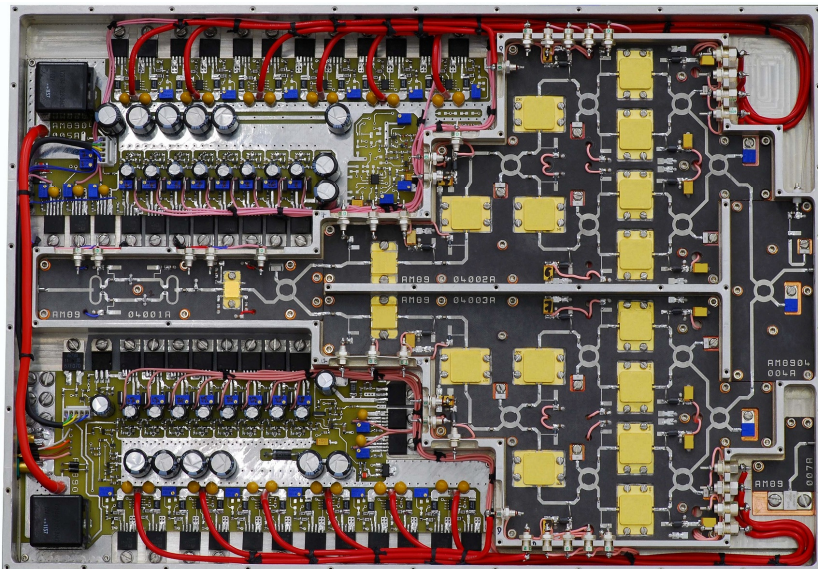


# RF & Microwave Amplifiers to 20GHz

## Short form Catalog EuMW 2013

- Low-Noise & Small Signal
- Power Amplifiers
- High Energy Physics
- Wideband GaN – ECM
- Digital TV
- IMD Testing
- General Purpose Wideband



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*RF-Signals...*

*...generating  
...modifying  
...distributing  
...amplifying  
...transmitting*

# Particle Physics, Radar, Comms, ECM, Jamming, Digital TV, IMD Testing, Telemetry, Endosurgery, RFI Testing and Much Much More. . .

## About Us

From the Clifton Suspension Bridge to Rolls-Royce & Concorde, the City or Bristol has long been at the forefront of innovation. Microwave Amps follow in this tradition offering over twenty years of experience in amplifier design. Our experienced engineering team use CAD tools and well proven manufacturing techniques combined with the utilisation of the latest advanced semiconductor technologies to offer the most up to date solutions to customer requirements. Our engineering team utilize three semiconductor technologies in our designs, GaAs, GaN & LDMOS. Each has advantages, and our experts choose the solution which best suits the application. Our products cover applications in the frequency range 20MHz to 20GHz, with power levels up to 2kW in a single module.



100% in-house manufacture and an extensive stock of microwave materials and components enables us to design and produce production quantities as well as prototypes in the shortest of timescales. Product housings & metalwork are produced in our CNC machine shop, and PTFE circuits fabricated & plated in our own process. Once all the hardware is in place, our production facility can build the circuits and assemble the components into completed products.

Our fully equipped test and measurement laboratory provides alignment and test capability together with 100 % burn-in screening for our wide product range, with frequencies up to 20GHz and output power in excess of 2kW. Calibrated network & spectral analysis, noise and power measurement, ensures that you get a product fully tested for compliance and quality be it for a single standard amplifier, or a large quantity of custom designed sub-systems.

All of our facilities and processes are operated under the most stringent of quality systems to ensure that an effective solution is provided to all of our customers. Microwave Amplifiers Ltd. is an ISO9001 approved organisation.

## Our Warranty

Microwave Amplifiers Ltd warrants for 2 years from date of shipment that the goods supplied will be in full compliance with the agreed specifications and will be free from defects in material and workmanship. Any and all other warranties (except of title) express or implied, relating to fitness for particular purpose, merchantable quality or otherwise are expressly disclaimed. Seller will not be responsible for special or consequential loss or damages. Liability shall be limited to the repair or replacement of defective products subject to the return of the product intact, and un-tampered with

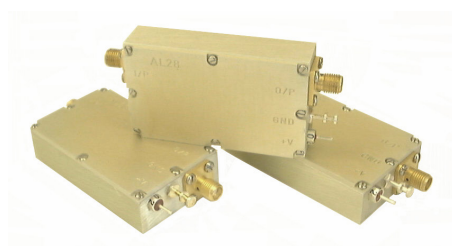


# LNA & Small Signal

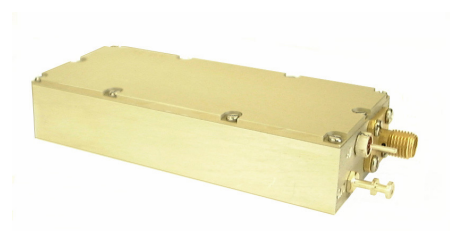
## Receiver & Gain Blocks

### Low Noise & General Purpose Amplifiers

Our range of Low Noise & Small Signal Microwave Amplifiers cover frequencies from 0.4GHz to 20GHz, and are designed for economy with good performance. These products are tuned to customer selected bandwidths of typically 500MHz.



