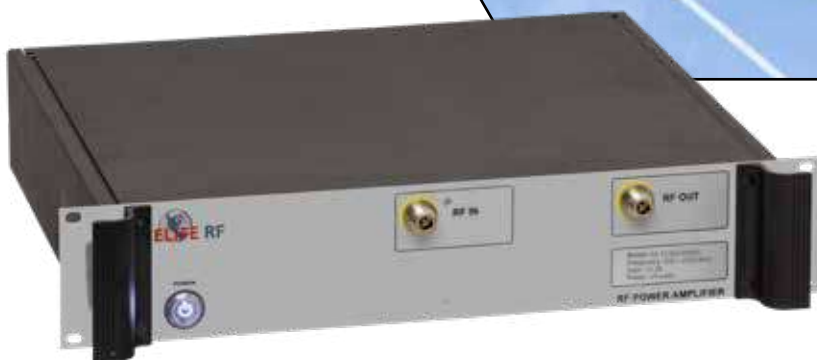
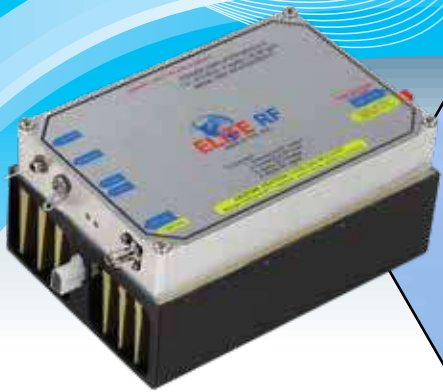


# RF Amplifier & RF Test Equipment Product Guide 2022





Elite RF was founded in 2014 and was built on the legacy of Motorola, Inc., the telecommunications company based in Schaumburg, Illinois. Motorola was the preeminent provider of wireless communications and the inventor of the cellular phone. Taking advantage of the company's exit from the communications market, Elite RF gathered the talent who built the Motorola brand that was synonymous with innovation, performance, and quality.

Elite RF's designers have close to two hundred years of power amplifier design experience and are at the cutting edge of today's technology with an eye towards the future. Now you can put our experience to work for you. We understand some customers may need help creating a custom RF solution. The Elite RF team of experts will work with you to provide the best solution to match your requirements. We also offer a free consultation service to help formulate your ideas and provide practical, cost-effective examples on how we can make you RF project a reality.

Contact us at [847-592-6350](tel:847-592-6350) or [sales@eliterf.com](mailto:sales@eliterf.com) and our technical sales team will be glad to assist you with your RF project.



# Quality and Customer Satisfaction is our #1 Priority

Elite RF provides an extensive portfolio of product designs that include over two hundred documented and verified solutions. These range from basic-function PA modules to complete, multifunction PA assemblies with embedded software and controllers which offers flexibility to manage SWaP-C demands for commercial off-the-shelf (COTS). Our solutions incorporate state-of-the-art GaN, LDMOS, MOSFET, and bipolar device technologies. In addition, we do custom designs that have advanced functionality and custom packaging. We specialize in frequencies up to 18GHz with narrow to multi-octave and multi-decade bandwidths with power levels from 1W up to and exceeding 100kW

Elite RF leverages “building block” combinations, coupled with a century's worth of experience, allowing our team to react swiftly to new requirements and develop custom designs that have advanced functionality and custom packaging. This offers a variety of cost-effective, value-added solutions. We pride ourselves with the fastest turn around time in the industry for custom products, a typical custom design can be realized within 60 days.

In addition, Elite RF also has a line of custom configurable, all-in-one RF test equipment to help you test your products and systems at a cost-effective price point. We incorporate the best-in-class, PC based test instruments available into our products. Available options include: Network Analyzers, Spectrum Analyzers, Signal Generators, Power Meters, Oscilloscopes, Power Amplifiers, RF Relays, and Attenuators. LabView, C++, and SCPI compatible.

## Engineering Capabilities

### IN HOUSE EXPERTISE

- Power Amplifiers design
- Wideband RF amplifiers
- High power RF Amplifiers up to 100 KW
- RF / Wireless System Design
- Mechanical CAD Design
- PCB Layout
- Embedded Firmware
- Analog & Digital Design
- Prototype Design
- Production Support
- Pre-Certification Testing
- FCC / CE Certification
- Frequencies from DC to 18 GHz
- RF Power levels from 1 watt to 100 KW
- Transmitters, Receivers, Transceivers, Repeaters
- RF Test Equipment Solutions from DC to 18 GHz
- Build-to-Print

### CAD TOOLS INCLUDE:

- Linear and non-linear circuit simulation (MW Office)
- 2.5D electromagnetic simulation (MW Office)
- Full 3D electromagnetic simulation (HFSS)
- PCB design and layout (Mentor Graphics/Altium)
- Mechanical design and layout (SolidWorks/AutoCAD)
- Solid modeling (SolidWorks)
- Thermal analysis (SolidWorks)
- Circuit modeling and analysis (SPICE)
- Reliability analysis and MTBF Prediction (RELEX)
- LabView

## Table of Contents

Management Team.....	4
Part Numbering System .....	5
Low Noise Amplifier Module .....	5
Class A Ultra Linear Module .....	5
MB Series - Class AB Linear Module .....	6
MB Series - Class AB Pulsed Module .....	7
Class A Ultra Linear Rack Mount.....	7
Class AB Linear Rack Mount.....	8
Class AB Pulsed Linear Rack Mount.....	9
Class A Ultra Linear Rack Mount w/Display .....	9
Class AB Linear Rack Mount w/Display .....	10
H-Series — 500 Watt High Power / High Density RF Amplifiers .....	11
Standard Line S-Series .....	12
Standard Line S-Series Pro.....	13
Engineering Reference.....	14-15



# Mangement Team

Elite RF provides the complete range of design services to get your wireless product to production. Development teams consist of experienced engineers with a broad range of skill sets to handle a wide range of product applications. The project scope can range from turnkey, specific design service support, integration, or product testing and certification.



**Tim Avicola**  
**President**

Tim is a corporate and entrepreneurial technical professional experienced in opening new market territories and developing cutting-edge power amplifier products. Over 30 years experience maintaining a competitive edge by anticipating client needs and aligning technology deployment with business strategy. Built a startup power amplifier venture to a 50 million dollar business in the cellular communications field. Managed Motorola cellular Feedforward engineering group.



**Phil Aseltine**  
**Vice President of Engineering**

Senior Engineering Manager with over 40 years of Motorola experience and extensive skills in developing a wide range of communications products. Skilled in leading and developing a team or teams of electrical and mechanical, engineers, including technicians, in the design of embedded Telematics and Automotive modules and systems, cellular technologies. Also skilled in the business and program aspects including quality, scheduling, customer contact, bill of material generation, schematic generation, P&L analysis, strategies, marketing, sales, etc.



