

AT5g8SgB – an intelligent small-signal source for 5.8GHz RF Energy applications

AT5g8SgG - AndivaTech's versatile and intelligent, small-signals (SS) source is intended for use in solid-state MW energy generators. AT5g8SsG is a single-board embedded product, operating in the 5.8GHz ISM band, which provides the full set of RF, control and processing capabilities, necessary for the construction of advanced, feature-rich MW energy systems.

Its extensive features set and processing capabilities enables a realization of microwave energy generators.

Functionality of AT5g8SgB

A summary of its extensive features set includes:

- Generates the signal, driving the MW energy generator's solid-state power amplifiers and executes the control of its parameters:
 - frequency
 - phase
 - power
 - timing
- Controls the power amplifier via ample set of control interfaces: I2C, analog and digital IOs
- Processes the RF and/or analog feedback signals, essential for the successful implementation of the control functions, required for safe and accurate operation of the MW energy systems:
 - measures both the forward power, applied to the MW applicator, and the reflected one, which is returned from the applicator in case of imperfect impedance match
 - measures the operating temperature of the used PA
- Executes control algorithms for:
 - close or open loop power control
 - RF and timing synchronization with other SS sources and/or generators, used to build larger MW energy systems
- Executes protection algorithms for prevention of operation with excessive:
 - load mismatch
 - PA's temperature
- Executes application algorithms enhancing the performance of the RF energy system, i.e. frequency sweep or automatic frequency tacking for achieving best impedance match
- Interfaces various components of the energy system: PCL controllers, etc. , via a number of communication and synchronization interfaces (USB, UART, I2C, analog and digital IOs).
- Executes a rich set of API commands, providing for fast and flexible functional and parametric control

Applications

AT5g8SgB is developed for use in MW Energy generators, providing accurate and flexible control of the parameters of the generated power.

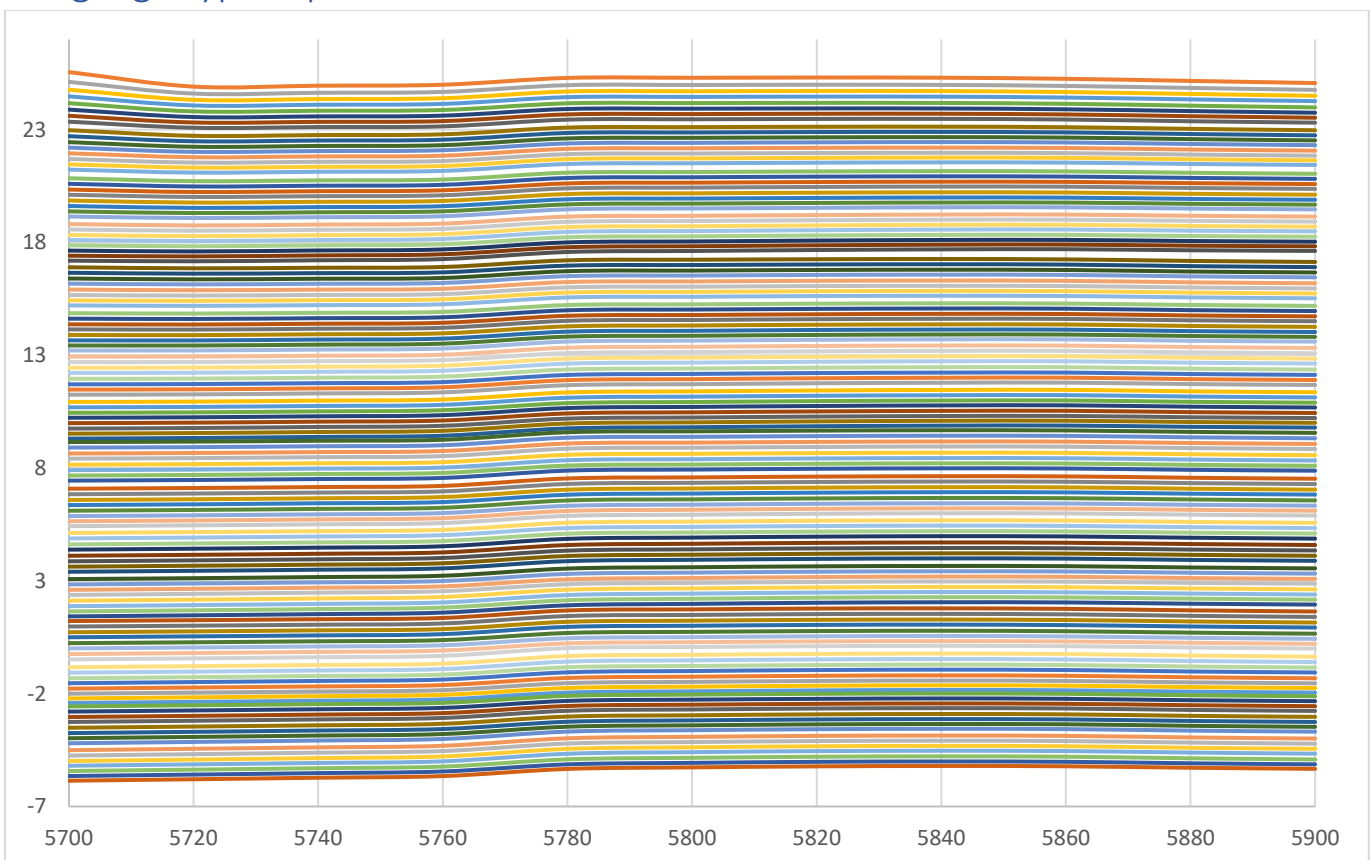
The SS source is applied in Andivatech's 200W, 5.8GHz generators' family: AT5g8GEN200 and AT5g8RF200, but it's also perfectly fit for constructing "generic" MW energy systems, using third-party solid-state power amplifiers.

AT5g8SgG provides an option for instant and cost-effective development of customized microwave energy systems with different functionality and power levels. The source is suitable for use both in single- and in multi-channel/distributed energy systems.

AT5g8SgB Specifications

Electrical specification		Mechanical specification	
Frequency range	5725 to 5875MHz	Environmental temp. range	25 ± 20°C
Frequency stability	±10Khz	Output RF connector	SMA
Output power	25dBm	Dimensions	120x60x54mm
Power control range	32dB	Weight	0.1kg
Power resolution	7bits (0.25dBm)		
Phasecontrol range	360°		
Phase control resolution	24bits		
Pulse condition	CW and pulse		
	Pulse width>1µs		
PWM frequency	<10kHz		
DC supply	7 - 60VDC		
Power consumption	<8W		

AT5g8SgB typical performance



The plot shows AT5g8SgB's output signal, swept from 5700 to 5900MHz at all 128 steps of the 32dB power control range.