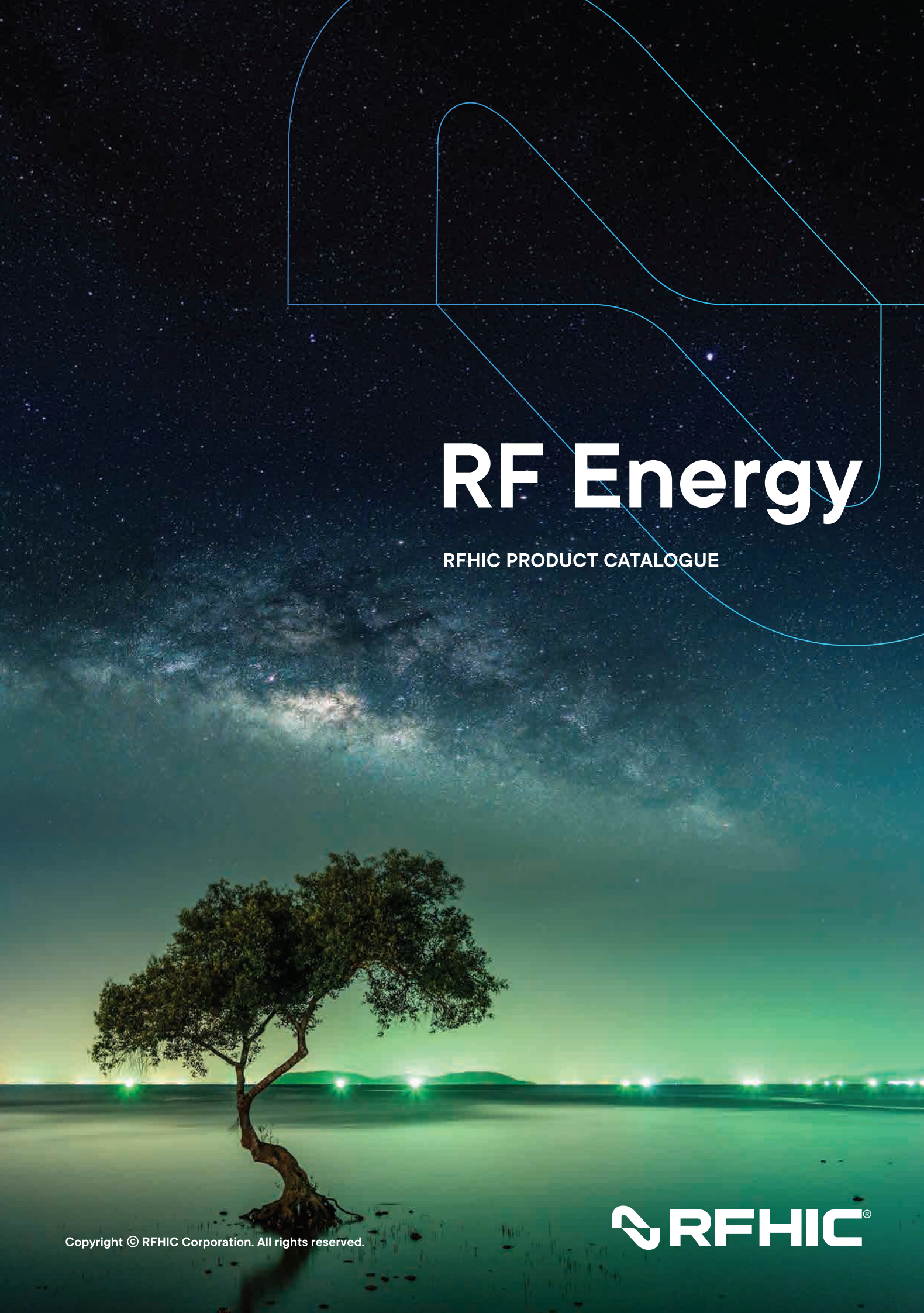




RF Energy

RFHIC PRODUCT CATALOGUE

About RFHIC

We are global leaders in designing and manufacturing GaN-based RF and microwave components for various applications in wireless infrastructure, defense & aerospace, and RF energy sectors. We're innovators, creating technology that transforms industries, enhances lives, and shapes our future.

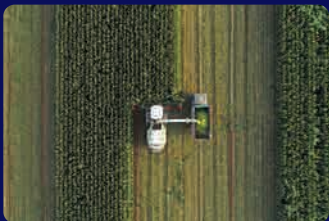
Microwave Energy Applications

From agriculture to space, RFHIC's proven Gallium Nitride technology allows users to digitally control and monitor their microwave applications like never before.

