



ASTI-FM 03-11  
REV 1/13 January 2020

**DOST-ASTI Bids and Awards Committee  
Invitation to Bid (Public Bidding)**

<b>ITB No:</b>	20-09-3199	<b>Date:</b>	September-07-2020
<b>PR No:</b>	EPIIC P2-20-02-9725	<b>Date:</b>	March-03-2020
<b>Source of Funds:</b>			
<b>Total ABC:</b>	Php 1,616,000.00		
<b>Time, Date &amp; Venue of Pre-bid Conference:</b>	September 22, 2020, 1:30 PM at Videoconferencing (Cisco Webex Meetings)		
<b>Time and Date of Submission of Bids:</b>	October 05, 2020, 12:00 PM		
<b>Time, Date &amp; Venue of Opening Bids:</b>	October 06, 2020, 1:30 PM at DOST-ASTI and Videoconferencing (Cisco Webex Meetings)		
<b>Date of availability of Complete Set of Documents:</b>	September 14, 2020		
<b>Deadline of Potential Bidder's Clarifications:</b>	September 25, 2020		
<b>Deadline of ASTI's Supplemental Bid Bulletin:</b>	September 28, 2020		
<b>Delivery Schedule:</b>			

The Advanced Science and Technology Institute (ASTI), through its Bids and Awards Committee (BAC), hereby invites all interested bidders to submit their bids for the item(s) listed below. Guidelines regarding the format, eligibility, technical and financial documents needed are described in the Instruction to Bidders of the Philippine Bidding Documents

Bidding will be conducted through open competitive bidding procedures using a non discretionary "pass/fail" criterion as specified in the 2016 R-IRR of RA 9184.

A complete set of Bidding Documents may be purchased by interested bidders upon payment of a fee for the Bidding Documents. It is also downloadable for free of charge at DOST-ASTI's website - [www.asti.dost.gov.ph](http://www.asti.dost.gov.ph)

For further inquiries, contact ASTI's BAC Secretariat via email at [bac-sec@asti.dost.gov.ph](mailto:bac-sec@asti.dost.gov.ph). Interested bidders may also call the number - (632)-426-7423 and look for ASTI's BAC Secretariat.

Respectfully,

**PEDRITO B. MANGAHAS**  
Chairperson, BAC-1

NO.	TECHNICAL SPECIFICATIONS	QTY	UNIT	UNIT PRICE(Php)	TOTAL PRICE(Php)
1	<b>350Mhz Mixed Signal Oscilloscope with Logic Probe, Computer &amp; Embedded Serial Triggering and Analysis</b> Specifications: 1. Analog Bandwidth: 350 MHz 2. Channels: 2.1. Analog: 4 4 input analog channels with passive probes with at least 500MHz badwidth 2.2. Digital: 16 input digital channels including active logic probes 3. Max. Sample Rate of Analog Channel: 3.1. Single-channel: 8 GSa/s 3.2. Half-channel: 4 GSa/s 3.3. All channels: 2 GSa/s 4. Max. Memory Depth: 4.1. Analog Channel:	2	unit	150000.00	300,000.00

	<p>4.1.a. Single-channel: 200 Mpts  4.1.b. Half-channel: 100 Mpts  4.1.c. All channels: 50 Mpts  4.2. Digital Channel: 25 Mpts (all channels)  5. Max. Waveform Capture Rate: <math>\geq 500,000</math> wfms/s  6. Range of Time Base: 1 ns/div~1ks/div  7. Vertical Sensitivity Range: 500 uV/div~10 V/div  8. DC Gain Accuracy: <math>\pm 3\%</math> of full scale  9. Hardware Real-time Waveform Recording and Playing: <math>\geq 450,000</math> wfms (single-channel)  10. Trigger Type: Edge trigger, Pulse trigger, Slope trigger, Video trigger, Pattern trigger, Duration trigger, Timeout trigger, Runt trigger, Window trigger, Delay trigger, Setup/Hold trigger, Nth Edge trigger, RS232, UART, I2C, SPI  11. Decoding Type: Parallel, RS232, UART, I2C, SPI  12. Waveform Calculation: A+B, A-B, AxB, A/B, FFT, A&amp;&amp;B, A  B, A^B, !A, Intg, Diff, Sqrt, Lg, Ln, Exp, Abs, AX+B, LowPass, HighPass, BandPass, and BandStop  13. Auto Measurement: 41 auto measurements; and up to 10 measurements can be displayed at a time  14. Enhanced FF: Record Length: Max. 1 Mpts; Window Type: Rectangular, Blackman-Harris, Hanning (default), Hamming, Flattop, and Triangle; Peak Search: max 15 peaks  15. Analysis: Frequency counter, DVM, power analysis, histogram  16. Connectivity: USB2.0 Host <math>\times</math> 1, USB2.0 Device, LAN(10/100/1000 Base-T), HDMI 1.4b, TRIG OUT  17. LCD Size and Type: 9-inch capacitive multi-touch screen/gesture enabled operation  18. Display Resolution: 1024<math>\times</math>600  19. Safety Approval: CE, RoHS  20. Interfaces I/O: GPIB, LAN / Ethernet, LXI, USB Host, Web Host / Web Server, HDMI, USB  21. Storage: Internal Memory, USB Flash Drive  22. Power Supply Voltage: 220V Universal  23. Includes:  23.1. Logic Probe  23.2. Computer Serial Triggering and Analysis  23.3. Embedded Serial Triggering and Analysis  24. Warranty: at least one (1) year</p> <p>Inclusive of all government fees, taxes and duties.  Delivery Period: 60 days upon receipt of NTP</p>				
2	<p><b>Spectrum Analyzer with Tracking Generator</b>  Specifications:  1. Type (Spectrum Analyzer): Benchtop  2. Frequency Range: 9 kHz to 3.2 GHz  3. Frequency Resolution: 1 Hz  4. Aging Rate: &lt;1 ppm/year  5. SSB Phase Noise(<math>f_c=1</math>GHz): &lt;-98 dBc/Hz@10kHz offset, &lt;-100 dBc/Hz@100kHz offset (typ.)  6. Resolution Bandwidth  6.1. -3 dB: 10 Hz to 1 MHz, in 1-3-10 sequence  6.2. -6 dB: 200 Hz, 9 kHz  7. Video Bandwidth (-3 dB): 1 Hz to 3 MHz, in 1-3-10 sequence  8. Displayed Average Noise Level (DANL) (condition: PA on , attenuation = 0 dB, RBW = VBW = 100 Hz,</p>	1	unit	260000.00	260,000.00

