EMPOWER
RF SYSTEMS, INC.

Solid State High Power Amplifier

2214

2900 – 3500 MHz / 8kW$_{PK}$ Pulsed

The 2214 is comprised of multi-drawer integrated subsystems to produce a minimum output of 8kW peak pulsed power. The amplifier subsystem features multiple high power GaN devices that provide wide frequency response, high gain, high peak power capability, and low distortions. Exceptional performance, long-term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, and all qualified components. Each drawer is constructed within single drawer including the integral forced air-cooling fans. The system comes standard to operate from 180-260VAC three phase AC source.

The amplifier system includes a built-in control and monitoring system, with protection functions which preserve maximum output capability and reliability. Remote management and diagnostics are via an embedded web server allowing network managed site status and control simply by connecting the unit's Ethernet port to a LAN. Using a web browser and the unit's IP address (IPV4) allows ease of access with the benefit of multilevel security. The control system core supports hardware encryption, runs an embedded OS (Linux), has a built-in non-volatile memory for event recording, and factory setup recovery feature. The extended memory option allows storage of control parameters and event logs.

We are delivering more than just RF power, the next generation family of systems provide dynamic adjustments linked to the processing power and digital controls, which focus on maximizing system availability time as well as power output under ALL conditions.

Empower RF's ISO9001:2015 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state class AB design
- Suitable for instantaneous pulse operation over the operating band.
- Compact Modular design and scalable architecture
- 50 ohm input/output impedance
- Built-in Control, Monitoring and Protection functions
- High reliability and ruggedness

ELECTRICAL SPECIFICATIONS over temperature conditions (0 to +50ºC)

Parameter	Symbol	Min	Typical	Max	Unit
Operating Frequency	BW	2900		3500	MHz
Power Output – Peak Pulse	P_{SAT_PK}	8000			Watt
Pulse Width @ Duty Cycle 20%**(NOTE)**	P_{WIDTH}	2		500	µSec
Duty Cycle		0.5		20	%
Pulse Repetition Rate Frequency	PRF	0.5		25	kHz
Power Gain @ Rated Peak P_{OUT}	G_{PK}	70			dB
Pulse Droop @ 500µSec Pulse Width	P_{DROOP}		1.2	1.5	dB
Modulated Pulse Rise/Fall Time (10% to 90%)	T_{RISE}/T_{FALL}		70/70	150/150	nSec
Input Power for rated output power	P_{IN}		-5	0	dBm
Input Return Loss	S_{11}			-10	dB
NPO – Noise Power Output	Enabled			-10	dBm/MHz
	Disabled			-106	
Harmonics @ P_{OUT_PULSE} = 8kW$_{PK}$	2nd		-20		dBc
	3rd		-12		
Spurious Signals	Spur			-60	dBc
Operating Voltage @ 3-phase (Line-to-Line)	V_{AC}	180	208	260	Volt
Power Consumption @ 20%$_{DC}$, P_{OUT_PULSE} = 8kW$_{PK}$	P_D			8000	VA

NOTE: ***Call factory for application >20% duty cycle.***

EMPOWER
RF SYSTEMS, INC.

Solid State High Power Amplifier

2214	2900 – 3500 MHz / 8kW$_{PK}$ Pulsed

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Overall Dimension W x H x D (excludes connectors, handles and brackets)	17.0 x 33.25 x 22.0 (19RU height, no rack/cabinet)	Inch
Total Weight	~425	Pound
RF Connectors Input/Output	Input: N-Type Female / Output: WR-284	RF INPUT RF OUPUT
RF Sample Connectors	N-type, Female	Forward / Reverse
Blanking/Gating Input Connector	BNC, Female	Blanking
Cooling	Built-in forced-air cooling system – front to rear	Airflow Direction

ENVIRONMENTAL CHARACTERISTICS:

Parameter	Symbol	Min	Typ	Max	Unit
Operating Ambient Temperature *NOTE 1*	T_C	-10		+50	°C
Non-operating Temperature	T_{STG}	-35		+75	°C
Relative humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F)	ALT			10,000	Feet
Shock / Vibration (MIL-STD-810F, Shock Method 516.5 , Vibration Method 514.5)	SH / VI				

Note: 1. Call factory for extended operating temperature range.