\$1.9B

Market Size by 2029

Source: Yole and Company Estimates



Agriculture

- MW Weed Treatment
- MW Plasma Lighting



Medical

- MW Ablation
- Hyperthermia
- MW Oncology and Radiation



Food Processing

- MW Heating
- MW Drying
- MW Sterilization



Semiconductor

- MPCVD
- MW Etching



Green Energy

- Hydrogen Conversion
- Syngas Production



Waste

- Medical Waste Sterilization
- Waste Gasification



Materials

- Nanomaterial Production
- MW Welding & Cladding
- MW Plasma Treatment Coating



Space

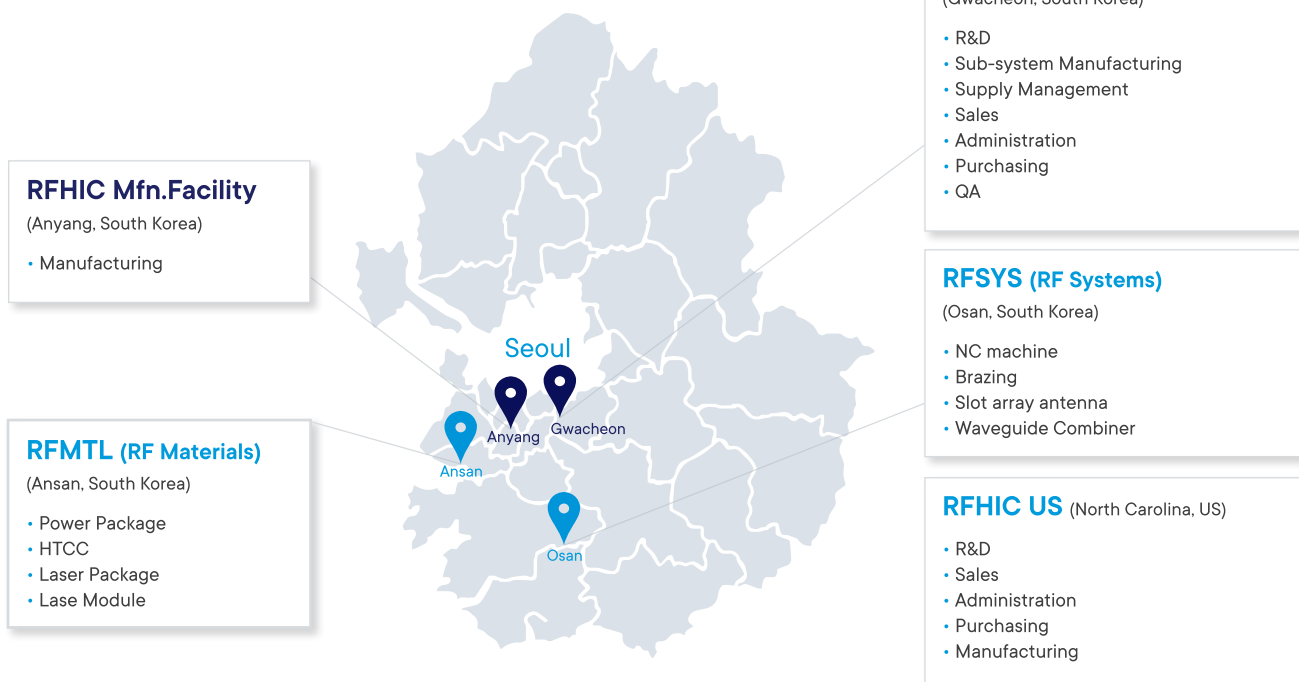
- Rocket Thruster
- GEO & LEO Satellites

Reimagine what's possible

GaN solid-state is the future of microwave heating and plasma generation. With its limitless potential, GaN solid-state will define the RF energy of tomorrow, and we will continue to be at the forefront of what's next.



Our Facilities & Partners



RFHIC's One-Stop GaN Solution



TR Design & Assembly	Transistor Testing	Amplifier Design & Assembly	System Design & Manufacturing	After-Sales Service
• Custom Transistor package • In-house Grade 4 Clean Room Facility • Operable from DC-40GHz • Power Levels up to 1kW	• HTRB (High-Temperature Reverse Bias) Age Testing • DC Testing • Ultrasound Testing	• In-house automated SMT line • Faster and Robust PA Assembly • Custom design capabilities	• Operable from 500MHz-30GHz • Power Levels Capable of up to Multi-MWs • Complete device to system-level replacement capabilities	• In-house device to system-level expertise • Faster service • Higher customer satisfaction and brand loyalty

Experts in GaN Solid State

As the world's leader in designing and manufacturing GaN solid-state industrial microwave generators, we strive to build reliable, sustainable, cost-efficient, and agile systems for various industrial, medical, and scientific applications. As a global solutions provider, we focus on solving our customers' biggest challenges to achieve the extraordinary.

Cost Perspective

		vs	
	RFHIC's GaN SSMG		Magnetron
Average Lifetime Hours (Yrs.)	50,000~100,000 (6-10 yrs)		4,000~6,000 (< 1 yr)
ROI	High		Low
Investment Costs	Intermediate		Low
Operating Costs	Intermediate		High
Maintenance Costs	Low		High
Labour Costs	Low		High

Product Capabilities

Frequency Control & Flexibility	✓	✗
Power Control & Monitoring Capability	✓	✗
Phase Control & Flexibility	✓	✗
Windows GUI Software	✓	✗

Safety & Space

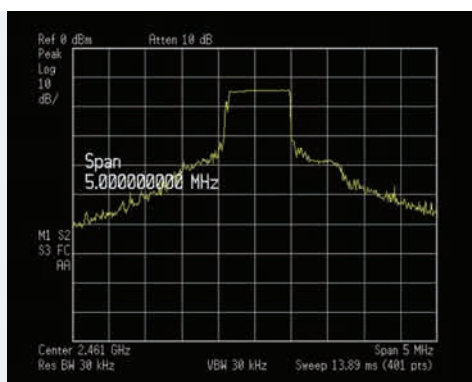
Operational Voltage	Low (50V)	High (38,000V +)
Footprint	Low	High

Spectrum Clarity

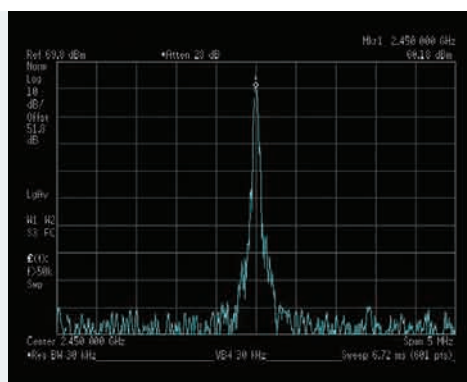
Spurious signals and harmonics are spikes of unwanted signals found at the output of amplifiers and generators.

Magnetrons tend to have high amounts of unwanted signals, which can cause an unstable source of plasma for CVD applications.

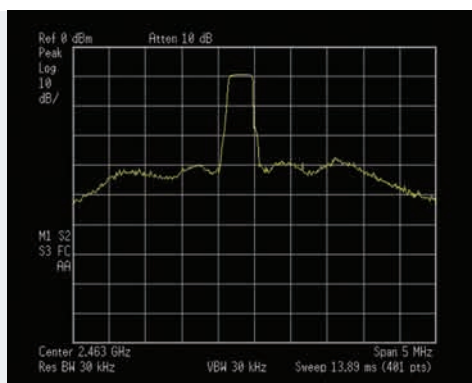
Unlike magnetrons, RFHIC's GaN solid-state generators provide a clear and precise replica of the input signal with a higher amplitude.



