Arbitrary Waveform Generator **MGVCH**

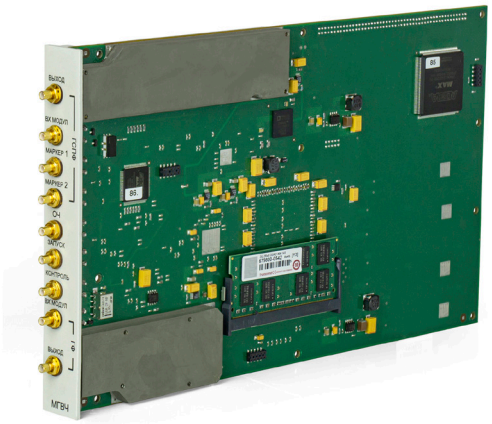
MGVCH is designed to reproduce arbitrary waveforms, as well as to reproduce sinusoidal waveforms with amplitude, frequency, phase modulation or without modulation.

MGVCH can be used for research, tuning and testing of systems and devices used in electronics, automation, computer and measurement technology, instrument making.

MGVCH contains two channels independent from each other:
- one channel of an arbitrary waveform generator (AWG);
- one channel of the functional generator (AFG).

AWG channel reproduces:
- Arbitrary analog signals on one output;
- logic marker signals on two outputs.

Channel AFG reproduces:
- sinusoidal analog signals with frequency, phase modulation or without modulation;
- harmonic sinusoidal signals, and various types of modulated signals on one channel by direct digital synthesis



- Direct Sampling Rate (DAC 14bit) 2.5 Gigasamples/sec
- 2 channels: arbitrary-shaped generator channel and functional generator channel
- RAM 2 GB

Specifications

AWG TECHNICAL SPECIFICATIONS	
The limits of the permissible relative error of the frequency of the periodic signal is not more than ± 0.003%	The maximum frequency of harmonic signals is 400 MHz. The maximum frequency of rectangular, sawtooth, triangular and trapezoidal signals is 50 MHz
Rise / fall time of a rectangular signal with a range of 1 V no more than 2 ns	Harmonic harmonic distortion at 100 kHz no more than 5%
Harmonic and non-harmonic distortion levels when playing a sinusoidal signal: • for a frequency of 10 MHz no more than -40 dBc; • for a frequency of 50 MHz no more than -35 dBc; • for a frequency of 100 MHz no more than -30 dBc; • for a frequency of 200 MHz no more than -25 dBc; • for a frequency of 400 MHz no more than -20 dBc	Frequency response when reproducing a harmonic signal relative to a frequency of 100 kHz: • no more than 1.5 dB (from 0.001 to 200 MHz); • no more than 3 dB (from 200 to 400 MHz)
DAC capacity - 14 bits (full scale)	The spectral power density of phase noise is not more than minus 80 dBc / Hz at a detuning of 10 kHz
Software setting of the output signal range (with a load resistance of 50 Ohms) in the range from minus 40 to 0 dB (with respect to 1 V), in increments of 0.5 dB, which corresponds to the output signal range from 0.01 to 1.00 V	The limits of the relative permissible error of the signal voltage reproduction ± (0,5 + Uк/Uуст) %, where Uк – is the maximum value of the signal amplitude equal to 0.5 V; Uуст – the set value of the signal amplitude
Software setting of the sampling frequency of the reproduced signal 1.25 and 2.5 GHz	Software setting of the output signal bias in the range from minus 0.5 to plus 0.5 V. The step of setting the signal bias is 0.01 V
The limits of the relative permissible error of setting the offset signal ± (0,5 + (Um/Ui) %, where Um – maximum signal bias value of 0.5 V; Ui – set value of the signal offset	RAM for recording codes of voltage values of the output signals. The amount of RAM is 1073741824 samples. The minimum number of samples is 1,024. Installation step is 16 samples
Electrical parameters of the analog output: • output impedance - (50 ± 1) Ohm; • maximum output current - 20 mA	Software connection / disconnection in the analog channel of the sixth order Bessel filter with a cutoff frequency of not more than 7 MHz at the level of -3 dB
AFG TECHNICAL SPECIFICATIONS	
Software setting of the output signal span (with load resistance Rnag = 50 Ohm) in the range from -40 to 0 dB (with respect to 1 V), in 0.5 dB steps, which corresponds to the output signal span from 0.01 to 1.00	
The capacity of the DAC GF - 14 bits (full scale)	Software setting of signal bias in the range from -0.5 to 0.5 V. The step of setting the signal bias is 0.01 V
Relative tolerance limits for voltage reproduction ± (0,5 + Uк/Uуст) %, where Uк – the maximum value of the signal amplitude, equal to 0.5 V; Uуст – set value of signal amplitude	The limits of the relative permissible error of setting the offset signal ± (0,5 + (Um/Ui) %, where Um – maximum signal bias value of 0.5 V; Ui – set value of signal offset.
Sampling frequency of the reproduced signal GF 1 GHz	Reproduction of a harmonic sinusoidal signal with a frequency from 0.01 to 400 MHz. Frequency setting step no more than 1 Hz
The limits of the permissible relative error of the frequency of the periodic signal is not more than ± 0.003%	Harmonic harmonic distortion at 100 kHz no more than 2.5%

Levels of harmonic and non-harmonic distortion when playing sinusoidal: • for a frequency of 10 MHz no more than -40 dBc; • for a frequency of 50 MHz no more than -35 dBc; • for a frequency of 100 MHz no more than -30 dBc; • for a frequency of 200 MHz no more than -25 dBc; • for a frequency of 400 MHz no more than -20 dBc	Reproduction of a harmonic sinusoidal signal in the linear frequency modulation mode: • the time interval in which the frequency changes is set programmatically in the range from 1 ms to 10 s. The step of setting the time interval is 1 ms; • the initial and final frequencies are set programmatically in the range from 50 to 100 MHz; • return time, no more than 0.2 μs; • frequency change step, no more than 100 Hz
Frequency response when reproducing a harmonic signal relative to a frequency of 100 kHz in the range from 0.01 to 400 MHz, not more than 3 dB	The spectral power density of phase noise is not more than minus 80 dBc / Hz at a detuning of 10 kHz
Electrical parameters of the analog output: • output impedance - (50 ± 1) Ohm; • maximum output current - 20 mA	Software setting of the zero level offset of the external modulation signal in the range from -1.2 to 1.2 V in increments of 0.01 V