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<u>Only Brands from Europe, North America, or Japan are acceptable.</u>	
<u>1. Spectrophotometer UV/Visible</u>	
Optical Design should be Double Beam with sample and reference cuvette positions;	
System should feature Czerny-Turner Monochromator	
Spectral Bandwidth should be Fixed 1 nm	
Light Source should be Xenon flash lamp with 3-year warranty	
Detector should be Dual Silicon Photodiodes	
Scan Ordinate Modes: Absorbance, % Transmittance, % Reflectance, Kubelka-Munk, log (1/R), log (Abs), Abs*Factor, Intensity	
Resolution should be >1.8 (Toluene in Hexane)	
Wavelength Range should be 190 –1100 nm	
Wavelength Accuracy should be below ± 0.55 nm	
Wavelength Reproducibility should be below ≤ 0.05 nm	
Scanning Speed should be below <1 to 6000 nm/min; continuously variable	
Slew Speed should be below 31,000 nm/min	
Data Intervals should be below 10, 5, 2, 1, 0.5, 0.2, 0.1 nm	
Photometric Range should be above 3.4 Abs	
Photometric Accuracy should be 1A: $\pm 0.004A$; 2A: $\pm 0.008A$; (measured at 440 nm; using neutral density filters traceable to NIST)	
Photometric Repeatability should be 1A: $\pm 0.0002A$	
Noise must be 0A: $\leq 0.00015 A$; 1A: $\leq 0.00025 A$; 2A: $\leq 0.00050 A$; (260 nm, 1.0 nm SBW, RMS)	
Drift must be < 0.0005 A/hr	
Stray light must be $\leq 1\%$ T at 198 nm (KCl), $\leq 0.05\%$ T at 220 nm (NaI), $\leq 0.05\%$ T at 340 nm (NaNO ₂)	
Baseline flatness should be $\pm 0.001 A$ (200-800 nm; 1.0 nm SBW, smoothing)	

Dimensions should be below 600 x 490 x 270 mm (23.3 x 18.7 10.6 inch) W x D x H
Weight should be below 15.5 kg
Warranty: on instrument 2 years/light source(Xenon lamp): 3 years
<u>2. Spectrophotometer UV/Visible</u>
DNA, RNA and protein measurements
Minimum Sample Volume 1 – 2 µL
Wavelength range 190 to 850 nm
Wavelength accuracy ± 1 nm
Spectral Bandwidth ≤ 1.8 nm
Measurement time ~ 8 sec
Absorbance / Photometric Range 0–550 A (10 mm equivalent) / Cuvette: 0–1.5 A
Detection Limit / Maximum Concentration Detection: 2 ng/µL dsDNA (pedestal) / 0.2 ng/µL (cuvette)
Max concentration: 27,500 ng/µL dsDNA (pedestal) / 75 ng/µL (cuvette)
Light source Xenon flash lamp
Pathlength / Auto-ranging 0.030 to 1.0 mm
USB, Ethernet, Bluetooth, WiFi; touchscreen interface; PC control options
<u>3. Spectrophotometer UV/Visible</u>
UV-Visible range scanning spectrophotometer
Measurement modes
Live Display in Abs, %T or Concentration
Scanning
Fixed wavelength at multiple wavelengths with calculations
Quantitative Analysis
OD600 analysis
Kinetics
Programmable method library
Smart Start direct boot-up
Technical Specifications
Should have a Dual beam, Czerny-Turner optical system with internal reference detector
System must have a Xenon flash lamp
Must feature a Dual silicon photodiode detectors
Wavelength Measurement Range: 190 - 1100nm
Wavelength Accuracy: ± 0.5 nm
Wavelength Repeatability: $< \pm 0.2$ nm
Data interval when scanning: 0.2, 0.5, 1, 2, 5 nm
Scan speeds: Slow, Medium & Fast - up to 1600nm/min
Photometric Display Range: -3A to +5A
Photometric Linear Range -2A to +3.5A
Photometric accuracy ± 0.002 A at 0.5A. ± 0.004 A at 1A. ± 0.008 A at 2A

