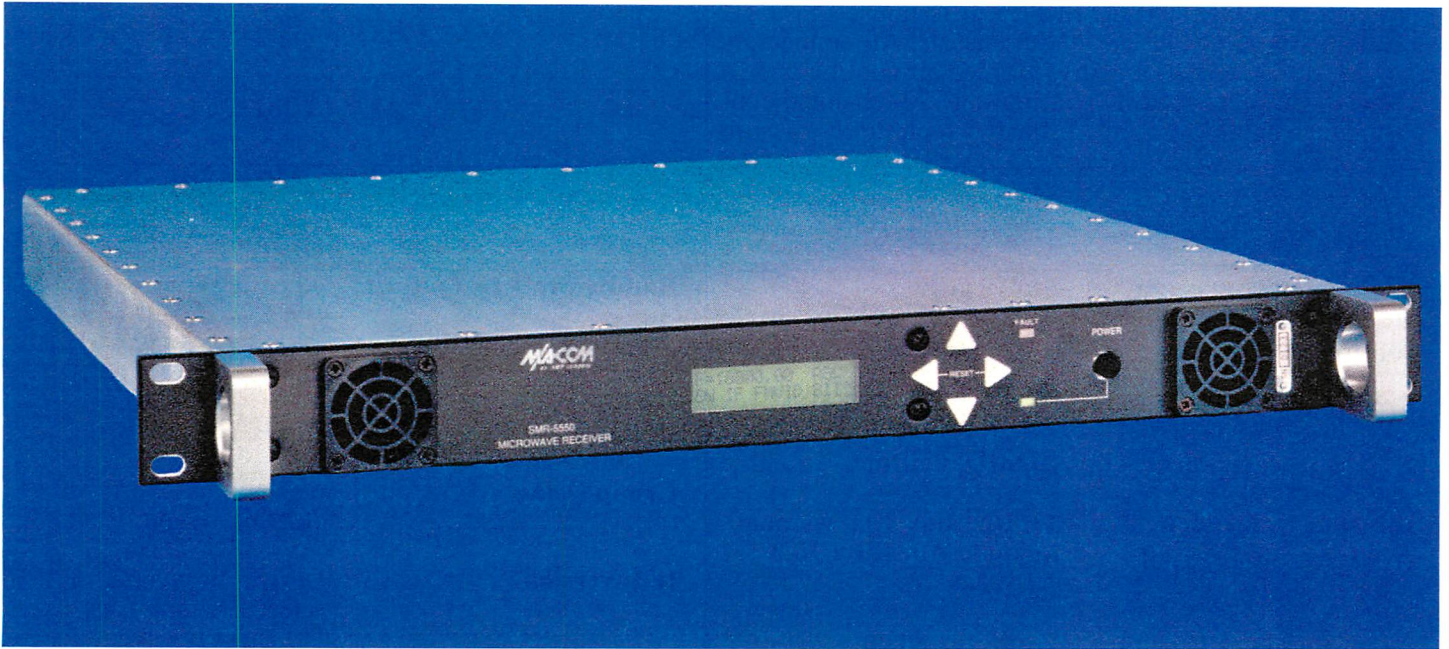




SMR-5550 LOW COST MICROWAVE RECEIVER



FEATURES

- 1.0 to 18 GHz Tuning Range
- Synthesized in 10 kHz steps
- High Dynamic Range
- Optimized for PCM/TDM and FM/FDM Reception
- Selectable Wideband IF Outputs:
70/140/160 MHz standard
- Excellent BER Performance
- Five IF Bandwidths for FM Demodulation
- RS-232 Control

DESCRIPTION

M/A-COM's new SMR-5550 fills the need for a low cost, high performance microwave receiver. The receiver has all the necessary features for reception of complex order, high data rate PCM/TDM and high capacity FM/FDM communication signals. The SMR-5550's electrical design is patterned after the SMR-4520 Microwave Receiver, and features the low group delay distortion and low phase noise characteristics necessary to assure virtually error-free reception of digitally modulated signals over a wide dynamic range of received signal strength. Through the use of new low-cost commercial components and high volume receiver production, M/A-COM's SMR-5550 sets a new standard for performance-to-cost value in microwave receiving equipment.

The SMR-5550 covers the entire 1-18 GHz frequency range in tuning steps as small as 10 kHz. A single, operator-selectable wideband IF is provided at 70, 140 or 160 MHz. The IF bandwidth at 70 MHz is 50 MHz, and the 140/160 MHz IF bandwidth is 80 MHz. The IF output features AGC or manual gain control. IF frequency inversion (upright or inverted) is selectable from the front panel. This feature is not available below 1.5 GHz. A demodulated FM video output is provided, along with the ability to select one of five IF bandwidth filters; 5, 10, 15, 20, and 50 MHz (other bandwidths available upon request). The IF filters and FM discriminator are designed for high NPR performance for all high capacity FM/FDM signal formats.

SMR-5550

All receiver functions are controllable from the front panel or via RS-232C serial interface. Control/status functions include: tuned frequency, IF output frequency select, IF gain mode (AGC/MGC), IF gain level, FM video level, FM bandwidth, signal strength, BIT status and receiver I.D. A system "kill" command is provided to reset all functions to a default condition.