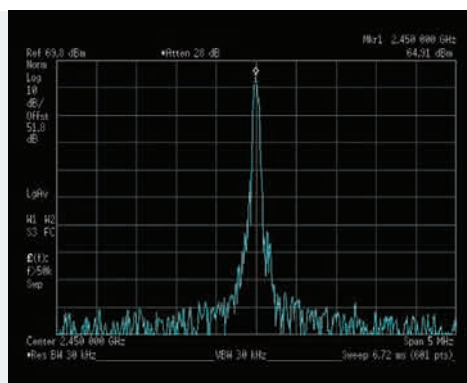
1kW Magnetron



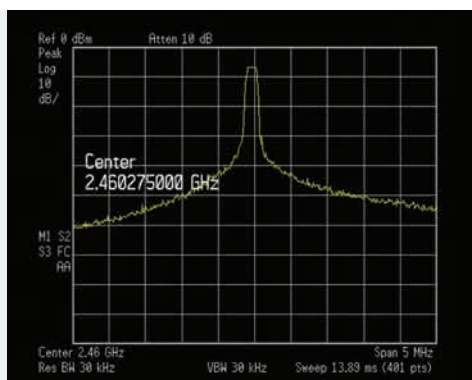
1kW SSPA



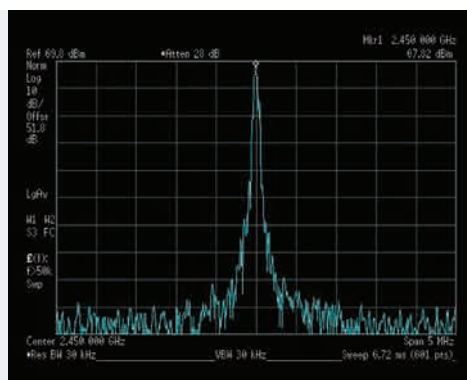
3kW Magnetron



3kW SSPA



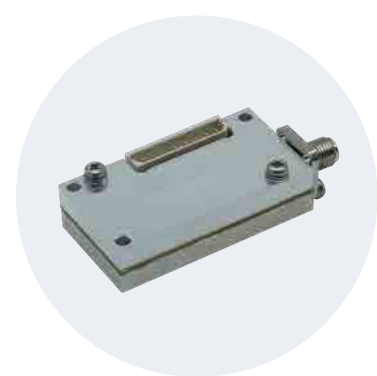
6kW Magnetron



6kW SSPA

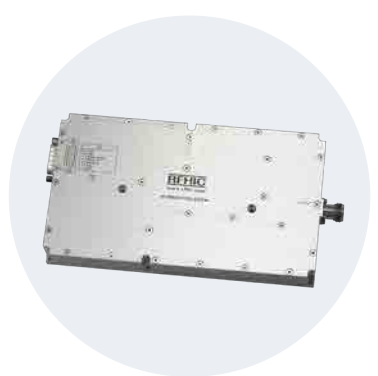
GaN Solid-State Microwave Generators

RFHIC provides a broad portfolio of high-powered GaN solid-state microwave generator (SSMG) solutions for heating and plasma generation applications, offering solutions operable at 915MHz, 2.45GHz, and 5.8GHz, with power levels capable of reaching up to megawatts. Custom solutions can be provided upon request.



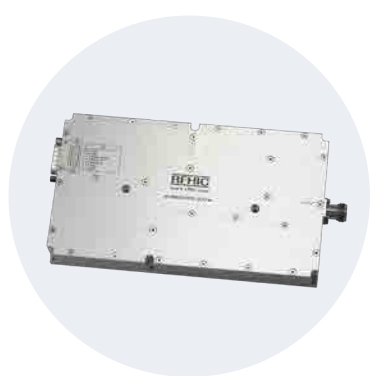
30W, 2.4-2.5GHz
RIP25030-10G





100W, 2.4-2.5GHz
RIM25100-20G





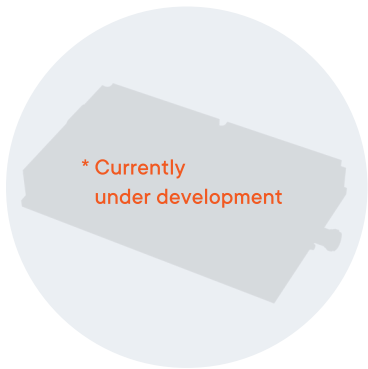
200W, 2.4-2.5GHz
RIM25200-20G



Part Number	Freq. [MHz]		Output Power [W]		Eff.	DC Voltage	Output Type	Dimensions (mm) [W × D × H]	Cooling
	Min	Max	Min	Max	[%]	[VDC]			
RIP25030-10G	2400	2500	1	30	65	48	SMA_F	45 × 24 × 10.8	External Heat sink & airflow
RIM25100-20G	2400	2500	1	100	60	50	N-Female	200 × 100 × 30	External Heat sink & airflow
RIM25200-20G	2400	2500	1	200	60	50	N-Female	200 × 100 × 30	External Heat sink & airflow
RIM25300-20G	2400	2500	10	300	60	50	N-Female	200 × 120 × 30	External Heat sink & airflow
RIM25500-20G	2400	2500	10	500	60	50	N-Female	300 × 150 × 47	Water cooled
RIM251K6-20G	2400	2500	100	1600	57	50	7/16 DIN F	200 × 361.5 × 53	Water cooled