Spectral bandwidth = 2nm
Noise: $\leq 0.0002A$ at 0A; $\leq 0.0003A$ at 1A; $\leq 0.0004A$ at 2A @ 260nm and 500nm
Drift: $< 0.0005A/hr$
Stray light @198nm $< 1.0\%T$; @220nm $< 0.05\%T$; 340nm $< 0.03\%T$
Baseline Flatness $\pm 0.002A$ Design Features
Should have a Removable, washable sample compartment
Easy-access top-and-front sample compartment lid
7 inch/17.8cm High Definition Color Touchpanel display; tiltable; 1280 x 800 pixels
Sloping surfaces to shed spills System should include:
Dust cover
8 Position rotary changer with room light resistance
Warranty 3 years
<u>4- Spectrophotometer UV/Visible</u>
UV-Visible range scanning spectrophotometer
Measurement modes
Live Display in Abs, %T or Concentration
Scanning
Fixed wavelength at multiple wavelengths with calculations
Quantitative Analysis
OD600 analysis
Kinetics
Programmable method library
Smart Start direct boot-up
Technical Specifications
Should have a Dual beam, Czerny-Turner optical system with internal reference detector
Must have a Xenon flash lamp
Dual silicon photodiode detectors
Wavelength Measurement Range: 190 - 1100nm
Wavelength Accuracy: $\pm 0.5nm$
Wavelength Repeatability: $< \pm 0.2nm$
Data interval when scanning: 0.2, 0.5, 1, 2, 5 nm
Scan speeds: Slow, Medium & Fast - up to 1600nm/min
Photometric Display Range: -3A to +5A
Photometric Linear Range -2A to +3.5A
Photometric accuracy $\pm 0.002A$ at 0.5A. $\pm 0.004A$ at 1A. $\pm 0.008A$ at 2A
Spectral bandwidth = 2nm
Noise: $\leq 0.0002A$ at 0A; $\leq 0.0003A$ at 1A; $\leq 0.0004A$ at 2A @ 260nm and 500nm
Drift: $< 0.0005A/hr$
Stray light @198nm $< 1.0\%T$; @220nm $< 0.05\%T$; 340nm $< 0.03\%T$
Baseline Flatness $< 0.002A$

Design Features
Removable, washable sample compartment
Easy-access top-and-front sample compartment lid
7 inch/17.8cm High Definition Color Touchpanel display; fixed; 1280 x 800 pixels
Sloping surfaces to shed spills
Includes dust cover
Warranty 3 years
<u>5- Spectrophotometer & fluorometer</u>
Microvolume UV-Vis Spectrophotometer designed for rapid and accurate quantification of nucleic acids, proteins, and other biomolecules.
Sample Volume: 1–2 μ L (microvolume)
Wavelength Range/ Accuracy : 190–850 nm $\pm$ 1 nm
Spectral Resolution: $\leq$ 1.8 nm
Pathlength Range: 0.030 to 1.0 mm (auto-ranging)
Absorbance Range: Pedestal: 0–550 A; Cuvette: 0–1.5 A
Photometric Accuracy: 3% at 0.97 A, 302 nm
Detector: 2048-element CMOS linear image sensor
Light Source: Xenon flash lamp
Sample Pedestal: 303 Stainless steel and quartz fiber
Measurement and Data processing time: Standard $\leq$ 7sec
Fluorescence $\leq$ 14sec
Acclaro Pro $\leq$ 30sec
Repeatability Typical: 0.002 A (1.0 mm path) or 1% CV, whichever is greater
Minimum Detection Limit: Pedestal: 1.0 ng/ μ L (dsDNA) 0.03 mg/ml (BSA) ; Cuvette: 0.2 ng/ μ L (dsDNA) 0.006mg/L (BSA) ; Fluorescence :10 ng/ul (dsDNA) 10 ng/ul (RNA)
Maximum Concentration: Pedestal: 27,500 ng/ μ L (dsDNA) ; BSA : 820 mg/mL
Fluorescence: 1000ng/ul (dsDNA) 1000ng/ul (RNA)
Connectivity: USB, Ethernet, Wi-Fi
Display: Built in 7-inch touchscreen Or computer software
21 CFR Part 11 compliance
<u>6- Benchtop Spectrofluorometer</u>
Benchtop Fluorescence Spectrometer with LuxMaster Software
Light Source: 150W Continuous Wave Xenon-Arc Lamp
. Detector: Photodiode for reference
PMT for Excitation and Emission Spectrum
. Wavelength Range: 190-900 nm for Excitation and Emission
. Wavelength Accuracy: $\leq \pm 0.5$ nm
. Wavelength Repeatability: ≤ 0.2 nm
. Wavelength Scan Speed: Max 60,000 nm/min
. Sensitivity: 4000 : 1 (RMS)

