Amplifiers

Model 455

Features:

- 30 kW Pulse, 9.0-10.0 GHz
- Class AB design
- Full VSWR tolerant
- Built-in fault monitoring, logging and protection
- Touch screen display
- Forward and reverse power monitoring
- Remote control: Ethernet, USB, GPIB, fiber-optic serial, RS-232
- Modular design for easy maintenance and service
- Low acoustical noise

Applications:

- EW Communication/Test/Jamming
- RADAR
- EMC Test applications
- Science

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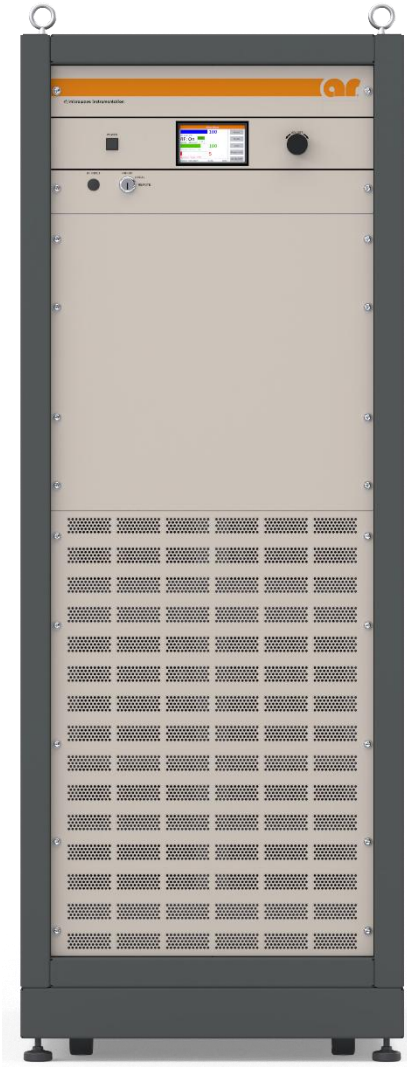
ISO 9001:2015 Certified
ISO 17025:2017 Accredited

The Model 455 is a solid-state, Class AB design, self-contained, air-cooled, broadband power amplifier designed for pulse applications at low duty factors where instantaneous bandwidth and high gain are required. It will provide a minimum of 30 kilowatts minimum across its operating bandwidth of 9.0-10.0 GHz.

The Model 455 is equipped with a Digital Control Panel (DCP) which provides both local and remote control of the amplifier. The DCP uses a color LCD touch screen and a single rotary knob to offer status reporting and control capability. The display provides Forward Power and Reflected Power values plus amplifier status. Special features include a gain control and RF output level protection

Protection is provided from various failure conditions including over-temperature and power supply faults. A front panel display indicates the operational status and fault conditions. All amplifier control functions, and status indications are available remotely using GPIB/IEEE-488, RS-232, fiber-optic serial, USB, or Ethernet. Interface connectors are located on the back panel. Local and remote operation is managed by a switch on the front panel.

The export classification for this equipment is 3A001. These commodities, technology or software are controlled for export in accordance with the U.S. Export Administration Regulations. Diversion contrary to U.S. law is prohibited.



Electrical Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Rated Power Output After required WR90 sections (*)	PSAT	30	31.5	33	kW
Input for Rated Output	Pin		1		mW
			0		dBm
Pulse Droop – 5µs pulse @ 30 kW (4 µs required) (*) RF power measurement at the end of the 5 µs				<-0.1	dB
Operating Frequency	BW	9.0		10.0	GHz
Gain (Small Signal)		74.8	76.8	78.8	dB
Gain Reduction Adjustment (when below compression)		20			dB
Flatness	ΔG		±1	±1.5	dB
Input Impedance	Z in		50		Ohm
				≤2.0:1	VSWR
Output Impedance	Z out		50		Ohm
Noise Figure	NF	6	7	≤8	dB
Harmonic Distortion @ rated power	H2, H3	-20	- 22	≤-30	dBc
Spurious			≤-60		dBc
Power Consumption for maximum duty-cycle	PD	900	1000	1200	W
Modulation	AM, FM or Pulse				

Absolute Maximum Rating

Parameter	Minimum	Typical	Maximum	Unit
RF Drive			+13	dBm
RF Load		1:1	6:1 @ rated power	VSWR
RF Load Reflected Will operate without damage or oscillation when connected to any load impedance. Alarm and protection above 15 kW reflected power			50	%
AC Power (single phase)	200		240	VAC
AC Power	47		63	Hz
Ambient Temperature (Operating)	+5	+25	+40	°C
Storage Temperature	-20		+50	°C
Relative Humidity			80% up to 31°C Decreasing linearly to 50% at 40°C.	RH
Altitude			2000	m
Shock/Vibration	MIL-STD-810H ANNEX C TRANSPORTATION sections 2.1-2.1.2 and 2.3			

Pulse Capability	
Parameter	**Value**
Pulse Width	5 µs maximum (4 µs required)
Pulse Rate (PRF)	250Hz maximum
Duty Cycle	0.12% maximum (0.1 % required)
RF Rise and Fall	30 ns maximum (10 - 90 %)
Delay	≤1 µs from pulse input to RF 90%
Pulse Width Distortion	±25 ns maximum (difference between Pulse input gate and RF pulse)
Pulse Off Isolation	60 dB minimum
Pulse Input	+5 V nominal / 50 ohms internal termination