300W, 2.4-2.5GHz
RIM25300-20G



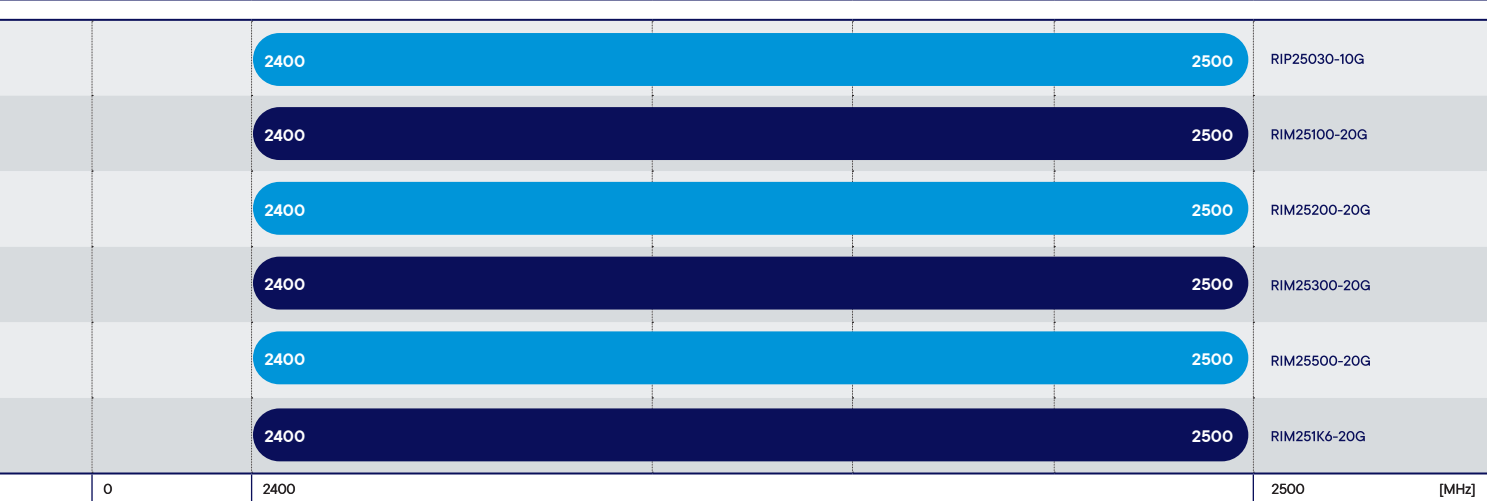
500W, 2.4-2.5GHz
RIM25500-20G



1600W, 2.4-2.5GHz
RIM251K6-20G



Frequency





800W, 5.8GHz, GaN SSMG

RIF58800-20SG

RFHIC's RIF58800-20SG is an 800W, GaN solid-state microwave generator designed ideally for plasma generation, microwave flash welding, industrial food processing (drying, heating, frying), and polymer modification applications. The RIF58800-20SG is a shelf-type microwave generator with an SSPA head, a 264 VAC power supply (PSU), and a main control unit (MCU). Unlike conventional vacuum tubes (magnetrons, klystrons), the RIF58800-20SG is operable at high frequencies from 5725 to 5875 MHz. This compact shelf-type microwave generator is pre-built with a phase-locked-loop (PLL) synthesizer that generates the signal precisely and controllably. The RIF58800-20SG is also embedded with RFHIC's precise control software suite allowing users to control and monitor the generator's power levels, phase, and RF mode (CW/pulse) to optimize end products.



Front



Back



Specifications

Frequency	5725~5875MHz
Output Power Range	100~800W
MW Output Port	WR159
Efficiency	34%
Power Supply Specification	220VAC, Single Phase
Dimensions (mm)	482 (W) × 610 (D) × 177 (H)
Weight (kg)	25.1
Cooling Type	De-ionized water must be used to prevent system damage



1.6kW, 2.45GHz, GaN SSMG

RIM251K6-20G

The RIM251K6-20G is a 1600W gallium nitride on silicon carbide (GaN-on-SiC) solid-state microwave generator operable from 2400 to 2500 MHz. Designed as a compact, modular-type microwave generator, the RIM251K6-20G is ideal for testing and R&D purposes. Applications include microwave heating, microwave sintering, microwave sterilization, plasma generation, food irradiation, drying and more.



Specifications

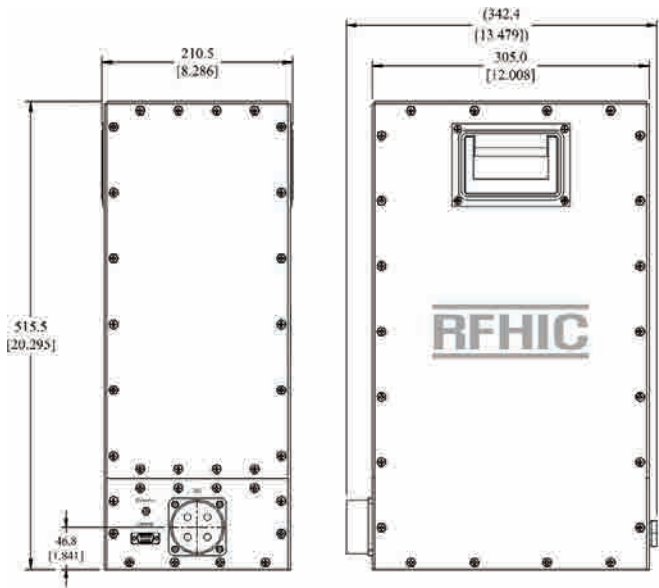
Frequency	2400~2500MHz
Output Power Range	100~1600W
MW Output Port	7/16 DIN Female
Efficiency	57%
Input DC Voltage	50VDC
Dimensions (mm)	200 (W) × 361 (D) × 53 (H)
Weight (kg)	7
Cooling Type	De-ionized water must be used to prevent system damage



3kW, 2.45GHz, GaN SSMG

RIU243KO-40TG

RFHIC's RIU243KO-40TG is a 3kW, gallium-nitride (GaN) solid-state microwave generator designed ideally for heating/drying and plasma generation applications. The RIU243KO-40TG provides continuous wave (CW) output power adjustable from 30W to 3kW at frequencies ranging between 2,400MHz and 2,500MHz.