**John Mastela**  
**Vice President of Sales and Marketing**

Industry expert with over 30 years of RF and Microwave experience in design engineering, manufacturing, sales and marketing. Broad technical background ranges from design and application engineering to program management, manufacturing, QA and test. In addition, he serves on the Board of Governors Executive Committee as Vice President for the International Microwave Power Institute (IMPI), Deputy Chairman of the Solid-State RF Energy Section and has involvement in several other industry organizations.



**Ami Patel**  
**Chief Operating Officer**

Dynamic, transformational, multi-disciplined leader with over 20 years of operations and finance experience. Her proven innovative approach to operations leverages her extensive background in manufacturing and finance. Coupled with strong leadership and project management skills, she provides unparalleled benefits to the customer and organization. Highly regarded member of the Women in Electronics organization and a STEM mentor. Her rich background includes leadership positions at American Standard Circuits, Morgan Stanley Dean Witter, and Accenture.

## Part Numbering System

<b>XX</b> Model	<b>XXX</b> Min Freq.	<b>XXX</b> Max Freq.	<b>X</b> Units (M) - MHz (G) - GHz	<b>XX</b> Power dBm	<b>XX</b> Gain dB	<b>XX</b> Voltage Vdc	<b>X</b> Option H - Heat sink and fans I - Isolator w/fwd and rev outputs* T - TTL Trigger D - Sub D9
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\*Not available on all models, consult factory.

## Low Noise Amplifier Module



The ML Series is a low-noise amplifier product line offering industry-leading performance over various bands from 1 MHz to 18 GHz. The internal amplifier utilizes E-PHEMT technology to achieve excellent noise figure performance in a unique cascade configuration enabling the combination of very wide band performance and flat gain while offering flexibility to manage SWaP-C demands for commercial off-the-shelf (COTS).

This design operates on a 15 volt supply and is housed in a rugged, compact metal case (3.5" x 3.0" x 1.0") with SMA connectors. It is an ideal candidate for tough operating conditions and crowded system layouts.

Part Number	Freq Min. MHz	Freq Max. MHz	Psat dBm	P1dB dBm	Gain dB	Mode	Class A/AB	Voltage Vdc	Size Inches
ML.458.0G214415	450	8000	24	21	44	CW	A	15	3.5 × 3.0 × 1.0
ML.043.0G183315	40	3000	21	18	33	CW	A	15	3.5 × 3.0 × 1.0
ML.046.0G184015	40	6000	21	18	40	CW	A	15	3.5 × 3.0 × 1.0
ML5.9018G185515	5900	18000	21	18	55	CW	A	15	3.5 × 3.0 × 1.0
ML.752.4G243415	750	2400	27	24	34	CW	A	15	3.5 × 3.0 × 1.0
ML.043.0G222615	40	3000	25	22	26	CW	A	15	3.5 × 3.0 × 1.0
ML.014.1G173415	0.5	4100	20	17	34	CW	A	15	3.5 × 3.0 × 1.0
ML5.0020G184815	5000	20100	21	18	48	CW	A	15	3.5 × 3.0 × 1.0
ML.01014G112415	0.3	14100	14	11	24	CW	A	15	3.5 × 3.0 × 1.0

## Class A Ultra Linear Module



The MA Series is a Class A, high-power amplifier providing ultra linear power over the specified bandwidth, ideal for a variety of high-power test setups as well as applications including communications, radar, EW, industrial, scientific, medical, and more.

The amplifier utilizes LDMOS or GaN technology to achieve excellent gain, efficiency, reliability, and offers flexibility to manage SWaP-C demands for commercial off-the-shelf (COTS). The amplifier provides stability and built-in self-protection against reverse polarity and overheating. Housed in a rugged aluminum alloy case, the unit features SMA connectors and must be mounted on a heat sink for cooling.

Part Number	Freq Min. MHz	Freq Max. MHz	Psat watts	P1dB watts	Gain dB	Mode	Class A/AB	Voltage Vdc	Size Inches
MA.10018G272715	100	18000	1.0	0.5	27	CW	A	15	6.0 × 3.0 × 1.0
MA.051.0G334828	50	1000	2	1	48	CW	A	28	6.0 × 3.0 × 1.0
MA.032.7G363728	30	2700	4	2	37	CW	A	28	7.5 × 4.0 × 1.0
MA800950M474828	800	950	50	20	48	CW	A	28	11.0 × 3.1 × 2.3
MA.502.5G474850	500	2500	50	25	48	CW	A	50	7.5 × 4.0 × 1.0
MA030512M474850	30	512	50	25	48	CW	A	50	8.5 × 6.0 × 1.0
MA.502.5G504850	500	2500	100	50	48	CW	A	50	8.5 × 6.0 × 1.0

## Class AB Linear Module



The MB Series is a Class AB, high-power amplifier providing linear power over the specified bandwidth, ideal for a variety of high-power test setups as well as applications including communications, radar, EW, industrial, scientific, medical, and more.

The amplifier utilizes LDMOS or GaN technology to achieve excellent gain, efficiency, reliability, and offers flexibility to manage SWaP-C demands for commercial off-the-shelf (COTS). The rugged designed amplifier provides stability and built-in self-protection against reverse polarity and overheating. Housed in a rugged aluminum alloy case, the unit features SMA connectors and must be mounted on a heat sink for cooling.