Series	Frequency Range
AL28	0.4 to 20 Ghz
AL26	1 to 6Ghz
AL7	1 to 7 Ghz
AL7	1 to 18GHz
AL22	5 to 20 Ghz
AL16	5 to 18 Ghz
AL16	5 to 18GHz
AL22	5 to 20GHz



- Solid State GaAs FET Designs
- Single Internally Regulated Supply Rail
- Reverse Polarity Protection
- Open & Short Circuit Operation
- AC Coupled Input & Output
- Milled from Solid Enclosures
- Fast Turnaround
- Economical

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# General Purpose Amplifiers

## Modular & Instrumentation Amplifiers

Solid State Amplifiers for All Applications

Series	Frequency (GHz)		Output Power (W)							
	From	To	< 10	< 20	< 50	< 100	< 250	< 500	< 1000	< 2000
AM7	0.90	15.00	■							
AM25	5.00	20.00	■							
AM38	0.70	15.00		■						
AM53	3.00	15.00		■						
AM31	5.00	15.00		■						
AM4	0.02	6.00			■					
AM5	2.00	6.00			■					
AM43	3.00	15.00			■					
AM51	3.00	15.00			■					
AM8	0.02	0.52				■				
AM6	0.50	2.50				■				
AM81	0.70	3.90				■				
AM9	2.00	6.00				■				
AM49	3.00	15.00				■				
AM55	8.50	15.00				■				
AM60	3.00	8.50					■			
AM83	0.70	3.90						■		
AM87	1.20	3.90							■	
AM86	1.00	3.90								■



- Open & Short Circuit Operation & Alarm
- Solid State GaAs GaN & LDMOS
- RF Monitors & Detectors
- Unconditional Stability
- Over Temperature Protection
- TTL Control
- Milled from Solid Enclosures
- Reverse Polarity Protection

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# High Energy Physics Amplifiers

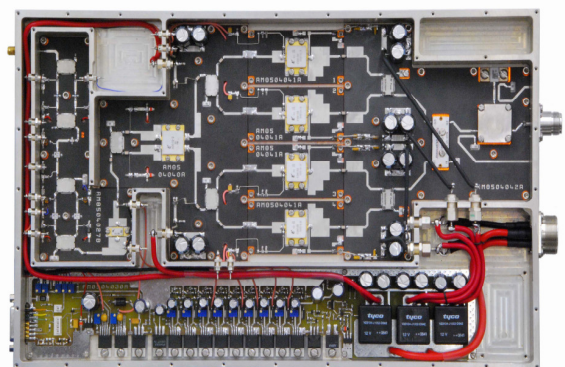
## Klystron & IOT drivers, Buncher & Cooling PAs

Solid State LDMOS, GaN & GaAs FET Power Amplifiers

Series	Frequency (GHz)		Output Power (W)					
	From	To	< 250	< 500	< 1000	< 2000	< 3000	< 5000
AM10-1.3S-53-53 - CW/Pulsed Power	1.28	1.32	■					
AM82 GaAs LINAC	2.85	3.00	■					
AM10-2.85S-55-55 - Pulsed Power	2.85	2.87		■				
AM85 GaAs LINAC	2.85	3.00		■				
AM10-3S-55-55 - Pulsed Power	2.99	3.01		■				
AM85 (LDMOS)	1.28	1.32			■			
AM10-2.85S-58-58 - Pulsed Power	2.85	2.87			■			
AM84 GaAs LINAC	2.85	3.00			■			
AM10-3S-58-58 - Pulsed Power	2.99	3.01			■			
AM84 (LDMOS)	1.28	1.32				■		
AM82 GaN LINAC	2.85	3.00				■		
AM85 GaN LINAC	2.85	3.00					■	
AM96 20kW Pulsed Power Systems	1.20	1.40						■
AM84 GaN LINAC	2.85	3.00						■