RIU243KO-40TG SSMG Head



Power Supply Unit

Specifications

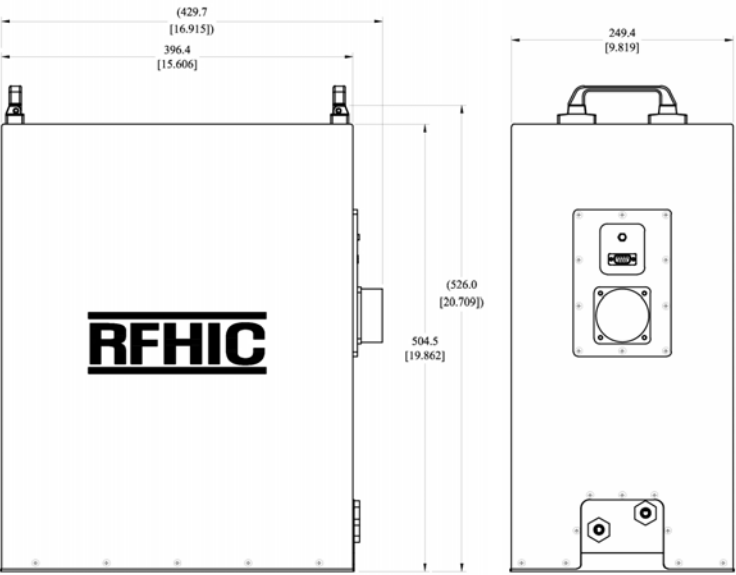
Frequency	2,450MHz Central Frequency, Adjustable in full 2,400-2,500MHz band in 0.1MHz Increments
Output Power Range	30W to 3kW (Adjustable with 10W step) Precision ±1%
Output Ripple	3% at Full Power
Output Waveguide	WR340
Efficiency	58%
Power Supply Specification	380 ~ 415VAC, 45 ~ 66Hz, 3-phase 4-Wire
Dimensions (mm)	Head 305 (W) × 211 (D) × 515.5 (H) / PSU 482 (W) × 445 (D) × 89 (H)
Weight (kg)	31
Cooling Type	De-ionized water must be used to prevent system damage



3kW, 915MHz, GaN SSMG

RIU093K0-40TG

RFHIC's RIU093K0-40TG is a 3kW, gallium-nitride (GaN) solid-state microwave generator designed ideally for heating/drying and plasma generation applications. The RIU243K0-40TG provides continuous wave (CW) output power adjustable from 30W to 3kW at frequencies ranging between 900MHz and 930MHz.



RIU093K0-40TG SSMG Head * Built-In Internal Waveguide



Power Supply Unit

Specifications

Frequency	915MHz Central Frequency, Adjustable in full 900-930MHz band in 0.1MHz Increments
Output Power Range	30W to 3kW (Adjustable with 10W step) Precision ±1%
Output Ripple	3% at Full Power
Output Waveguide	WR975
Efficiency	65%
Power Supply Specification	380 ~ 415VAC, 45 ~ 66Hz, 3-phase 4-Wire
Dimensions (mm)	Head 400 (W) × 252 (D) × 505 (H) / PSU 482 (W) × 445 (D) × 89 (H)
Weight (kg)	43
Cooling Type	De-ionized water must be used to prevent system damage



6kW, 2.45GHz, GaN SSMG

RIU256KO-40TG

RIU256KO-40TG is a 6kW, 2.45GHz GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications.

The RIU256KO-40TG provides continuous wave (CW) and pulse output power adjustable from 300W to 6000W at frequencies ranging between 2400MHz and 2500MHz.

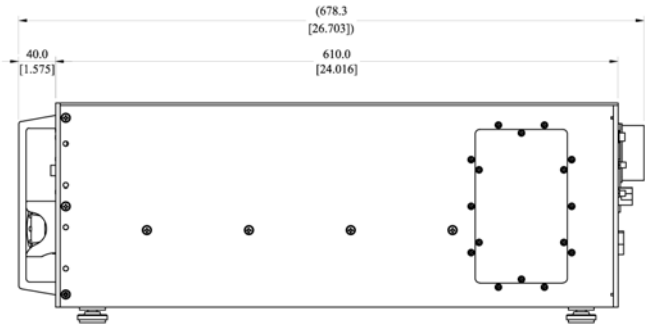
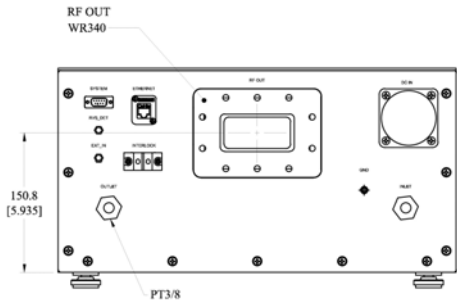
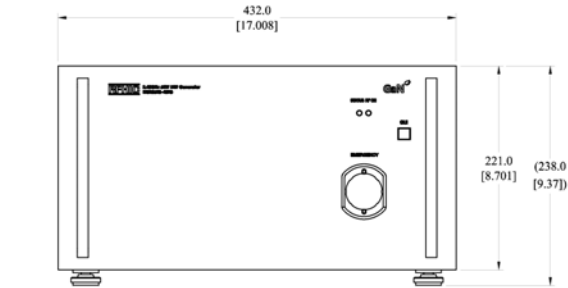
The RIU256KO-40TG is a remote-type turn-key microwave generator system with the SSPA head and power supply unit.



RIU256KO-40TG SSMG Head



Power Supply Unit



* Note: External isolator is additional and can be provided upon request.