PROTECTIONS

Parameter	Specification	Remark
Input Overdrive	≥10 dBm – Shutdown	-
Load VSWR Protection	The unit disables the RF when reverse power exceeds the safe level @ all load phase & amplitude	-
Thermal Shutdown	Baseplate ≥90 ºC	-
Default Data Recovery	Factory Default Calibration Recovery	-

COMMUNICATION INTERFACES:

Function	Utility	Connector
Ethernet	Network management of device / web interface	RJ45

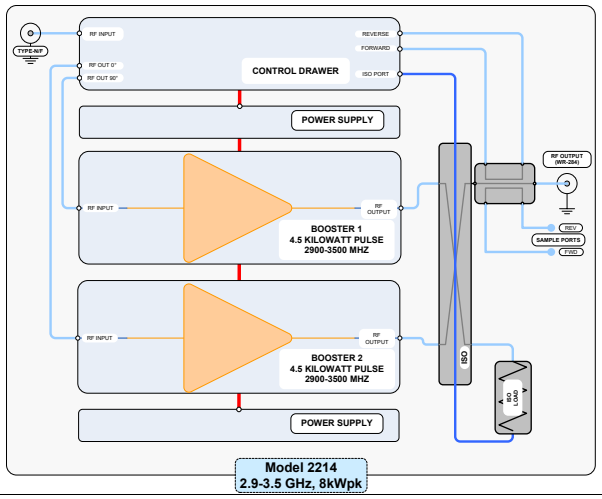
Available Options

2214-00X
-002 180-260 VAC, 3-phase-Delta, 47-63 Hz, Rear RF Connectors
-00X TBD
Contact us for other available options; sales@empowerrf.com

Standard Feature:

-LCD Control, Ethernet & Serial Comm
-Sample Port: N-type-F [Forward & Reverse]
-Blanking/Gating Port: BNC-F
-Rack Slides, Handles and Rackmount Brackets

NOTIONAL BLOCK DIAGRAM

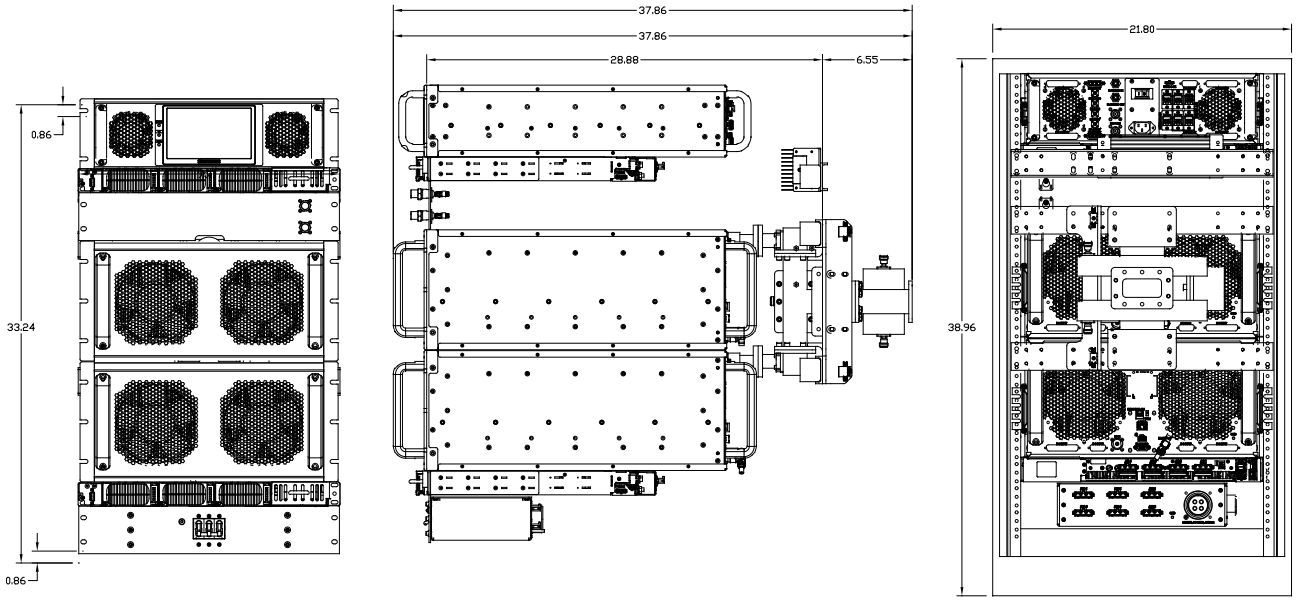


EMPOWER
RF SYSTEMS, INC.

Solid State High Power Amplifier

2214 | 2900 – 3500 MHz / 8kW$_{PK}$ Pulsed

MECHANICAL OUTLINE



EXPLODED VIEW