1000 : 1 (Peak to Peak)
. Monochromator: 1,200 grooves/mm
. Minimum Resolution: 0.5 nm
. Slit Width : Excitation : 0.5, 1, 2.5, 5, 10, 20 nm
Emission : 0.5, 1, 2.5, 5, 10, 20 nm
. Minimum Data Interval: 0.1 nm
Should be supplied with:
. PC Software
. FL Single Cell Holder
. Interface Cable (USB)
. User manuals
. AC Power Cord (EU, UK, US)
. FL TEFLON Reflector
Quartz SUPRASIL Cell 10mm, 3.5mL, Pkg. 2
. Pathlength : 10 mm
. Cell Volume : 3.5 mL
. Desktop PC and printer
<u>7- Infrared Spectrophotometer – FTIR</u>
System should feature a Single-point source with non-migrating hotspot (10-year warranty)
System should have an interferometer with KBr/Ge coated beamsplitter and dynamic alignment, 7800-350 cm ⁻¹ (10-year warranty)
Should feature a Solid-state, temperature-controlled diode laser (10-year warranty)
Supplied with a High-Performance - Deuterated Triglycine Sulfate (DTGS) detector
Must have multi-component search functionality
Desiccated optical compartment should be sealed in a Al alloy chassis
Should be supplied with integrated heat and humidity electronic sensors to protect the bench from potential damage due to extreme environments
Should feature an Auto-align energy optimization
System should provide the below factory verified specifications:
1 minute signal to noise of better than 35,000:1
0.6 cm ⁻¹ standard resolution, 0.5 with transmission aperture card (variable from 32 to 0.5 cm ⁻¹)
System Size (WxHxD) 34 cm x 24 cm x 32 cm

System should be supplied with Diamond ATR accessory for analyzing liquids, solids, pastes or powders with the following specifications :

- The accessory must be supplied with an Optical Base and at least one crystal plate.
- The optical base should include the accessory base with integrated pressure tower along with two pressure tips and a volatiles cover.
- The ATR must feature anti-reflectance coated crystals and high efficiency all-reflective optics
- Plates should be easily removed for cleaning or to exchange with other crystals.
- The pressure tower includes two interchangeable tips suited for flat or uneven solids and powders.
- The ATR must include a 5-year warranty for the optical base and diamond crystal plates.
- System must feature an automatic accessory recognition
- System should be supplied with AR Diamond Crystal Plate with the below specifications:
Single Reflection Diamond Crystal Plate - High Throughput
Spectral range with KBr/DTGS optics: 7,800 - 400 cm⁻¹
Monolithic diamond crystal

System should be supplied with an appropriate branded desktop PC and laser printer

8- SPE Solid phase extraction

16 positions (ports) for SPE cartridges.

Includes vacuum gauge & valve assembly, vacuum control valve to optimize sample flow rate, bleed valve, adjustable collection rack

Glass block chamber, Corian® lid, durable chemically resistant materials

Collection racks for 12-13 mm or 16 mm disposable test tubes

High capacity (16 positions) and designed for SPE cartridges (1 mL-75 mL) and plates.

Polypropylene racks are highly resistant to chemical degradation and abuse

9- PCR

96-well, 0.2 mL block with 3 independent temperature zones

Temperature range (block) : 0.0 °C to 100.0 °C

Temperature accuracy ± 0.25 °C (35 °C to 99.9 °C)

Temperature uniformity < 0.5 °C (within 20 sec after reaching 95 °C)

Maximum block ramp (heating / cooling) 3.5 °C/sec (block)

Maximum sample ramp rate 2.7 °C/sec

Onboard memory ~2,000 MB (stores > 1,000 protocols); USB port for additional storage

5-inch color TFT LCD touchscreen

USB, WiFi, Ethernet; cloud-enabled with Thermo Fisher Connect / Instrument Connect

10. Elisa reader

• Proven performance and reliable day-to-day results through patented optical design and in-built self-diagnostics

A broad wavelength range of 340-850 nm for a wide variety of research and routine applications such as ELISA