Part Number	Freq Min. MHz	Freq Max. MHz	Psat watts	P1dB watts	Gain dB	Mode	Class A/AB	Voltage Vdc	Size Inches
MB.051.0G374828	50	1000	5	2	48	CW	AB	28	6.0 × 3.0 × 1.0
MB.032.7G403728	30	2700	10	5	37	CW	AB	28	7.5 × 4.0 × 1.0
MB.026.0G363228	20	6000	4	2	32	CW	AB	28	7.5 × 4.0 × 1.0
MB.026.0G434050	20	6000	20	10	40	CW	AB	50	7.5 × 4.0 × 1.0
MB800950M484828	800	950	75	25	48	CW	AB	28	11.0 × 3.1 × 2.3
MB030512M504850	30	512	100	50	48	CW	AB	50	8.5 × 6.0 × 1.0
MB.502.5G434328	500	2500	20	10	43	CW	AB	28	6.0 × 3.0 × 1.0
MB.502.5G504850	500	2500	100	50	48	CW	AB	50	7.5 × 4.0 × 1.0
MB.502.5G534850	500	2500	200	100	48	CW	AB	50	8.5 × 6.0 × 1.0
MB026028M602550	26	28	1000	—	25	CW	AB	50	6.0 × 4.0 × 3.0
MB039041M602550	39	41	1000	—	25	CW	AB	50	6.0 × 4.0 × 3.0
MB080082M602550	80	82	1000	—	25	CW	AB	50	6.0 × 4.0 × 3.0
MB087108M602550	87	108	1000	—	25	CW	AB	50	6.0 × 4.0 × 3.0
MB144148M602550	144	148	1000	—	25	CW	AB	50	6.0 × 4.0 × 3.0
MB170230M602550	170	230	1000	—	25	CW	AB	50	6.0 × 4.0 × 3.0
MB351353M602050	351	353	1000	—	20	CW	AB	50	6.0 × 4.0 × 3.0
MB499501M601850	499	501	1000	—	18	CW	AB	50	6.0 × 4.0 × 3.0
MB1.08.0G404828	1000	8000	10	5	48	CW	AB	28	6.0 × 3.0 × 1.0
MB2.0018G374822	2000	18000	5	—	48	CW	AB	22	6.0 × 4.0 × 1.0
MB2.06.0G404028	2000	6000	10	—	40	CW	AB	28	6.0 × 4.0 × 1.0
MB2.06.0G444828	2000	6000	25	—	48	CW	AB	28	6.0 × 4.0 × 1.0
MB2.06.0G474828	2000	6000	50	—	48	CW	AB	28	8.5 × 6.0 × 1.0
MB6.0012G404020	6000	12000	10	—	40	CW	AB	20	6.0 × 4.0 × 1.0
MB6.0012G444820	6000	12000	25	—	48	CW	AB	20	6.0 × 4.0 × 1.0
MB6.0012G474820	6000	12000	50	—	48	CW	AB	20	8.5 × 6.0 × 1.0
MB9.0010G454828	9000	10000	35	—	48	CW	AB	28	6.0 × 4.0 × 1.0
MB9.0010G484828	9000	10000	60	—	48	CW	AB	28	8.5 × 6.0 × 1.0
MB010011G444828	10000	11000	30	—	48	CW	AB	28	6.0 × 4.0 × 1.0
MB010011G474828	10000	11000	50	—	48	CW	AB	28	8.5 × 6.0 × 1.0
MB013015G474828	13400	15500	50	—	48	CW	AB	28	6.0 × 4.0 × 1.0
MB6.0018G404020	6000	18000	10	—	40	CW	AB	20	6.0 × 4.0 × 1.0
MB6.0018G434820	6000	18000	20	—	48	CW	AB	20	6.0 × 4.0 × 1.0

## Class AB Pulsed Module



The MP Series is a Class AB, high-power pulsed amplifier providing linear power over the specified bandwidth, ideal for a variety of high-power applications including communications, radar, EW, industrial, scientific, medical, and more.

The amplifier utilizes LDMOS or GaN technology to achieve excellent gain with a typical duty cycle of 10% and offers flexibility to manage SWaP-C demands for commercial off-the-shelf (COTS). The rugged designed amplifier provides stability and built-in self-protection against reverse polarity and overheating. Housed in a rugged aluminum alloy case, the unit features SMA connectors and must be mounted on a heat sink for cooling.

Part Number	Freq Min. MHz	Freq Max. MHz	Psat watts	P1dB watts	Gain dB	Mode	Class A/AB	Voltage Vdc	Size Inches
MP430437M681865	430	437	6000	—	18	PULSED	AB	65	19.0 × 16.0 × 3.0
MP430437M631865	430	437	1800	—	18	PULSED	AB	65	6.0 × 4.0 × 3.0
MP1.01.1G605050	1030	1090	1000	—	50	PULSED	AB	50	10.5 × 7.0 × 5.0
MP1.21.4G575050	1200	1400	500	—	50	PULSED	AB	50	8.5 × 6.0 × 3.0
MP2.73.1G575050	2700	3100	500	—	50	PULSED	AB	50	8.5 × 6.0 × 3.0
MP2.93.5G575050	2900	3500	500	—	50	PULSED	AB	50	8.5 × 6.0 × 3.0
MP3.13.6G504830	3100	3600	100	—	48	PULSED	AB	30	6.0 × 4.0 × 1.0
MP3.13.6G534830	3100	3600	200	—	48	PULSED	AB	30	8.5 × 6.0 × 1.0
MP3.33.7G575050	3300	3700	500	—	50	PULSED	AB	50	8.5 × 6.0 × 3.0
MP4.45.0G534840	4400	5000	200	—	48	PULSED	AB	40	8.5 × 6.0 × 3.0
MP5.25.9G474850	5200	5900	50	—	48	PULSED	AB	50	8.5 × 6.0 × 3.0
MP5.25.9G544850	5200	5900	300	—	50	PULSED	AB	50	8.5 × 6.0 × 3.0
MP7.99.6G474840	7900	9600	50	—	48	PULSED	AB	40	8.5 × 6.0 × 3.0
MP8.0011G504828	8000	11000	100	—	48	PULSED	AB	28	6.0 × 4.0 × 1.0
MP8.0011G534828	8000	11000	200	—	48	PULSED	AB	28	8.5 × 6.0 × 1.0

## Class A Ultra Linear Rack Mount



The AA Series is a Class A, high-power 19" rack mount amplifier providing ultra linear power over the specified bandwidth, ideal for a variety of high-power test setups as well as applications including communications, radar, EW, industrial, scientific, medical, and more.

The internal amplifier utilizes LDMOS or GaN technology to achieve excellent gain. The rugged designed amplifier provides stability and built-in self-protection against reverse polarity and overheating. Housed in a aluminum alloy case, the unit features internal power supply, heat sink, fans and N-connectors. The system will operate on 100- 240 VAC.

Part Number	Freq Min. MHz	Freq Max. MHz	Psat watts	P1dB watts	Gain dB	Mode	Class A/AB	Voltage Vdc	Size Inches
AA.051.0G3348AC	50	1000	2	1	48	CW	A	100-240	19 × 15 × 3.5
AA.032.7G3637AC	30	2700	4	2	37	CW	A	100-240	19 × 15 × 3.5
AA.026.0G4038AC	20	6000	10	5	38	CW	A	100-240	19 × 15 × 3.5
AA800950M4748AC	800	950	50	20	48	CW	A	100-240	19 × 15 × 3.5
AA.502.5G4748AC	500	2500	50	25	48	CW	A	100-240	19 × 15 × 3.5
AA030512M4748AC	30	512	50	25	48	CW	A	100-240	19 × 15 × 3.5
AA.502.5G5048AC	500	2500	100	50	48	CW	A	100-240	19 × 15 × 3.5
AA1.84.0G4340AC	1800	4000	20	10	40	CW	A	100-240	19 × 15 × 3.5
AA.021.0G4350AC	20	1000	20	10	50	CW	A	100-240	19 × 15 × 3.5

# Class AB Linear Rack Mount



The AB Series is a Class AB, high-power 19" rack mount amplifier providing linear power over the specified bandwidth, ideal for a variety of high-power test setups as well as applications including communications, radar, EW, industrial, scientific, medical, and more.

The internal amplifier utilizes LDMOS or GaN technology to achieve excellent gain. The rugged designed amplifier provides stability and built-in self-protection against reverse polarity and overheating. Housed in a rugged aluminum alloy case, the unit features internal power supply, heat sink, fans and N-connectors. The system will operate on 100- 240 VAC.