- Pulsed Power & CW Models
- TTL Gating Control
- Low Distortion
- Superior Amplitude & Phase Stability
- Fast Response Time
- DC Modules or AC Rack-Mount Units



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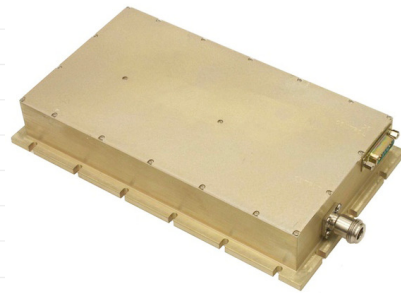


# Wideband Amplifier Modules

## Jamming & ECM

Fully Featured RF Power Modules for OEM System Integration

Series	Frequency (GHz)		Output Power (W)					
	From	To	< 30	< 40	< 50	< 60	< 80	< 100
AM4-20-500-43-43	0.02	0.50	■					
AM4-20-520-44-44	0.02	0.52	■					
AM4-20-1000-43-43	0.02	1.00	■					
AM4-0.5-2.5-43-43	0.50	2.50	■					
AM4-2-6-43-43	2.00	6.00	■					
AM4-2.5-6-43-43	2.50	6.00	■					
AM5-2.5-6-45-45	2.50	6.00	■					
AM4-20-500-46-46	0.02	0.50		■				
AM6-0.5-2.5-46-46	0.50	2.50		■				
AM4-0.5-2.5-45-45	0.50	2.50		■				
AM5-2.5-4-46-46	2.50	4.00		■				
AM4-2-6-45-45	2.00	6.00		■				
AM5-4-6-46-46	4.00	6.00		■				
AM6-0.5-2.5-47-47	0.50	2.50			■			
AM6-1-3.5-47-47	1.00	3.50			■			
AM5-2-6-47-47	2.00	6.00			■			
AM5-2.2-6-47-47	2.20	6.00			■			
AM5-2.5-6-47-47	2.50	6.00			■			
AM5-4-6-47-47	4.00	6.00			■			
AM8-20-520-48-48 (LDMOS)	0.02	0.52				■		
AM6-0.5-2.5-48-48	0.50	2.50				■		
AM5-2-4-48-48	2.00	4.00					■	
AM8-20-520-45-50 (LDMOS)	0.02	0.52						■
AM8-20-520-50-50	0.02	0.52						■
AM6-0.5-2.5-50-50	0.50	2.50						■
AM9-2-6-50-50	2.00	6.00						■



- Solid State GaN & LDMOS Designs
- Instantaneous Full Bandwidth
- TTL Control
- Reverse Polarity Protection
- Open & Short Circuit Operation & Alarm
- RF Output Status Monitor
- Over Temperature Protection
- DC Current Monitor

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# Digital TV

## COFDM Amplifiers for DVBT

### Linear GaAs FET power modules

Our range of COFDM amplifiers for DVB, cover frequencies from 1.7 to 3.5GHz in all common bands. Typically used as boosters in fixed and portable systems, the rated output power is achieved with an 8MHz bandwidth, with  $-30\text{dBc}$  min regrowth measured @ 1MHz offset.



Series	Frequency (GHz)		Output Power (W)				
	From	To	< 2	< 5	< 10	< 20	< 40
AM7 2w	1.70	3.50	■				
AM38 5w	1.70	3.50		■			
AM81 10w	1.70	3.50			■		
AM81 20w	1.70	3.50				■	
AM82 40w	1.70	3.50					■

- Solid State GaAs FET Designs
- Single Internally Regulated Supply Rail
- Reverse Polarity Protection
- Open & Short Circuit Operation
- AC Coupled Input & Output
- Milled from Solid Enclosures
- Fast Turnaround
- Economical

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# IMD Test Amplifiers

## 2-Tone 3<sup>rd</sup> Order IMD Testing Applications

### For Passive Intermodulation Measurement Systems

These linear amplifiers are ideally suited for the testing of filters, combiners, and connectors used in wireless telecom systems. Available covering all cellular bands, these models provide cost effective power in a rugged and reliable platform, designed to provide user friendly maintenance free operation. Supplied as modules for OEM system integration, and individually or in matched pairs in a 19" chassis.