Immunoassays, protein quantification, endotoxin, cytotoxicity and proliferation assays, enzyme assays and growth curves
The system should be equipped with an eight-position filter wheel with three standard filters, 405 nm, 450 nm and 620 nm, preinstalled A comprehensive range of easy-to install additional filters available for order
Fast and accurate measurement of both 96- (7 seconds fast mode /13 seconds normal mode) and 384-well plates for various throughput requirements
Ease of use through the large color screen and a variety of language versions Visual and logical SkanIt software for comprehensive instrument control and data handling
Plate formats supported: 96-well standard; with incubator model also supports 384-well plates.
Incubation temperature range: Ambient + 4 °C to 50 °C.
Shaking: Linear shaking (slow/medium/fast) standard.
Read-out / resolution: Read-out range: 0 – 6 absorbance units (AU) Resolution: 0.001 Abs
Memory / Data export: Internal memory for at least 99 assay protocols + 100 test results (for 96-well) when stand-alone. USB port for data export to USB memory device
Verification plate available for instrument performance verification Robot compatibility for high-throughput environments
Multiple languages choose between English, German, French, Spanish, Italian, Portuguese, Russian, Chinese, and Japanese (touchscreen models)
<u>11- Horizontal electrophoresis</u>
Gel Dimension 3.9"x2.8" (100x70mm), 3.9"x3.9" (100x100mm)
Maximum Sample 50 samples for 3.9"x2.8" (100x70mm) Tray (2x25 sample combs) 100 samples for 3.9"x3.9" (100x100mm) Tray (4x25 sample combs)
Buffer Volume 0.08gal (300ml)
Injection molded construction; durable, leak proof environment for complete safety and long life
Cassette type electrode Easy to replace; made of 99.99% corrosion resistant pure platinum
Lid can only be fastened in one way. Upon removal, power is disconnected from buffer chamber
4 (4 positive voltage and 4 negative voltage) for the running of multiple electrophoresis units
Flexibility to either program a custom method (up to 100 custom methods, 20 steps per method, 999 minutes per step) or select a pre-programmed gel electrophoresis and transfer method
Advanced UI/UX design combined with 4.3-inch backlit LCD touchscreen for ease of use and convenience in monitoring run progress
Power Supply:
Output Voltage/Current/Power: Maximum output of 300 V, 500 mA, and 120 W

Terminal Pairs: 4 (4 positive voltage and 4 negative voltage) for the running of multiple electrophoresis units
Programming: Flexibility to either program a custom method (up to 100 custom methods, 20 steps per method, 999 minutes per step) or select a pre-programmed gel electrophoresis and transfer method
Display: Advanced UI/UX design combined with 4.3-inch backlit LCD touchscreen for ease of use and convenience in monitoring run progress
Dimensions: 230 x 303 x 102 mm (W x D x H)
<u>12. UV transilluminator for gel viewing</u>
White and blue light sources that allow for visualization of common nucleic acid stains, colorimetric protein and membrane stains, and SYPRO protein stains
Magnetic filter screen with hinge-free design for simplicity and safety, allowing observation and gel-cutting without protective goggles
Five-minute automatic power-off and long-lasting LEDs (safer for the eyes and skin compared with UV)
Three-level adjustable light intensity to achieve the best observational or imaging quality
Compact design 18.5 cm × 22 cm × 3.0 cm (L × W × H)
Wavelength: 470 nm Excitation, 580 nm (with Amber Filter Cover) Emission
LED lifetime: >30,000 hours (spec for LED modules)
Input current: 2 A
Viewing area: 12 cm × 18 cm (uniform plate size) for the gel imaging
<u>13. Microtome</u>
Semi-automated microtome
Section Thickness Range: 0.5 µm to 60 µm
Vertical Stroke: 70 mm
Horizontal Stroke: 40 mm
Blade Holder: Bidirectional sliding with finger guard
Specimen Clamping: Compatible with standard, SuperMega, and quick-release clamps
Orienting Head: 360° rotation with X-Y positioning
Coarse Feed: Motorized with adjustable speed
Control Interface: 7" full-color touchscreen with memory function
Safety Features: Emergency stop button, electrical brake, manual lock
Waste Tray: High-capacity (1.7 L) with antistatic coating
Two year warranty