Part Number	Freq Min. MHz	Freq Max. MHz	Psat watts	P1dB watts	Gain dB	Mode	Class A/AB	Voltage Vdc	Size Inches
AB.051.0G3748AC	50	1000	5	2	48	CW	AB	100-240	19 × 15 × 3.5
AB.032.7G4037AC	30	2700	10	5	37	CW	AB	100-240	19 × 15 × 3.5
AB.026.0G3632AC	20	6000	4	2	32	CW	AB	100-240	19 × 15 × 3.5
AB.026.0G4340AC	20	6000	20	10	40	CW	AB	100-240	19 × 15 × 3.5
AB800950M4848AC	800	950	75	25	48	CW	AB	100-240	19 × 15 × 3.5
AB.502.5G5048AC	500	2500	100	50	48	CW	AB	100-240	19 × 15 × 3.5
AB030512M5048AC	30	512	100	50	48	CW	AB	100-240	19 × 15 × 3.5
AB.502.5G5348AC	500	2500	200	100	48	CW	AB	100-240	19 × 15 × 3.5
AB026028M6025AC	26	28	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
AB039041M6025AC	39	41	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
AB080082M6025AC	80	82	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
AB087108M6025AC	87	108	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
AB144148M6025AC	144	148	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
AB170230M6025AC	170	230	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
AB351353M6020AC	351	353	1000	—	20	CW	AB	100-240	19 × 15 × 3.5
AB499501M6018AC	499	501	1000	—	18	CW	AB	100-240	19 × 15 × 3.5
AB.706.0G4650AC	700	6000	40	20	50	CW	AB	100-240	19 × 15 × 3.5
AB2.0018G3748AC	2000	18000	5	—	48	CW	AB	100-240	19 × 15 × 3.5
AB2.06.0G4040AC	2000	6000	10	—	40	CW	AB	100-240	19 × 15 × 3.5
AB2.06.0G4448AC	2000	6000	25	—	48	CW	AB	100-240	19 × 15 × 3.5
AB2.06.0G4748AC	2000	6000	50	—	48	CW	AB	100-240	19 × 15 × 3.5
AB6.0012G4040AC	6000	12000	10	—	40	CW	AB	100-240	19 × 15 × 3.5
AB6.0012G4448AC	6000	12000	25	—	48	CW	AB	100-240	19 × 15 × 3.5
AB6.0012G4748AC	6000	12000	50	—	48	CW	AB	100-240	19 × 15 × 3.5
AB9.0010G4548AC	9000	10000	35	—	48	CW	AB	100-240	19 × 15 × 3.5
AB9.0010G4848AC	9000	10000	60	—	48	CW	AB	100-240	19 × 15 × 3.5
AB010011G4448AC	10000	11000	30	—	48	CW	AB	100-240	19 × 15 × 3.5
AB010011G4748AC	10000	11000	50	—	48	CW	AB	100-240	19 × 15 × 3.5
AB013015G4748AC	13400	15500	50	—	48	CW	AB	100-240	19 × 15 × 3.5
AB6.0018G4040AC	6000	18000	10	—	40	CW	AB	100-240	19 × 15 × 3.5
AB6.0018G4348AC	6000	18000	20	—	48	CW	AB	100-240	19 × 15 × 3.5



## Class AB Pulsed Linear Rack Mount



The AP Series is a Class AB, high-power 19" rack mount pulse amplifier providing linear power over the specified bandwidth, ideal for a variety of high-power applications including communications, radar, EW, industrial, scientific, medical, and more.

The internal amplifier utilizes LDMOS or GaN technology to achieve excellent gain with a typical duty cycle of 10%. The rugged designed amplifier provides stability and built-in self-protection against reverse polarity and overheating. Housed in a rugged aluminum alloy case, the unit features internal power supply, heat sink, fans and N- connectors. The system will operate on 100-240 VAC.

Part Number	Freq Min. MHz	Freq Max. MHz	Psat watts	P1dB watts	Gain dB	Mode	Class A/AB	Voltage Vdc	Size Inches
AP430437M6818AC	430	437	6000	—	18	PULSED	AB	100-240	19 × 15 × 3.5
AP430437M6318AC	430	437	1800	—	18	PULSED	AB	100-240	19 × 15 × 3.5
AP1.01.1G6050AC	1030	1090	1000	—	50	PULSED	AB	100-240	19 × 15 × 3.5
AP1.21.4G5750AC	1200	1400	500	—	50	PULSED	AB	100-240	19 × 15 × 3.5
AP2.73.1G5750AC	2700	3100	500	—	50	PULSED	AB	100-240	19 × 15 × 3.5
AP2.93.5G5750AC	2900	3500	500	—	50	PULSED	AB	100-240	19 × 15 × 3.5
AP3.13.6G5048AC	3100	3600	100	—	48	PULSED	AB	100-240	19 × 15 × 3.5
AP3.13.6G5348AC	3100	3600	200	—	48	PULSED	AB	100-240	19 × 15 × 3.5
AP3.33.7G5750AC	3300	3700	500	—	50	PULSED	AB	100-240	19 × 15 × 3.5
AP4.45.0G5348AC	4400	5000	200	—	48	PULSED	AB	100-240	19 × 15 × 3.5
AP5.25.9G4748AC	5200	5900	50	—	48	PULSED	AB	100-240	19 × 15 × 3.5
AP5.25.9G5448AC	5200	5900	300	—	50	PULSED	AB	100-240	19 × 15 × 3.5
AP7.99.6G4748AC	7900	9600	50	—	48	PULSED	AB	100-240	19 × 15 × 3.5
AP8.0011G5048AC	8000	11000	100	—	48	PULSED	AB	100-240	19 × 15 × 3.5
AP8.0011G5348AC	8000	11000	200	—	48	PULSED	AB	100-240	19 × 15 × 3.5

## Class A Ultra Linear Rack Mount w/Display



The DA Series is a Class A, high-power 19" rack mount amplifier providing ultra linear power over the specified bandwidth, ideal for a variety of high-power test setups as well as applications including communications, radar, EW, industrial, scientific, medical, and more.

The internal amplifier utilizes LDMOS or GaN technology to achieve excellent gain. The rugged designed amplifier provides stability and built-in self-protection against reverse polarity and overheating. Housed in a rugged aluminum alloy case, the unit features front panel-touch display to control gain, and provides forward power, reverse power, VSWR monitoring along with internal power supply, heat sink, fans and N- connectors. Remote control via Ethernet and the system will operate on 100- 240 VAC.

