

Technical parameters



Institute of Plasma Physics of Czech Academy of Sciences - COMPASS-U department – Vector network analyzer

Number parameter	Number of the evaluated subcriterion	Parameter name	Parameter value	Offer (parameters of the offered goods)	Relevance
General parameters					
1		The Vector network analyzer (VNA) own frequency range (w/o extenders) 10 MHz - 67 GHz	YES	YES -	Requirement
2		The analyser shall allow to stimulate the measured circuit with a harmonic signal adjustable over all ports simultaneously, but also for each port separately.	YES	YES - - -	Requirement
3		The output power range > (-80; 0) dBm for all ports	YES	YES - -	Requirement
4		An internal attenuator on at least ports 1 and 3 to attenuate the signal level to -120dBm or less.	YES	YES - - -	Requirement
5		The power scaling (continuous power re-tuning to a stable frequency) of the stimulating harmonic signal over a power range of > 100dB.	YES	YES - -	Requirement

6		4 measurement ports (input/output) 1,85mm (male) connector	YES	YES [REDACTED]	Requirement
7		The analyser must be configured to allow connection upto four external frequency converters for the 330GHz to 500GHz frequency band without necessity of additional HW accessories.	YES	YES [REDACTED] [REDACTED] [REDACTED] [REDACTED]	Requirement
8		safety operation with the input signal upto +27dBm	YES	YES [REDACTED] [REDACTED]	Requirement
9		Each port of the analyzer should be equipped with input and output connectors and appropriate jumper, allowing: 1. Bypass the internal directional tap, feed the measured signal directly to the mixer of one of the receivers of that measurement port and thus increase the dynamic range of the measurement. 2. Bypass the internal directional tap and the mixing stage of the receiver, feed the measured signal directly to the ADC input of one of the receivers of the measurement port and increase the dynamic range of the measurement. The customer envisages the application of a measurement with a harmonic down-converter. The output of the down converter is a signal with a frequency range of 0Hz to 1GHz. 3 Disconnect the signal path between the internal generator and the directional tap and insert an external amplifier, attenuator or modulator into the signal path and connect the output of this external circuit to the input of the directional tap.	YES	YES [REDACTED] [REDACTED] [REDACTED] [REDACTED]	Requirement
10		Equipped by 4 internal oscillators	YES	YES [REDACTED] [REDACTED]	Requirement

11		Equipped by 8 internal receivers	YES	YES [REDACTED]	Requirement
12		Equipped by two internal harmonic signal generators (LO) used as local oscillators for mixing on the receiving stages before the AD converter.	YES	YES [REDACTED]	Requirement
13		Port 2 of the analyser should be equipped by an internal adjustable attenuation with an attenuation range of at least 0dB to 30dB and a step of at least 5dB	YES	YES [REDACTED]	Requirement
14		The analyser shall be equipped with an internal signal combiner on ports 1 and 3.	YES	YES [REDACTED]	Requirement
15		Dynamic range when measuring on shielded ports 1 not less than 85dB in the frequency range 10 MHz- 67 GHz 2 not less than 130dB in the frequency range 500MHz - 20GHz	YES	YES [REDACTED]	Requirement
16		The analyser should display the spectrum. The spectrum display function should be available on each of the measurement ports without necessity to disconnect the circuit being measured.	YES	YES [REDACTED]	Requirement
17		The all 16 scattering parameters S11 to S44 should be available for measurement.	YES	YES [REDACTED]	Requirement
18		The analyser should be capable of time domain measurements. The analyser should allow converting the results measured in the frequency domain into the time domain by means of inverse Fourier transformation, filtering (gating) in the time domain and back-transferring the filtered time waveform into the frequency domain.	YES	YES [REDACTED]	Requirement

19		The SCPI recorder function should be implemented. When the SCPI logger is started, the analyzer shall record all operator actions in the form of SCPI commands. After the recording is finished, the prepared SCPI script can be exported to a format common for C++, Python or Matlab control.	YES	YES [REDACTED]	Requirement
20		The analyser shall be operable by means of a built-in colour touch screen and a diagonal of at least 30cm or larger with a resolution of at least 1280 x 800 pixels.	YES	YES [REDACTED]	Requirement
21		The analyser should be equipped with the following communication interfaces 1. 1Gbit/s LAN (Ethernet) for connection to a PC. The possibility of full control of the analyser via the LAN interface is required. If any special software is required for this, it must be included in the tender. Such software must be compatible with Windows 10 OS and higher. 2. At least 6x USB2.0 interfaces 3. At least 1x DisplayPort, or 1x HDMI, or 1x DVI-D for connecting an external monitor	YES	YES [REDACTED]	Requirement
22		possibility to apply the frequency extensions for measurements in the frequency band from 330GHz to 500GHz using two, three, or four external converters	YES	YES [REDACTED]	Requirement
Accessories					
23		Set of 4 coaxial adapters type 1,85mm(f) - 3,5mm(m). A short cable solution or a single adapter made up of two adapters accepted.	YES	YES [REDACTED]	Requirement

24		A set of > 4 cables with the following specifications 1. Defined frequency range from DC to 26.5GHz 2. 3.5mm(f) - 3.5mm(m) connectors 3. Cable length per cable 900mm to 1000mm 4. Adaptation to 26.5GHz better than 14.73dB 5. 26.5 GHz attenuation less than 2.1 dB 6. Amplitude stability at 26.5GHz: deviation less than 0,15dB at a bend radius of 114mm 7. Phase stability at 26.5GHz: less than 6,6° deviation at a bend radius of 114mm	YES	YES [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]	Requirement
25		Automatic calibration unit with the following parameters 1. The operation frequency range (10MHz; 67GHz) 2. Number of calibration ports: Minimum of 2 (f) ports 3. Communication via USB as plug-and-play 4 Maximum allowable input power +23dBm or higher	YES	YES [REDACTED] [REDACTED] [REDACTED] [REDACTED]	Requirement
Delivery and warranty conditions					
26		Service support in the Czech Republic	YES	YES	Requirement
27		Warranty 3 year	YES	YES	Requirement
28		Free updates of the internal FW analyzer for the duration of the warranty.	YES	YES	Requirement
29		Installation, commissioning of the machine and operator training	YES	YES	Requirement

 completed by the applicant