	Frequency (MHz)	Power (W)
AM81 - 47	700 - 960	50
AM81 - 47RT	1700 - 1900	2x 50
AM81 - 100	1800 - 2300	100
AM81 - 100RT	2200 - 2700	2x 100

## Specification

- Small Signal Gain 45dB min
- Gain Flatness 2dB p-p max
- Harmonics -40dBc typ
- VSWR 1.5:1 max
- Spurious -70dBc min
- Noise 6dB max



## Features

- Class AB Solid State
- Unconditional Stability
- Over Temp Protection
- Open / Short Circuit Operation
- Remote Control Line
- Rugged Chassis



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# Wideband Bench-Top Amplifiers

## Test & Measurement

### RF Power Amplifiers for General Purpose Use

Our new AM4 range of wideband GaN amplifiers offer flexibility, simplicity and performance in a compact bench-top form. Ideal for general purpose RF testing, these rugged and reliable amplifiers output a nominal 25W RF power in frequency bands covering 20MHz to 6GHz. All models will achieve maximum output with 0dBm input, sufficient to be driven from most frequency sources

	Frequency (MHz)	Power (W)
AM4-20-500-43-43R	20 - 500	25
AM4-20-1000-43-43R	20 - 1000	25
AM4-0.5-2.5-43-43R	500 - 2500	25
AM4-2.5-6-43-43R	2500 - 6000	25

## Specification

- Input Drive for Rated Output 0dBm
- Small Signal Gain 46dB min
- Gain Flatness 3dB p-p max
- Power Flatness 2dB p-p typ
- VSWR 2:1 max
- Spurious -70dBc min

## Features

- Class AB Solid State
- Unconditionally Stable
- Over Temperature Protection
- Open / Short Circuit Operation
- Remote Control Line
- Rugged Chassis



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# Test & Measurement Amplifiers

## General Purpose Amplifiers

Amplifiers for Laboratory and Production Testing

Series	Frequency (GHz)		Output Power (W)		
	From	To	< 50	< 100	< 200
AM4-20-500-43-43R - Wideband GaN	0.02	0.50	██████████		
AM4-20-1000-43-43R - Wideband GaN	0.02	1.00	██████████		
AM4-0.5-2.5-43-43R - Wideband GaN	0.50	2.50	██████████		
AM6-0.5-2.5-47-47R - Wideband GaN	0.50	2.50	██████████		
AM81-47RT - Narrowband GaAs Twin PA	0.70	2.70	██████████		
AM6-1-3.5-47-47R - Wideband GaN	1.00	3.50	██████████		
AM81-50W - Narrowband GaAs	0.70	3.90	██████████		
AM4-0.7-4-40-40R - Wideband GaN	0.70	4.00	██████████		
AM5-2.5-6-47-47R - Wideband GaN	2.50	6.00	██████████		
AM4-2.5-6-43-43R - Wideband GaN	2.50	6.00	██████████		
AM7 2-8GHz (1W) – Wideband GaAs MMIC	2.00	8.00	██████████		
AM7 2-10GHz (1W) - Wideband GaAs MMIC	2.00	10.00	██████████		
AM7 10-20GHz (1W) - Wideband GaAs MMIC	10.00	20.00	██████████		
AM81-50RT - Narrowband GaAs Twin PA	0.70	2.70		██████████	
AM81-100W - Narrowband GaAs	0.70	3.90		██████████	
AM83-200W - Narrowband GaAs	1.00	3.90			██████████

- Open & Short Circuit Operation & Alarm
- Solid State GaAs GaN & LDMOS
- RF Monitors & Detectors
- Unconditional Stability
- Over Temperature Protection
- TTL Control
- 19" Rack Mount & Bench Top Solutions
- Reverse Polarity Protection

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# Radar Power Amplifiers

## Solid State High Power RADAR Amplifiers

Amplifiers for Land, Sea, Air and Space Applications.

TWT Replacement Options

Series	Frequency (GHz)		Output Power (W)		
	From	To	< 250	< 500	< 1000
AM10-1.2-1.4-53-53 - CW/Pulsed Power	1.20	1.40	■		
AM10-2.7-3.1-55-55 - Pulsed Power	2.70	3.10		■	
AM10-2.9-3.3-55-55 - Pulsed Power	2.90	3.30		■	
AM10-2.7-3.3-54-54 - Pulsed Power	2.70	3.40		■	
AM10-2.9-3.5-55-55 - Pulsed Power	2.90	3.50		■	
AM89-8.5S-56-56 - Pulsed Power	8.40	8.50		■	
AM10-1.2-1.4-58-58 - Pulsed Power	1.20	1.40			■
AM10-2.9-3.3-58-58 - Pulsed Power	2.90	3.30			■
AM10-2.9-3.5-58-58 - Pulsed Power	2.90	3.50			■

- Open & Short Circuit Operation & Alarm
- RF Monitors & Detectors
- Over Temperature Protection
- Milled from Solid Enclosures
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# Contact Information

## How To Find Us

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