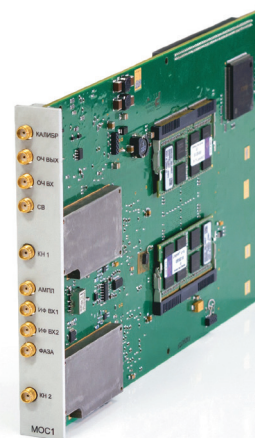


Digitizer of radio frequency signals **MOS1**

- 1000 MHz bandwidth
- 12 bit ADC
- 2.5 gsamples / s
- 8 RAM samples

The MOS1 mezzanine module (mezzanine) is designed to convert instantaneous voltage values of an electrical signal into a digital code, measure instantaneous voltage values, measure time intervals between two instantaneous voltage values through two independent channels, measure the phase difference and the ratio of the amplitudes of two signals.

MOS1 provides digital-to-analog conversion of the instantaneous voltage values of the input signals through two channels with a given sampling frequency and the recording of the received measurement information in the memory installed on the mezzanine.



Specifications

Bandwidth limitation for each channel using a software-enabled low-pass filter with an upper limit of 470 MHz	The bandwidth of each channel at the level of minus 3 dB is not less than 1000 MHz
The limits reduced to the value of the upper limit of the range, the permissible error of measurement of instantaneous voltage values for each channel are $\pm 0.25\%$	Measurement of instantaneous voltage values at the inputs of each channel is performed in the ranges: • from -1 to +1 V (designation of the range "10 dBm"); • from -0.3 to +0.3 V (range designation "0 dBm")
Maximum non-destructive voltage applied to the inputs of mezzanine channels with a continuous exposure time not exceeding 1 minute, not more than ± 7.5 V	The maximum sampling frequency on each channel when measuring a signal in real time is 2.5 Gsamples / s (0.4 ns sampling period). Minimum real-time sampling rate 2384.4 Samples / s
Number of bits of the ADC: 12	Input impedance of the channels is 50 Ohm $\pm 1\%$
Rise time no more than 500 ps with an input impedance of 50 Ohm	Dynamic range not less than 62 dB
Parameters of the measured signals: • input signal frequency - no more than 1 GHz; • input signal frequency - no more than 1 GHz; • measurement range of phase difference from -180° to 0°; • amplitude ratio measurement range from -25 dB to 25 dB	Startup login options: • DC input resistance 50 Ohm; • the range of non-destructive voltage from -7.5 to 7.5 V; • setting range of the switching threshold from -2.0 to 2.0 V in 0.1 V increments; • bandwidth - 250 MHz
Limits of permissible absolute error of measurement of the ratio of signal amplitudes ± 4 dB	Limits of permissible absolute error of measurement of the phase difference of the signals at equal levels of input signals $\pm 12^\circ$
Software selection of the following reference frequency sources: • internal frequency generator 10 MHz. The relative error and instability of the reference frequency is not more than 2.5×10^{-6}; • external generator, from which a 10 MHz signal should be supplied to the «O4 BX» mezzanine connector	External reference frequency input parameters: • operating mode for direct current - closed; • input impedance at a frequency of 10 MHz - (50 ± 1) Ohm; • the range of non-destructive voltage is not more than 6 V
Requirements for an external reference frequency signal: • signal type: sinusoid or rectangular pulses; • signal frequency - 10 MHz; • signal amplitude - from 0.5 to 2.5 V	The formation of the output signal of the reference frequency with the parameters: • shape - rectangular pulses with duty cycle 2; • frequency - 10 MHz; • high level output voltage - at least 2.3 V at a load current of up to 8 mA; • low voltage output voltage - not more than 0.6 V at a load current of up to 8 mA