

TECHNICAL REQUIREMENTS

regarding to acquisition of digital oscilloscope

Elaborated:

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| | | To be completed by the Bidder | |
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| | | Guaranteed Technical Specifications (GTS) | Deviation/ Remarks Specify if any |
| <p>1. GENERAL NOTES</p> <p>The Technical Requirements is an integral part of the Awarding Tender Documentation and contains whole set of requirements which is the basis for Technical Proposal preparation by each bidder.</p> <p>The imposed requirements will be considered as a minimum and mandatory. In this order, any submitted tender offer, which deviates from these Technical Requirements, will be taken into consideration only if the Technical Proposal implies the ensuring a qualitative level superior to the minimum requirements of these Technical Requirements. The offer containing technical characteristics of products inferior to those specified in the Technical Requirements will be considered inconsistent and will be rejected.</p> | | | |
| <p>2. PURPOSE OF ACQUISITION</p> <p>The object of this acquisition procedure is the:</p> <p>Supply, Installation and Commissioning of one digital oscilloscope for measurements of electric quantities and electromagnetic compatibility..</p> <p>Purpose of acquisition:</p> <p>The measurement instruments are being purchased for endowment of IP SNMFR testing laboratory for product conformity assessment purposes.</p> <p>Place of delivery:</p> <p>The measuring instruments and accessories will be delivered, installed and commissioning at the IP SNMFR headquarter, in Durleşti, str. N.Dimo 22/20, MD-2003</p> | | | |

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| | <p>3. GENERAL SCOP OF AQUISITION</p> <ul style="list-style-type: none"> - To test the electromagnetic compatibility parameters of electronic and household electronics products in accordance with European standards (EN and ETSI) in the field of electromagnetic compatibility and radio equipment - To perform testing of radio equipment regarding the efficient use of radio spectrum so that it does not cause harmful interference to prevent the proper use of the spectrum by license holders or end-users (the requirement of the Technical Regulation "Radio Equipment, Telecommunication terminal Equipment and the recognition of their conformity" approved by GD 1274 of 23.11.2007) - To facilitate the accreditation of the testing laboratory for the measurements necessary for product conformity assessment and product market surveillance over a wide range of tests in order to meet electromagnetic compatibility requirements regarding EMI perturbation emissions and immunity to disturbance EMS (Technical Regulation "Electromagnetic Compatibility of Equipment" approved by GD 807 of 29.10.2015) - To provide an accredited tests services necessary for CE and SM conformity marking for telecommunication, radio and home appliances products manufacturers. | |
| | <p>4. QUANTITY</p> <ul style="list-style-type: none"> • 1 (one) benchtop digital oscilloscope with capacitive touchscreen display. | |
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5. COMPONENTENCE

- 1 (one) benchtop digital oscilloscope with capacitive touchscreen display.
- Passive probes for each input channel
- User manual
- Accredited calibration certificate.

6. THE MINIMAL PERFORMANCES OF MEASUREMENT EQUIPMENT AND INSTRUMENTS

| Type | benchtop digital oscilloscope with capacitive display | digital oscilloscope with capacitive touchscreen display |
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| Input channels | ≥ 2 channels | ≥ 2 channels |
| Analog bandwidth (-3 dB): - at 50 Ω input impedance | ≥ 3 GHz | Upgradable up to 6 GHz or better |
| Analog bandwidth limits | 200 MHz, 20 MHz | |
| Rise time/fall time (10 % to 90 % at 50 Ω) | <117 ps | |
| Vertical resolution | ≥8 bit | |
| Effective number of bits (ENOB) at declared bandwidth | > 7 bit | |
| Input impedance | 50 Ω ± 3.5 % 1 MΩ ± 1 % | |
| DC gain accuracy | ±2.5 % | |
| Input coupling at 50 Ω at 1 MΩ | AC, DC | |
| Input sensitivity at 50 Ω | 1 mV/div to 1 V/div or better | |
| Maximum input voltage (with or without probes) at 50 Ω at 1 MΩ | 5V 400 V (Vp) | |