Mechanical Specifications		
Parameters		**Unit**
Dimensions (35U) (W x H x D) **Includes 5U of extra space at top of rack for customer use.**	56.3 x 176.0 x 95.5	cm
	22.6 x 69.3 x 37.6	in
Weight	396	kg
	872	lb
Cooling	Forced air (self-contained fans) Side inlets / rear outlet 728cfm, Δt = +4°C (typical)	
Acoustical Noise (Measured @ 1 meter from the front)	66 (typical)	dBA

Regulatory Compliance	
Type	**Standard**
EMC	EN 61326-1
Safety	UL 61010-1
	CAN/CSA C22.2 #61010-1
	CENELEC EN 61010-1
RoHS	Directive 2011/65/EU
Export	3A001

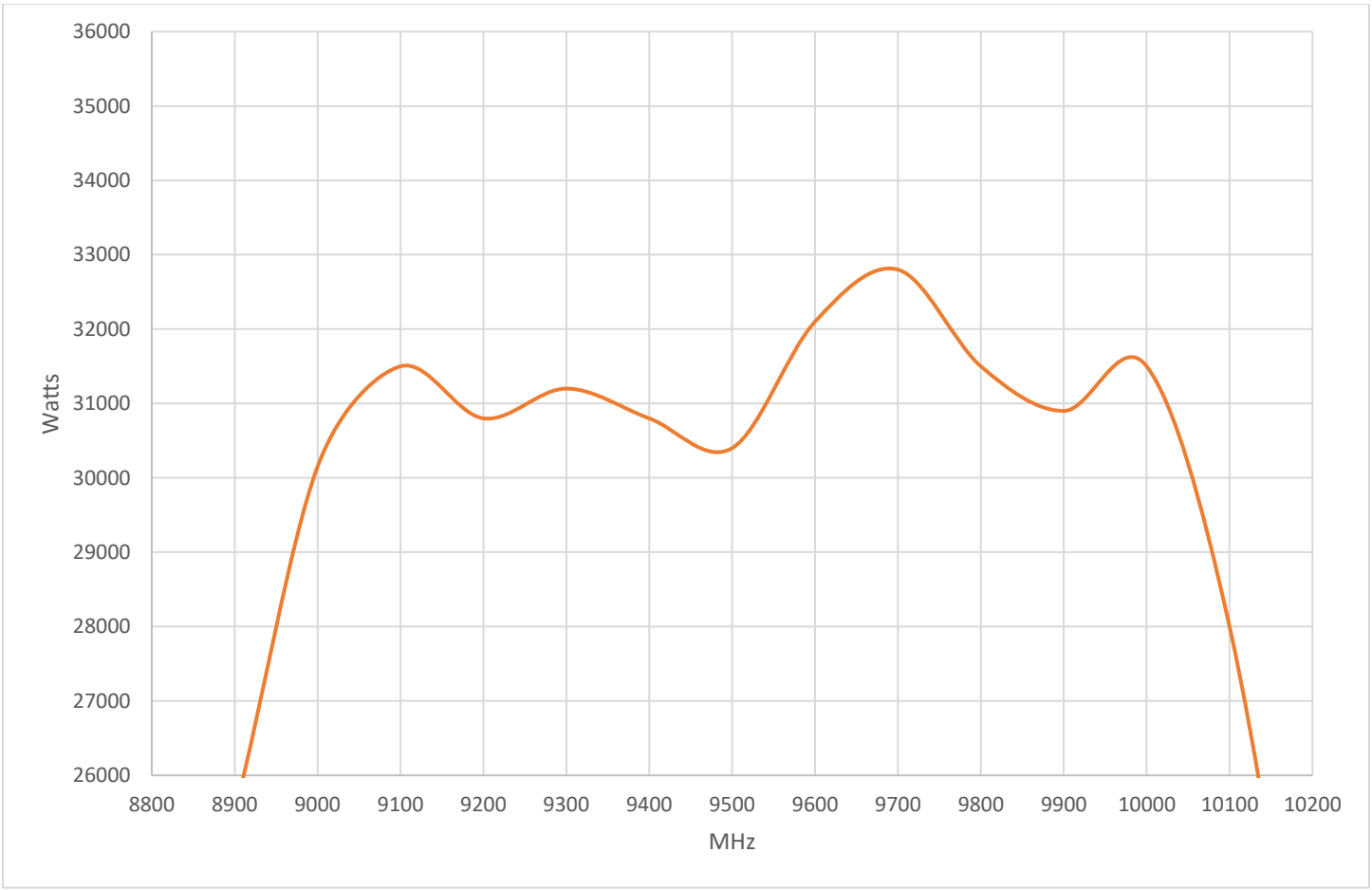
Connector interfaces	
Function	**Type**
RF Input	N female (50 Ω) (Rear)
RF Output	WR90 (Rear)
RF Sample	N female (50 Ω) (70dB typical) (Rear)
Pulse Input	BNC female (rear)
IEEE-488	24-pin female
RS-232	9-pin subminiature D female
RS-232 (fiber optic)	ST
USB 2.0	Type B
Ethernet	RJ-45
Interlock	15-pin subminiature D female

Ordering Options

455	-		-	N	-		-	WR90	-		-	
Model		RF IN Conn Location, Type				RF OUT Conn Location, Type				Enclosure No Enclosure		RF Sample Ports

Connector	
Front	F
Rear	R

Enclosure	
Enclosure	E
No Enclosure	NE

RF Sample Ports	
RF Sample Ports, Front	SPF
RF Sample Ports, Rear	SPR

TYPICAL PSAT POWER @ 0 dBm