Part Number	Freq Min. MHz	Freq Max. MHz	Psat watts	P1dB watts	Gain dB	Mode	Class A/AB	Voltage Vdc	Size Inches
DA.051.0G3348AC	50	1000	2	1	48	CW	A	100-240	19 × 15 × 3.5
DA800950M4748AC	800	950	50	20	48	CW	A	100-240	19 × 15 × 3.5
DA.502.5G4748AC	500	2500	50	25	48	CW	A	100-240	19 × 15 × 3.5
DA030512M4748AC	30	512	50	25	48	CW	A	100-240	19 × 15 × 3.5
DA.502.5G5048AC	500	2500	100	50	48	CW	A	100-240	19 × 15 × 3.5
DA1.84.0G4340AC	1800	4000	43	10	40	CW	A	100-240	19 × 15 × 3.5
DA.021.0G4350AC	20	1000	20	10	50	CW	A	100-240	19 × 15 × 3.5

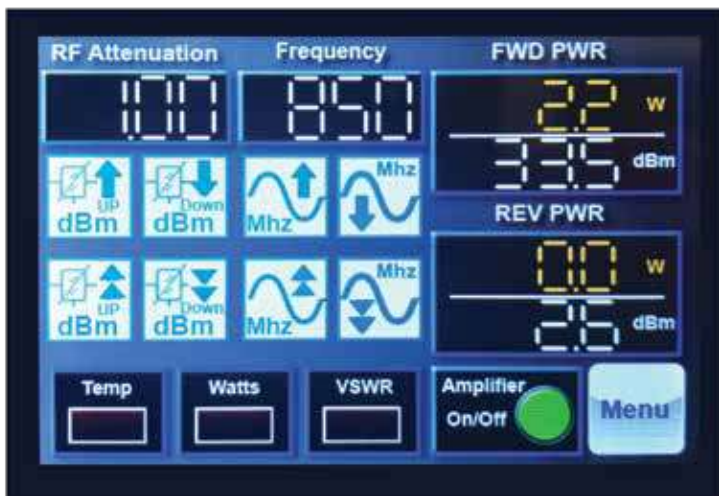
## Class AB Linear Rack Mount w/Display

The DB Series is a Class AB, high-power 19" rack mount amplifier providing linear power over the specified bandwidth, ideal for a variety of high-power test setups as well as applications including communications, radar, EW, industrial, scientific, medical, and more.



The internal amplifier utilizes LDMOS or GaN technology to achieve excellent gain. The rugged designed amplifier provides stability and built-in self-protection against reverse polarity and overheating. Housed in a rugged aluminum alloy case, the unit features front panel-touch display to control gain, and provides forward power, reverse power, VSWR monitoring along with internal power supply, heat sink, fans and N-connectors. Remote control via Ethernet and the system will operate on 100-240 VAC.

Part Number	Freq Min. MHz	Freq Max. MHz	Psat watts	P1dB watts	Gain dB	Mode	Class A/AB	Voltage Vdc	Size Inches
DB.051.0G3748AC	50	1000	5	2	48	CW	AB	100-240	19 × 15 × 3.5
DB800950M4848AC	800	950	75	25	48	CW	AB	100-240	19 × 15 × 3.5
DB.502.5G5048AC	500	2500	100	50	48	CW	AB	100-240	19 × 15 × 3.5
DB030512M5048AC	30	512	100	50	48	CW	AB	100-240	19 × 15 × 3.5
DB.502.5G5348AC	500	2500	200	100	48	CW	AB	100-240	19 × 15 × 3.5
DB026028M6025AC	26	28	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
DB039041M6025AC	39	41	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
DB080082M6025AC	80	82	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
DB087108M6025AC	87	108	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
DB144148M6025AC	144	148	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
DB170230M6025AC	170	230	1000	—	25	CW	AB	100-240	19 × 15 × 3.5
DB351353M6020AC	351	353	1000	—	20	CW	AB	100-240	19 × 15 × 3.5
DB499501M6018AC	499	501	1000	—	18	CW	AB	100-240	19 × 15 × 3.5
DB.706.0G4650AC	700	6000	40	20	50	CW	AB	100-240	19 × 15 × 3.5
DB2.06.0G4040AC	2000	6000	10	—	40	CW	AB	100-240	19 × 15 × 3.5
DB2.06.0G4448AC	2000	6000	25	—	48	CW	AB	100-240	19 × 15 × 3.5
DB2.06.0G4748AC	2000	6000	50	—	48	CW	AB	100-240	19 × 15 × 3.5



### D-Series touchscreen display enables the user to:

- Set attenuation levels and output power
- Set calibration factor
- Monitor forward/reverse power and VSWR
- Monitor heatsink temperature
- Monitor fault indicators for over temp, current, and voltage
- Remote wireless control capable via smart device

# H-Series — 500 Watt High Power / High Density RF Amplifiers

The H Series is a Class AB, very high-power rack system, which may be air-cooled or water-cooled. The amplifier provides linear power over the specified bandwidth, ideal for a variety of high-power applications up to 100 KW. The internal amplifier utilizes LDMOS or GaN technology to achieve excellent gain. The rugged designed amplifier provides stability and built-in self-protection against reverse polarity and overheating. Housed in a rugged aluminum alloy rack, the unit features front panel-touch display, and provides forward power, reverse power, VSWR monitoring along with internal power supply, heat sink, fans and 7/16 Din connectors along with all water cooling components. Remote control via Ethernet and the system will operate on 120 / 240 / 240 3-phase / 480 3-phase VAC. These systems can be custom designed per the customer specification.



