

Modular spectrum analyzer **ASM AXle**

The hardware and software complex "Spectrum analyzer modular AFM AXle" for analyzing RF signals with a frequency of up to 10 GHz is intended for use in automated testing programs, research in the frequency domain of periodic signals of RF and microwave ranges, as well as for analyzing the parameters of signals with analog modulation (AM, FM, PM).

Complex functions

- Overview of the 4 MHz to 10 GHz frequency band;
- Peak search;
- Measurement of frequency and amplitude of peaks;
- Measurement of power in a frequency band;
- Demodulation of AM, FM, PM signals;
- Measurement of modulation depth, frequency deviation and phase.

Complex composition

- Equipment set: NMVC Down AXle-0 module, which combines the functionality of DOWNCONVERTER 10GHz and MOS2;

Software bundle:

- Management Library (API);
- Software control panel (Spectrum Analyzer).

Design - structurally, the spectrum analyzer is made in the form of a single AXle NMVC Down AXle-0 module installed in an AXle chassis.



- The scope of the complex is radio engineering measurements, research and test work in laboratory and production conditions, testing of communications and other telecommunication equipment.
- The analyzer's operating principle is based on superheterodyne transfer of the input signal to an intermediate frequency, followed by its digitization using an ADC and digital signal processing using algorithms in the software panel.

Specifications

Input frequency range 4 MHz to 10 GHz *	Maximum allowable input power 5 dBm
Converter output bandwidth 150 MHz	Input impedance 50 Ohm
The frequency of the reference crystal oscillator is not less than 100 MHz	The limits of the relative error of the local oscillator frequency setting $\pm 1 \cdot 10^{-6}$
Average noise floor at 0 dB input attenuator, in the frequency range from 4 MHz to 10 GHz -110 dBm / Hz	Non-input signal non-harmonic noise level at 0 dB input attenuator, typical: • at frequencies less than 12 MHz -60 dBc • at frequencies from 12 MHz and above, -70 dBc
Input VSWR 1.5	
LO phase noise at 10 kHz offset -115 dBm / Hz	Setting range of nominal values of bandwidth from 50 Hz to 10 MHz
Non-uniformity of frequency response relative to the level at a frequency of 100 MHz at a temperature from 15 °C to 30 °C • at frequencies up to 2 GHz ± 0.5 dB • at frequencies above 2 GHz ± 1.0 dB	Limit of permissible relative error in measuring the frequency of the fundamental harmonic of an RF signal in the range from 4 MHz to 10 GHz • $\pm 2,5 \cdot 10^{-6}$ without MFOCH** • $\pm 1 \cdot 10^{-8}$ with MFOCH
Limits of permissible error for measuring the power level of the input signal in a given frequency band at temperatures from 10 °C to 30 °C • at frequencies up to 2 GHz ± 1.5 dB • at frequencies above 2 GHz ± 1.5 dB	
Spectrum Analyzer Mode	
Center frequency setting range 4 MHz to 10 GHz *	Span setting range from 10 kHz to 10 GHz
Bandwidth setting range from 50 Hz to 10 MHz	Automatic peak search
Automatic measurement of the frequency and amplitude of the found peak	
Notes	
* It is possible to extend the lower limit of the operating frequency range up to 9 kHz when using an attenuator module RFATT AXle-0	
**MFOCH is the source of the reference signal, providing high-precision frequency reproduction	
Amplitude demodulation mode (ADM)	
Restoring and displaying baseband waveform	Limit of permissible relative error in measuring the frequency of the modulating signal in the range from 20 Hz to 200 kHz $\pm 1\%$
Limit of permissible error in measuring the AM depth in the range from 0.1 to 100%: $\pm 2\%$	
Frequency demodulation mode (FDM)	
Restoring and displaying baseband waveform	Limit of permissible relative error in measuring the frequency of the modulating signal at frequencies from 20 Hz to 200 kHz: $\pm 1\%$ (at modulating frequency from 1 kHz to 50 kHz)
Limit of permissible relative error of frequency deviation measurement in the range from 1 to 10^6 Hz: $\pm (2-3)\%$ (with frequency deviation from 1 kHz to 1 MHz)	
Phase demodulation mode (PDM)	
Restoring and displaying baseband waveform	