Specifications

Frequency	2,450MHz Central Frequency, Adjustable in full 2,400-2,500MHz band in 500kHz increments
Output Power Range	300W to 6kW (Adjustable with 100w step)
Output Ripple	3% at Full Power
Output Waveguide	WR340
Efficiency	58%
Power Supply Specification	380 ~ 415VAC, 45 ~ 66Hz, 3-Phase 4-Wire
Dimensions (mm)	Head 432 (W) × 610 (D) × 221 (H) / 432 (W) × 636 (D) × 221 (H) (w/ isolator) PSU 483 (W) × 432 (D) × 177 (H)
Weight (kg)	48.7 / 54.2 (w/ isolator)
Cooling Type	De-ionized water must be used to prevent system damage



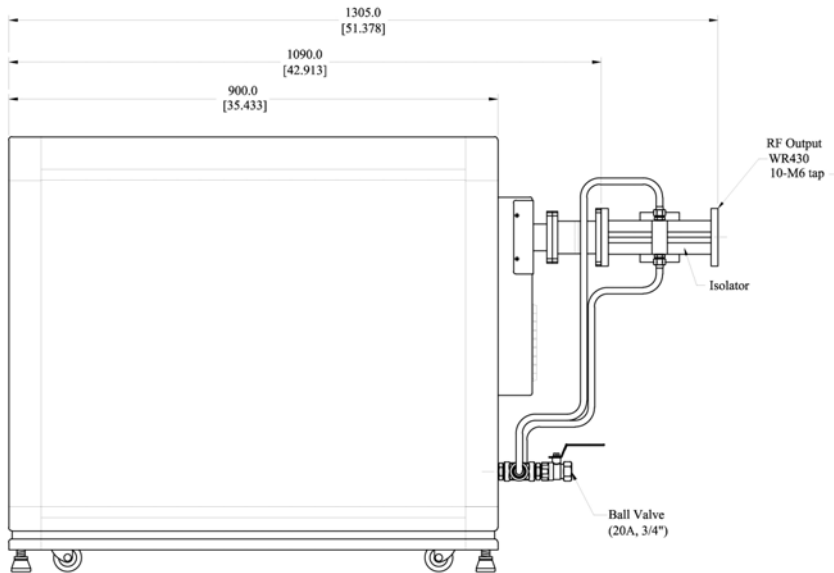
12kW, 2.45GHz, GaN SSMG

RIK2512K-40TG_H

RIK2512K-40TG_H is a 12kW, 2.45GHz GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications. The RIK2512K-40TG_H provides continuous wave (CW) and pulse output power adjustable from 600W to 12,000W at frequencies ranging between 2400MHz and 2500MHz. The RIK2512K-40TG_H is a remote-type, turnkey microwave generator system with the SSPA head and power supply unit.



* Note:
Built in WR340 adapter &
WR430 external isolator



RIK2512K-40TG_H SSMG Head



Power Supply Unit

Specifications

Frequency	2,450MHz Central Frequency, Adjustable in full 2,400-2,500MHz band in 0.5MHz increments
Output Power Range	600W to 12kW (Adjustable with 0.1kW step)
Output Ripple	3% at Full Power
Output Waveguide	WR430
Efficiency	54%
Power Supply Specification	380 ~ 415VAC, 45 ~ 66Hz, 3-Phase 4-Wire
Dimensions (mm)	Head 600 (W) x 1232 (D) x 760 (H) with External Isolator PSU 483 (W) x 427 (D) x 400 (H)
Weight (kg)	175
Cooling Type	De-ionized water must be used to prevent system damage



Datasheet
Download

12kW, 2.45GHz, GaN SSMG

RIK2512K-40TG

RIK2512K-40TG is a 12kW, 2.45GHz GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications. The RIK2512K-40TG provides continuous wave (CW) and pulse output power adjustable from 600W to 12,000W at frequencies ranging between 2400MHz and 2500MHz.

Details



WR430



External Isolator



Water Inlet / Outlet



Control Port



Specifications

Frequency	2,450MHz Central Frequency, Adjustable in full 2,400-2,500MHz band in 0.5MHz increments
Output Power Range	600W to 12kW (Adjustable with 0.1kW step)
Output Ripple	3% at Full Power
Output Waveguide	WR430
Efficiency	54%
Power Supply Specification	304 ~ 456VAC, 45 ~ 66Hz, 3-Phase 4-Wire
Dimensions (mm)	600 (W) x 1288 (D) x 1293 (H) with External Isolator
Weight (kg)	250 (Approx.)
Cooling Type	De-ionized water must be used to prevent system damage

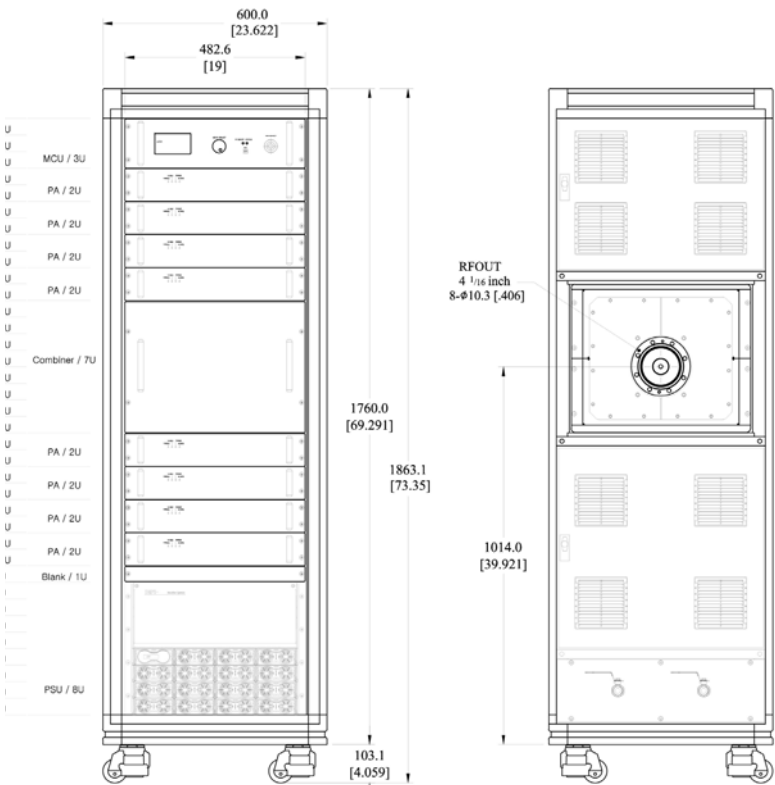


Datasheet
Download

15kW, 915MHz, GaN SSMG

RIK0915K-40TG

RIK0915K-40TG is a 15kW, 915MHz GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications. The RIK0915K-40TG provides continuous wave (CW) and pulse output power adjustable from 1,000W to 15,000W at frequencies ranging between 900MHz and 930MHz.