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| Channel-to-channel isolation | 40 dB or better |
| Noise floor at 50 Ω f \geq 3GHz 1mV/div 10mV/div | 180 μ Vrms or better 355 μ Vrms or better \leq \pm 0.2 ppm or better |
| Timebase accuracy (during 1 year after calibration) | |
| Acquisition System | |
| Real Time Sampling Rate | max. 10 Gsample/s on each channel or better |
| Waveform acquisition rate | >1 000 000 waveforms/sec or better |
| Memory depth/sampling memory | 50MSamples per channel or better |
| Acquisition modes | Realtime, Segmented mode |
| Time base range | 25ps/div to 50s/div or better |
| Trigger System | |
| Detectable glitch width | 100ps to 1000s or better |
| Sweep mode | auto, normal, single |
| Trigger modes | Edge, Glitch, Width, Runt, Window, Timeout, Pattern, Video |
| Analysis & Measurement | |
| Waveform processing | Math functions, Gates, Waveform measurements, Voltage, Time, Frequency domain, Eye-diagram measurements, Statistics, Mask testing, Histograms, Waveform Math |
| Power analysis | Quality, harmonics, inrush current, |
| Arbitrary Waveform and Pattern Generator | Operating modes: function generator, arbitrary waveform generator, modulation, frequency sweep |

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| List of Oscilloscope probes should be supplied | Standard Probes | At least 500 MHz passive probes for each channel, 10:1, 1 MΩ, |
| Connectivity | USB port | 2 ports or more |
| LAN port | 1 port | 1 port or more |
| 10MHz reference port | 1 port or more | |
| General data | Display | Capacitive Touchscreen display |
| Operating Voltage | Operating Temperature range | 100-240 V, 50/60 Hz |
| Warranty | | 0 °C to +45 °C |
| | | 3 years |
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- The measuring instrument should be compliant to the applicable European technical regulations, safety requirements of the EN/IEC 61010 standard and shall comply with relevant EMC&EMI standards.
- The measuring instrument should be supplied with the Calibration Certificate for full oscilloscope bandwidth, issued by the ILAC/EA/APLAC/IAAC (ISO 17025) accredited calibration laboratory.
- Calibration certificate shall not be older than 3 months from date of delivery to IP SNMFR.

Accessories

The offer shall include all standard accessories, interconnecting cables, power supply cables, connectors etc.

Both hard and soft copies of Safety manual, Installation manual and Operating manual shall be supplied. The manuals should be in at least one of following languages Romanian/English/Russian.

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| <p>7. STAFF TRAINING</p> | <p>The bidder shall be responsible for the installation, commissioning and demonstration equipment operation. When the installation is complete, the bidder shall demonstrate that the supplied equipment meets the declared specifications and provide instructions to laboratory personnel on the following areas:</p> <ul style="list-style-type: none"> - Operation of the equipment; - Verification of the characteristics; - Maintenance & trouble shooting over view; - Safety considerations during the operation and maintenance of the equipment. | |
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| <p>8. WARRANTY</p> | <p>The warranty period shall be at least 36 months for all measuring equipment and shall start from the date of signature without objection of the equipment acceptance report.</p> <p>If different parts of the equipment are accepted by IP SNMFR over different periods of time, the warranty period for the entire equipment / measurement system will begin from the date of signature of the last acceptance report.</p> | |
| <p>9. POST WARRANTY</p> | <p>The bidder has the obligation to guarantee that offered equipment will be provided with repair services and spare parts by the manufacturer of the equipment / measurement system, for a period of at least 7 years after the expiration of the warranty period.</p> | |

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| <p>10. Eligibility criteria for bidders</p> | | |
| <p>The bidder shall provide documents establishing experience and capability as follows:</p> <ul style="list-style-type: none"> • The bidder shall have minimum of 5 year's experience in supplying similar or higher system. • The bidder shall provide the copy of recommendation letters or feedback from 3 accredited European test laboratory which use such measuring instruments. <p>Note: The manufacturer's references for the required type of equipment are acceptable, in case the bidder is not the manufacturer of the equipment.</p> | | |
| <p>11. The offer assessment mode</p> | | |
| <p>The offer that meets all the requirements of this Technical Specification and has the lowest total price will be selected.</p> | | |
| <p>Note: Compliance to meeting all of the above technical specification requirements should be furnished in detail against each technical requirement in GTS column with supporting technical illustrations, schematics, diagrams, drawings, catalogues of proposed sub-equipment & instruments offered.</p> | | |