**HM Model**  
**Modular**  
**High Power**



**HR Model**  
**19 Inch**  
**Rack Mount**



**HS Model**  
**19 Inch**  
**Rack**  
**Mount**  
**System**

Model	Frequency (MHz)	Power Out (watts)	Gain (dB)	Voltage (Vdc)	System (watts)	Mode	Package
XX002030M5760-XX	2-30	500	60	28-65 Vdc/100-480 Vac	900	CW/Digital/Pulse	HM / HR
XX027027M5760-XX	27	500	60	28-65 Vdc/100-480 Vac	900	CW/Digital/Pulse	HM / HR
XX040042M5760-XX	40-42	500	60	28-65 Vdc/100-480 Vac	900	CW/Digital/Pulse	HM / HR
XX060060M5760-XX	60	500	60	28-65 Vdc/100-480 Vac	900	CW/Digital/Pulse	HM / HR
XX071073M5760-XX	71-73	500	60	28-65 Vdc/100-480 Vac	900	CW/Digital/Pulse	HM / HR
XX080082M5760-XX	80-82	500	60	28-65 Vdc/100-480 Vac	900	CW/Digital/Pulse	HM / HR
XX088108M5760-XX	88-108	500	60	28-65 Vdc/100-480 Vac	900	CW/Digital/Pulse	HM / HR
XX128128M5760-XX	128	500	60	28-65 Vdc/100-480 Vac	900	CW/Digital/Pulse	HM / HR
XX144148M5760-XX	144-148	500	60	28-65 Vdc/100-480 Vac	900	CW/Digital/Pulse	HM / HR
XX170230M5760-XX	170-230	500	60	28-65 Vdc/100-480 Vac	1000	CW/Digital/Pulse	HM / HR
XX200200M5760-XX	200	500	60	28-65 Vdc/100-480 Vac	1000	CW/Digital/Pulse	HM / HR
XX225235M5760-XX	225-235	500	60	28-65 Vdc/100-480 Vac	1000	CW/Digital/Pulse	HM / HR
XX352352M5760-XX	352	500	60	28-65 Vdc/100-480 Vac	1000	CW/Digital/Pulse	HM / HR
XX500500M5760-XX	500	500	60	28-65 Vdc/100-480 Vac	1000	CW/Digital/Pulse	HM / HR
XX915915M5760-XX	915	500	60	28-65 Vdc/100-480 Vac	1000	CW/Digital/Pulse	HM / HR
XX1.01.1G5760-XX	1000-1100	500	60	28-65 Vdc/100-480 Vac	1000	CW/Digital/Pulse	HM / HR
XX1.21.4G5760-XX	1200-1400	500	60	28-65 Vdc/100-480 Vac	1000	Pulse	HM / HR
XX1.31.3G5760-XX	1300	500	60	28-65 Vdc/100-480 Vac	1000	CW/Digital/Pulse	HM / HR
XX2.42.5G5760-XX	2400-2500	500	60	28-65 Vdc/100-480 Vac	1000	CW/Digital/Pulse	HM / HR
XX2.73.1G5760-XX	2700-3100	500	60	28-65 Vdc/100-480 Vac	1000 pk	Pulse	HM / HR
XX2.93.5G5760-XX	2900-3500	500	60	28-65 Vdc/100-480 Vac	1000 pk	Pulse	HM / HR
XX4.45.0G5760-XX	4400-5000	500	60	28-65 Vdc/100-480 Vac	1200	CW/Digital/Pulse	HM / HR
XX4.55.9G5760-XX	4500-5900	500	60	28-65 Vdc/100-480 Vac	1200 pk	Pulse	HM / HR
XX5.25.9G5760-XX	5200-5900	500	60	28-65 Vdc/100-480 Vac	1200 pk	Pulse	HM / HR
XX7.99.6G5760-XX	7900-9600	500	60	28-65 Vdc/100-480 Vac	1200 pk	Pulse	HM / HR

# Standard Line S-Series



A compact and cost-effective alternative to bulky and expensive test equipment has been the dream of many engineers. Elite RF tasked its engineers to develop a multi-purpose RF test equipment product that would be a workhorse for the RF engineer. The goals were to be as versatile as possible, have a small footprint — yet remain affordable compared to the typical RF test equipment on the market. The S-Series product line is the result of that development.

The new and innovative S-Series Multi-Purpose RF Test System is a flexible alternative to expensive and bulky RF test equipment and can be used for R&D characterization on the bench, EMC assessment and automated production test in the factory.

Model	Spectrum Analyzer (GHz)	RF Tracking Generator (GHz)	Dual Signal Generator (GHz)	RF Power Amplifier	4 Channel Scope (MHz)	RF Power Meter
SA 441	1 Hz - 4.4	10 Hz - 4.4	54 MHz - 13.6	N/A	200	N/A
SPA 441	1 Hz - 4.4	10 Hz - 4.4	54 MHz - 13.6	0.5 - 4.2 GHz / 5 watt	200	50 MHz - 4 GHz
SA 1241	100 kHz - 12.4	100 kHz - 12.4	54 MHz - 13.6	N/A	200	N/A
SPA 1241	100 kHz - 12.4	100 kHz - 12.4	54 MHz - 13.6	100MHz - 18 GHz / 1watt	200	10 MHz - 12.5 GHz

## Spectrum Analyzer and Measuring Receiver

### **FREQUENCY**

- Frequency Range: 100 kHz to 12.4 GHz
- Time base: 10 MHz reference in and out
- Internal Frequency Reference Accuracy:  $\pm 1$ ppm
- Resolution Bandwidth: 1 Hz to 250 kHz and 6 MHz

### **AMPLITUDE (RBW $\leq 100$ KHZ)**

- Range: +10 dBm to Displayed Average Noise Level (DANL)
- Absolute Accuracy (0dB to DANL):
  - $\pm 1.5$  dB (100 kHz to 6 GHz)
  - $\pm 2.5$  dB (6 GHz to 12.4 GHz)

### **DISPLAYED AVERAGE NOISE LEVEL (DBM/HZ)**

- 100 kHz to 8.0 GHz -147 dBm
- 8.0 GHz to 11.0 GHz -134 dBm
- 11.0 GHz to 12.4 GHz -129 dBm

### **RESIDUAL RESPONSES (RBW = 6.5KHZ)**

- 100 kHz to 10 MHz -100 dBm
- 10 MHz to 8.0 GHz -93 dBm
- 8.0 GHz to 12.4 GHz -82 dBm

### **SSB PHASE NOISE AT 10 GHZ (TYPICAL)**

Frequency	Offset dBc/Hz
100 Hz	-72
1 kHz	-80
10 kHz - 100 kHz	-87
1 MHz	-110

### **IF OUTPUT**

63 MHz with 6 MHz bandwidth for down conversion of NTSC, PAL, SECAM, ATSC, and DTV formatted signals

### **MEASURING RECEIVER (TYPICAL AFTER 30 MIN WARM-UP AND $\pm 3^\circ\text{C}$ OF REF. START TEMP.)**

- Operating Frequency: 100 kHz to 12.4 GHz
- Modulation Measurement Accuracy:  $\pm 1\%$  for AM & FM

## Dual Channel RF Signal Generator (54 MHz – 13.6 GHz)

### **FEATURES:**

- Open source Labview GUI software control via USB
- 96MHz 32 bit ARM processor on board
- Two channel frequency, phase and amplitude control
- Quadrature (or other phase) LO signal generation
- 0.1Hz or less frequency resolution
- 2.5ppm generator frequency accuracy
- 01 degree phase control on each channel
- 4mS RF lock time standard
- 70uS RF lock time (TBD) (subject to export control)
- Up to +20dBm output power
- 16 bit 0.01dB amplitude resolution
- Over 50dB of power control
- Absolute power display on Software GUI
- 10MHz – 100MHz external reference input
- Selectable 10 or 27 MHz internal reference output
- Internal and external FM, AM, Pulse Modulation
- Pulsed FMCW Chirp
- External Sweep, Step and modulation Trigger
- 100 point Frequency and Amplitude Hop Table
- Dual Channel Frequency and Amplitude Lock

## Tracking Generator

### **FREQUENCY**

- Frequency range: 100 kHz to 12.4 GHz
- Frequency Accuracy:  $\pm 1$ ppm
- Frequency steps: 19 selectable step sizes from 10 Hz to 10 MHz (100 kHz to 4 GHz range) and 16 selectable step sizes from 100 Hz to 10 MHz (4 GHz to 12.4 GHz range)

### **AMPLITUDE**

- Amplitude range: -30 dBm to -10 dBm
- Absolute Amplitude accuracy  $\pm 2$  dB
- Amplitude steps: 1 dB



# Standard Line S-Series Pro



The S-Series Pro Multi-Purpose RF Test System is a flexible alternative to traditional RF test equipment and can be used for R&D characterization on the bench, EMC assessment and automated production test in the factory.