Other features include 10 MHz internal or external reference frequency and built-in-test (BIT) of power supply voltages, internal temperature, and phase lock status. The unit is operational over the 0 to 50° C operating temperature range. The SMR-5550 is housed in a 1U (1.75 inch high), full rack width chassis. All connectors are on the rear panel. Positive, forced air cooling is provided through front panel cooling fans. Mechanical construction, shielding and filtering techniques assure

EMI/RFI compliance with applicable categories of MIL-STD-461C.

The SMR-5550 Receiver is designed for low life cycle cost and ease of maintainability. All major assemblies and most active components are connectorized to facilitate field repair and module replacement. Power, control and signal lines are contained within the same harness, and all connectors are keyed and labeled to prevent erroneous connections. No alignment or adjustment is required after module replacement, and modules are interchangeable between receivers.

SMR-5550 RECEIVER SPECIFICATIONS

Frequency Coverage	1 to 18 GHz
Input Connector	N type, female
Frequency Resolution	10 kHz
External Reference	10 MHz, 0 dBm
Internal Reference Accuracy and Aging	3 x 10 ⁻⁷ after 1 hr. warmup. Aging less than 1 x 10 ⁻⁶ per year
Noise Figure	15 dB, maximum
Phase Noise	0.7° rms, typical (SSB)
Input VSWR	2.5:1, maximum
Preselection	Suboctave filters
LO Radiation	-90 dBm, maximum antenna conducted
Image Rejection	60 dB, minimum 70 dB, typical
1 dB Compression Point Input Level	-15 dBm
Third Order Input Intercept Point	-5 dBm, minimum 0 dBm, typical
Spurious-free Dynamic Range	60 dB, typical
LO Spurious	-55 dBc, maximum
RF to IF Gain	60 dB, RF to variable gain IF output
Wideband IF Outputs	70, 140, or 160 MHz standard

Bandwidth - IF Output	70 MHz IF: 50 MHz BW 140 MHz IF: 80 MHz BW 160 MHz IF: 80 MHz BW
IF Rejection	80 dB, typical
Group Delay	6 ns p-p, over 80% of 3 dB bandwidth
IF Inversion	Upright or inverted IF, selectable from front panel. IF cannot be inverted below 1.5 GHz.
Video Gain Control	5% to 100%
Video Output Level	1 Vp-p @ 100%
Video Impedance	75 Ω, nominal; 50 Ω available
IF AGC/MGC	MGC range is 60 dB in 1 dB steps; -20 dBm output level in AGC
FM Demodulator	70 MHz IF, five bandwidths: 5, 10, 15 20 and 50 MHz

Typical FDM NPR Channels	Typical FDM NPR	
	Low Slot	High Slot
960	49	42
1200	50	40
1800	43	38
2700	47	36

Built-In-Test (BIT)	Power supply voltages, temperature, phase lock status
EMI Shielding	Built to Meet MIL-STD-461C, CE03, and RE02

SMR-5550

Humidity	90% non-condensing at +40°C
Shock	Meets or exceeds MIL-STD-810D, method 516.3
Vibration	Meets or exceeds, MIL-STD-810D, method 514.3-1
Temperature Range, Operating	0° to +50°C
AC Power	Universal Input - 90-250 Vac, 47-440 Hz, 100 W

Size	1.75" H x 22" D x 17" W 4.38 cm H x 55.88 cm D x 43.18 cm W Mounts in Standard 19" rack
Weight	20 lbs. (9.07 kg)
Digital Control	RS-232, See Options

Specifications guaranteed at 25°C.
Specifications are subject to change without notice.

OPTIONAL CONFIGURATIONS

- RS-422
- Other IF Bandwidths*
- 1-6 GHz Frequency Range Only
- 2 kHz Step Size
- Post-Filtered IF Output

*Available Bandwidths

Narrowband Set (No more than two)		
3 dB Bandwidth (MHz)		
1.0		
1.5		
2.0		
2.5		

Wideband Set (No more than four)		
3 dB Bandwidth (MHz)		
3.0	3.5	4.0
4.5	5.0	5.5
6.0	6.5	7.0
7.5	8.0	8.5
9.0	9.5	10.0
11.0	12.0	13.0
14.0	15.0	16.0
18.0	20.0	22.0
24.0	26.0	28.0
30.0	32.0	34.0
36.0	38.0	40.0

- AM Detector
- 1.5 GHz - 6 GHz Tuning Range
- High Stability Reference
- Dual Signal Path (SMR-5555)
- Frequency Converter Configurations (No Demod)

NOTE

The user may select a total of four bandwidths (3 dB) from the narrowband and wideband sets, provided that no more than two (2) are selected from the narrowband set. A fifth IF bandwidth, fixed at 50 MHz, is available in addition to the four selectable bandwidths.

WARRANTY

All M/A-COM SIGINT Products' equipment is warranted for one year, except for damage caused by accident or misuse, provided the equipment is returned for repair to the plant in Hunt Valley, Maryland, U.S.A.



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