Specifications

Frequency	915MHz Central Frequency, Adjustable in full 900-930MHz band in 500kHz increments
Output Power Range	1kW to 15kW (Adjustable with 100W step)
Output Ripple	3% at Full Power
Output Waveguide	WR975 or 4 1/16 inch EIA Connector
Efficiency	65%
Power Supply Specification	380 ~ 415VAC, 45 ~ 66Hz, 3-Phase 4-Wire
Dimensions (mm)	600 (W) × 900 (D) × 1760 (H)
Weight (kg)	480
Cooling Type	De-ionized water must be used to prevent system damage



Datasheet
Download

24kW, 2.45GHz, GaN SSMG

RIK2524K-40TG

RIK2524K-40TG is a 24kW, 2.45GHz GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications. The RIK2524K-40TG provides continuous wave (CW) and pulse output power adjustable from 600W to 24,000W at frequencies ranging between 2400MHz and 2500MHz.



Specifications

Frequency	2,450MHz Central Frequency, Adjustable in full 2,400-2,500MHz band in 0.5MHz increments
Output Power Range	600W to 24kW (Adjustable with 0.1kW step)
Output Ripple	3% at Full Power
Output Waveguide	WR430
Efficiency	51%
Power Supply Specification	304 ~ 456VAC, 45 ~ 66Hz, 3-Phase 4-Wire
Dimensions (mm)	650 (W) x 1270 (D) x 1800 (H) with External Isolator
Weight (kg)	500 (Approx.)
Cooling Type	De-ionized water must be used to prevent system damage



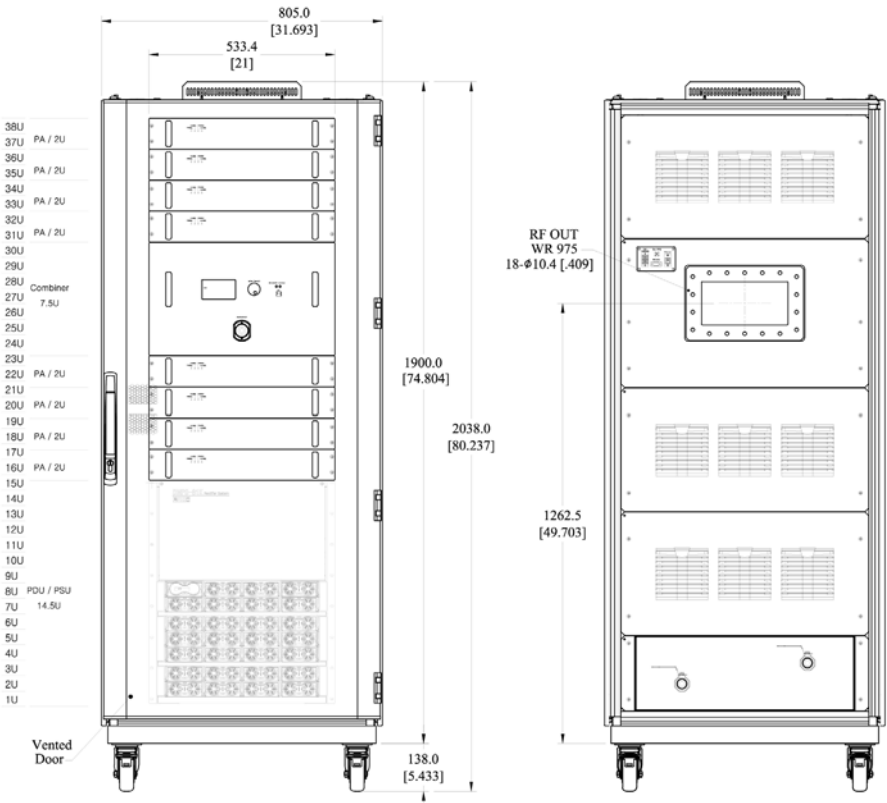
Datasheet
Download

30kW, 915MHz, GaN SSMG

RIK0930K-40TG

RIK0930K-40TG is a 30kW, 915MHz GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications.

The RIK0930K-40TG provides continuous wave (CW) and pulse output power adjustable from 1000W to 30,000W at frequencies ranging between 900MHz and 930MHz. Multiple units can be combined to achieve higher powers up to megawatts.



Specifications

Frequency	915MHz Central Frequency, Adjustable in full 900-930MHz band in 500kHz increments
Output Power Range	1kW to 30kW (Adjustable with 100W step)
Output Ripple	3% at Full power
Output Waveguide	WR975
Efficiency	65%
Power Supply Specification	380 ~ 415VAC, 45 ~ 66Hz, 3-Phase 4-Wire
Dimensions (mm)	793 (W) x 1017(D) x 1900 (H)
Weight (kg)	590
Cooling Type	De-ionized water must be used to prevent system damage