The RF test equipment built into the S-Series Pro can be used independently or with other external equipment. Base Model is controllable via a USB port with on screen GUI. Compatible computer required along with included S-Series Pro software.

Model	Spectrum Analyzer (GHz)	4 Channel Scope (MHz)	Signal Generator (MHz)	RF Power Amplifier (1 Watt)	Vector Network Analyzer (MHz)	RF Power Meter	Tracking Generator	Programmable Attenuator	Dual Signal Generator
SP 4	1 Hz - 4.4 GHz	250	34 - 4.4	100 MHz - 18 GHz 1 Watt	300 kHz - 6 GHz	1 MHz - 8 GHz	Tracking 10 Hz - 4.4 GHz	1 MHz - 6 GHz	54 MHz-13.6 GHz
SP 6	Real Time 9 kHz - 6 GHz	250	Filtered 1 MHz - 6 GHz	100 MHz - 18 GHz 1 watt	300 kHz - 6 GHz	1 MHz - 8 GHz	N/A	1 MHz - 6 GHz	54 MHz-13.6 GHz
SP 12	100 kHz - 12.4 GHz	250 MHz	Dual 54 MHz-13.6 GHz	100 MHz - 18 GHz 1 watt	100 kHz - 18 GHz	1 MHz - 12.5 GHz	Tracking 100 kHz - 12.4 GHz	N/A	Included in base model
SP 20	Real Time 100 kHz - 20 GHz	250 MHz	100kHz-20 GHz	100 MHz - 18 GHz 1 watt	100 kHz - 18 GHz	1 MHz - 26.5 GHz	N/A	100 MHz - 30 GHz	10 MHz-24 GHz

## Real Time Spectrum Analyzer

### FREQUENCY

- Frequency Range: 100 kHz to 20.0 GHz
- Calibrated Streaming I/Q: 5 kHz to 40 MHz of selectable I/Q bandwidth.
- Resolution Bandwidths (RBW): 0.1 Hz ( $\leq 200$  kHz span) to 3 MHz (any span) using 40 MHz IBW; 30 kHz to 10 MHz using 160 MHz IBW

### SWEEP SPEED

Speed	RBW
1THz/sec	1 MHz
1THz/sec	100 kHz
1THz/sec	30 kHz
160GHz/sec	10 kHz
18GHz/sec	1 kHz

### DISPLAYED AVERAGE NOISE LEVEL (DANL)

Input Frequency Range	dBm/Hz (Typical)
100 kHz to 700 MHz	-156 dBm
700 MHz to 2.7 GHz	-160 dBm
2.7 GHz to 4.5 GHz	-158 dBm
4.5 GHz to 8.5 GHz	-153 dBm
8.5 GHz to 15 GHz	-154 dBm
15 GHz to 20 GHz	-149 dBm

### SSB PHASE NOISE AT 10 GHZ (TYPICAL)

Offset Frequency	dBc/Hz
10 Hz	-76
100 Hz	-108
1 kHz	-123
10 kHz	-132
100 kHz	-136
1MHz	-133

## Signal Generator

### FREQUENCY

- Frequency Range: 100 MHz to 20 GHz
- 1 Hz tuning resolution (exact frequency)
- < -30 dBm to +10 dBm leveled output
- Spurious signals < -70 dBc typical
- Low residual phase noise typically -118 dBc/Hz at 10 kHz offset from 10 GHz
- Dual independent channels
- 2nd order Harmonics > -20 dBc
- Sub-Harmonics > -70 dBc

## Vector Network Analyzer

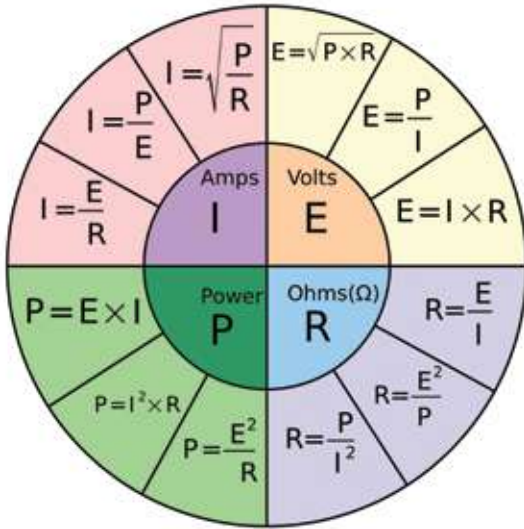
- 100 KHz to 18 GHz operation  
Measured parameters: S11, S21, S12, S22
- Sweep types: Linear frequency, log frequency, segment, power sweep
- Dynamic range: 130 dB
- Wide output power adjustment range: -40 dBm to +10 dBm
- Measurement time per point: 30  $\mu$ s per point, min typ.
- Tabular and graphic print and save formats, including Touchstone
- Up to 16 logical channels with 16 traces each max
- Automation programming in LabView, Python, MATLAB, .NET, etc.
- Time domain and gating conversion included
- Frequency offset mode, including vector mixer calibration measurements
- Up to 200,001 measurement points
- Multiple precision calibration methods and automatic calibration

### Noise Floor

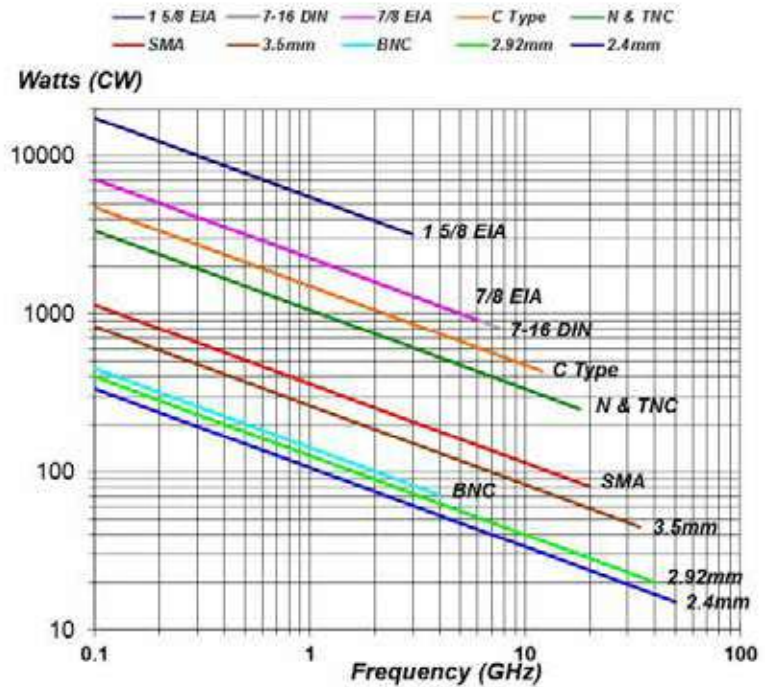
100 kHz to 300 kHz	-80 dBm/Hz
300 kHz to 10 MHz	-115 dBm/Hz
10 MHz to 7 GHz	-130 dBm/Hz (135 dBm/Hz typ.)
7 GHz to 12 GHz	-125 dBm/Hz (130 dBm/Hz typ.)
12 GHz to 16 GHz	-122 dBm/Hz (127 dBm/Hz typ.)
16 GHz to 18 GHz	-120 dBm/Hz (125 dBm/Hz typ.)

# Engineering Reference

## Ohm's Law Wheel



## Connector Power Handling



## Frequency Band Designator

Frequency	IEEE	EU, NATO, US ECM	ITU		
			no.	abbr.	
3 Hz		A			
30 Hz			1	ELF	
300 Hz			2	SLF	
3 kHz			3	ULF	
30 kHz			4	VLF	
300 kHz			5	LF	
3 MHz			6	MF	
30 MHz	HF		7	HF	
250 MHz	VHF	B	8	VHF	
300 MHz					
500 MHz	UHF		C	9	UHF
1 GHz		D			
2 GHz	L				
3 GHz	S	E	10	SHF	
4 GHz		F			
6 GHz	C	G			
8 GHz		H			
10 GHz	X	I			
12 GHz		J			
18 GHz	K <sub>u</sub>				
20 GHz	K				
27 GHz		K	11	EHF	
30 GHz	K <sub>a</sub>				
40 GHz					
60 GHz	V	L			
75 GHz		M			
100 GHz	W				
110 GHz					
300 GHz	mm		12	THF	
3 THz					

## Connector Torque Values

Connector	Coupling Torque N-cm/in-lb	Wrench Size
Type DIN 7-16	3500/310	27 & 32 mm
Type F (75 ohm)	168/15	7/16 in
7 mm (APC-7)	135/12	3/4 in (19 mm)
Type N 50/75 ohm	135/12 135/12	25/32 in (20 mm) 3/4 in (19 mm)
3.5 mm	90/8	8 mm
2.4 mm	90/8	8 mm
2.92 mm (K)	90/8	8 mm
1.85 mm (V)	90/8	5/16 in (8 mm)
SMA, OSM	45/4 (economic) 100/9 (standard) 195/17 (hermetic)	5/16 in (8 mm) 5/16 in (8 mm) 7 mm
SSMA	70/6	1/4 in
SMC	35/3	6 mm
TNC	56/5	9/16 (15 mm)
1.0 mm	45/4	6 mm

# Engineering Reference

## dB Down vs % Loss

db	%	db	%	db	%
0.1	2.3	1.0	20.6	2.5	43.7
0.2	4.5	1.1	22.4	3	50
0.25	5.6	1.2	24.1	4	60.2
0.3	6.7	1.3	25.9	5	68.4
0.4	8.8	1.4	27.6	6	75
0.5	10.9	1.5	29.2	7	80.8
0.6	12.9	1.6	30.8	8	84.6
0.7	14.9	1.7	32.4	9	87.5
0.75	15.9	1.8	33.9	10	90
0.8	16.9	1.9	35.5	15	97
0.9	18.7	2	36.9	20	99

## Conversion of Return Loss to VSWR

db	VSWR	db	VSWR	db	VSWR	db	VSWR
46.1	1.01	24.3	1.13	15.6	1.4	9.5	2
40.1	1.02	23.7	1.14	14.7	1.45	9	2.1
36.6	1.03	23.1	1.15	14	1.5	8	2.32
34.1	1.04	22.1	1.17	13.3	1.55	7	2.61
32.3	1.05	21.6	1.18	12.6	1.6	6	3.01
30.7	1.06	20.8	1.2	12.2	1.65	5	3.57
29.4	1.07	20.1	1.22	11.7	1.7	4	4.42
28.3	1.08	19.1	1.25	11.3	1.75	3	5.85
27.3	1.09	17.7	1.3	10.9	1.8	2	8.72
26.4	1.1	17	1.33	10.5	1.85	1	17.4
25.6	1.11	16.5	1.35	10.2	1.9	0.5	34.78
24.9	1.12	15.9	1.38	9.8	1.95	0	∞

## Coupling Value vs. Coupling Loss

Coupling Value (dB)	Coupling Loss (dB)
13	0.227
15	0.14
17	0.09
20	0.045
23	0.023
25	0.014
27	0.009
3	3
6	1.26
10	0.454
30	0.004
40	4x10 <sup>-4</sup>

## Power Ratio dBm to Watts

dbm	Power	dbm	Power
0	1mW	47	50W
3	2mW	50	100W
7	5mW	53	200W
10	10mW	54.77	300W
13	20mW	56	400W
17	50mW	57	500W
20	100mW	57.78	600W
23	200mW	58.45	700W
27	500mW	59	800W
30	1W	59.54	900W
40	10W	60	1000W
43	20W	67	5000W



### Corporate Headquarters

1900 E. Golf Road - Suite 950 | Schaumburg, IL 60173

### Research and Development Center

2155 Stonington Ave - Suite 217 | Hoffman Estates, IL 60169

### In-House PCB Shop, Metal Shop & Final Assembly

West Chicago, IL 60185

## RFMW is the exclusive distributor of Elite RF Products



### **RFMW**

188 Martinvale Lane  
San Jose, CA 95119  
Telephone: 877-367-7369)  
E-mail: sales@rfmw.com

### **Americas**

#### **Canada**

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#### **Mexico**

408-572-8811

#### **Latin America**

001 954-476-8630

### **Europe**

#### **United Kingdom**

E-mail: sales@rfmw.co.uk  
Tel: +(44) 1522 686690

### **Germany**

E-mail: sales@rfmw.eu  
Tel : +(49) 8031-7969240  
Fax : +(49) 8031-7969241

### **Sweden**

E-mail: sales@rfmw.eu  
Tel: +46 79 336 75 36

### **France**

E-mail: sales@rfmw.eu  
Tel: +33 (0) 6 60 44 47 23  
Fax: +44 (0) 1522 686 691

### **Italy**

E-mail: sales@rfmw.eu  
Tel: +(39) 039 890 1515

### **Russia**

E-mail: sales@rfmw.eu  
Tel : +(49) 8031-7969240  
Fax : +(49) 8031-7969241

### **Israel**

Tel: +(972) 72 3322111  
Fax: +(972) 72 2150900  
E-mail: israelw@rfmw.com

### **Asia**

#### **Singapore**

Tel: (65) 6316 3389  
Fax: (65) 6316 3390  
E-mail: sales@rfmw.asia

#### **Hong Kong**

Tel: +852 2682 9330  
Fax: +852 2682 9302  
E-mail: sales@rfmw.asia

### **China**

Tel: 86 134 2393 5353  
E-mail: sales@rfmw.asia