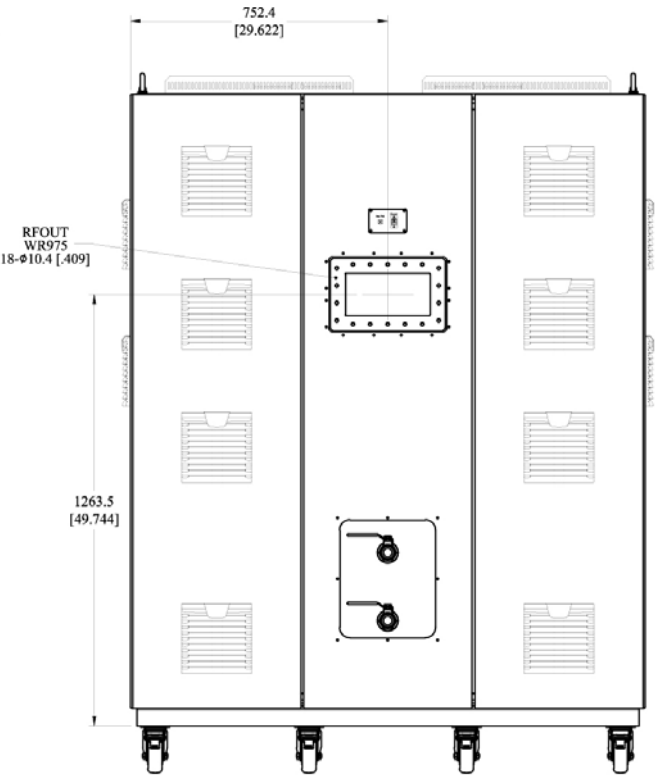
Datasheet
Download

60kW, 915MHz, GaN SSMG

RIK0960KO-40TDG

RIK0960KO-40TDG is a 60kW, 915MHz GaN solid-state microwave generator designed ideally for microwave heating and plasma generation applications.

The RIK0960KO-40TDG provides continuous wave (CW) and pulse output power adjustable from 1000W to 60,000W at frequencies ranging between 900MHz and 930MHz.



Specifications

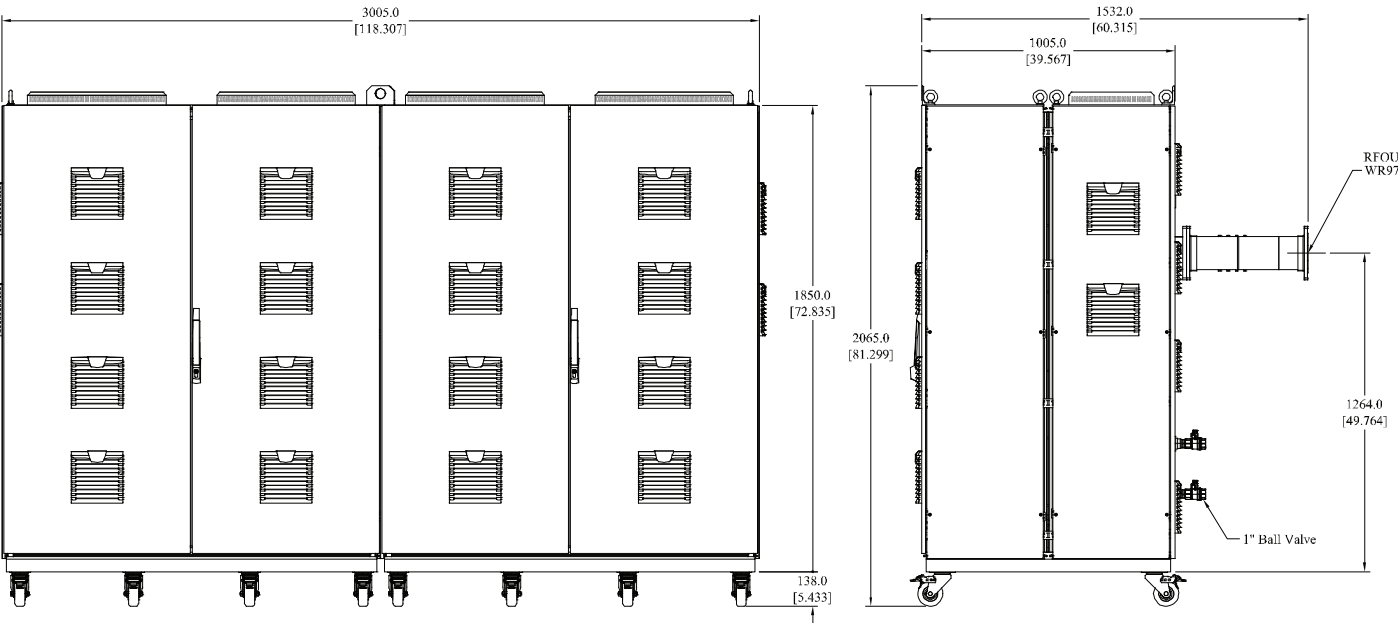
Frequency	915MHz Central Frequency, Adjustable in full 900-930MHz band in 500kHz increments
Output Power Range	1kW to 60kW (Adjustable with 100W step), Pulse Operation
Output Ripple	3% at Full power
Output Waveguide	WR975
Efficiency	65%
Power Supply Specification	380 ~ 415VAC, 45 ~ 66Hz, 3-Phase 4-Wire
Dimensions (mm)	1556 (W) x 1006(D) x 2046 (H)
Weight (kg)	1,000
Cooling Type	De-ionized water must be used to prevent system damage



120kW, 915MHz, GaN SSMG

RIK09120K-40TDG

RIK09120K-40TDG is a 120kW, 915MHz GaN solid-state microwave generator designed for microwave heating and plasma generation applications. The RIK09120K-40TDG provides both continuous wave (CW) and pulse output power adjustable from 2kW to 120kW at frequencies ranging between 900MHz to 930MHz.



* Depth is TBD due to uncertainty in the waveguide design.
Height without wheels about 150mm less.

Specifications

Electrical Specifications	Operating Frequency	900MHz ~ 930MHz
	Operating Bandwidth	30MHz (Typ.)
	Waveguide Output	WR975
	CW Variable Output Power	2 kW~ 120 kW (TBD)
	Power Spectral Bandwidth	500kHz (Max.)
	Pulse Period	2 sec. (Max.)
	Pulse Width	10 us (Min.)
	Pulse Duty Cycles	1 ~ 99 %
	Frequency Resolution	100 kHz (Min.)
	Frequency Accuracy & Stability	-2.5 ppm ~ 2.5 ppm (TBD)
	Operating Voltage	400 VAC 3 phase 50/60Hz
	System Efficiency	57 % (Typ.) (TBD)
Monitoring / Control	FWD & RVS Power	System Output and Reflect Power from 10 to 100%
	Temperature	Individual Power Amplifier
	Current	+50Vdc Output of PSU
	Control Interface	USB, Ethernet



rfhic.com

 Visit us on LinkedIn