	<p>sample detector, trace average <math>\geq 50</math>, tracking generator off, normalized to 1Hz, 20°C to 30°C , input impedance = 50 <math>\Omega</math>):</p> <p>8.1. 100 kHz to 1 MHz: &lt;-152 dBm (typ.)</p> <p>8.2. 1 MHz to 5 MHz: &lt;-152 dBm, &lt;-155 dBm (typ.)</p> <p>8.3. 5 MHz to 3.2 GHz &lt;-157 dBm, &lt;-161 dBm (typ.)</p> <p>9. Trace Detectors: normal, positive-peak, negative-peak, sample, RMS, voltage average</p> <p>10. Trace Functions: clear write, max hold, min hold, average, view, blank</p> <p>11. Units of Level Axis: dBm, dBmV, dB<math>\mu</math>V, nV, <math>\mu</math>V, mV, V, nW, <math>\mu</math>W, mW, W</p> <p>12. Level Measurement Uncertainty: &lt;0.8 dB (nom.)</p> <p>13. Tracking Generator</p> <p>13.1. Frequency Range: 100 kHz to 3.2</p> <p>13.2. Output Level Range: -40 dBm to 0 dBm</p> <p>13.3. Output Level Resolution: 1 dB</p> <p>14. SSC Measurement Bandwidth: 1.5 MHz</p> <p>15. Warranty: at least one (1) year</p> <p>Inclusive of all government fees, taxes and duties. Delivery Period: 60 days upon receipt of NTP</p>				
3	<p><b>Arbitrary Function Generator with PC based waveform editing software license</b></p> <p>Specifications:</p> <p>1. Channel: 2</p> <p>2. Maximum Frequency: 160MHz</p> <p>3. Sample Rate: 500Msa/s</p> <p>4. Standard Waveforms: Sine, Square, Ramp, Pulse, Noise, Harmonics (up to 16 orders)</p> <p>5. Arbitrary Waveforms: Sinc, Exponential Rise, Exponential Fall, ECG, Gauss, HaverSine, Lorentz, DualTone, DC, etc. up to 150 waveforms</p> <p>6. Waveform Length: 16K</p> <p>7. Vertical Resolution: 14bits</p> <p>8. Sine: 1<math>\mu</math>Hz-160MHz</p> <p>9. Square: 1<math>\mu</math>Hz-50MHz</p> <p>10. Ramp: 1<math>\mu</math>Hz-4MHz</p> <p>11. Pulse/arb: 1<math>\mu</math>Hz-40MHz</p> <p>12. Noise (-3dB): 120MHz</p> <p>13. Sine Wave Spectrum Purity Total Harmonic Distortion: &lt;0.1%(10Hz-20KHz,0dBm); Phase Noise: = -115dBc@10MHz (0dBm,10KHz offset)</p> <p>14. Square: Rise/Fall Time &lt;8ns</p> <p>15. Jitter (rms):</p> <p>15.a. <math>\leq 5</math>MHz: 2ppm+500ps</p> <p>15.b. &gt;5MHz: 500ps</p> <p>16. Amplitude (into 50 <math>\Omega</math>):</p> <p>16.a. 20MHz: 1mVpp-10Vpp</p> <p>16.b. 60MHz: 1mVpp-5Vpp</p> <p>16.c. 120MHz: 1mV-2.5Vpp</p> <p>16.d. 160MHz: 1mV-1Vpp</p> <p>17. Modulation Type: AM, FM, PM, ASK, FSK, PSK, BPSK, QPSK, 3FSK, 4FSK, OSK, PWM</p> <p>18. Work Mode: Continue, Burst, Sweep, Modulation</p> <p>19. Burst Characteristics:</p> <p>19.a. Carrier Frequency: 2mHz-100MHz</p> <p>19.b. Burst Count: 1 to 1 000 000 or Infinite</p> <p>19.c. Trigger Source: Internal, External, Manual</p> <p>20. With PC based waveform editing software license</p>	1	unit	106000.00	106,000.00

	21. Warranty: at least one (1) year  Inclusive of all government fees, taxes and duties. Delivery Period: 60 days upon receipt of NTP				
4	<b>Vector Signal Generator</b> Specifications: 1. Frequency Range: 1MHz to 6.1GHz (RF band) 100Hz to 1MHz (Low band), 1Hz resolution, 0.5PPM clock accuracy 2. Output level range: -100dBm~+10dBm (1MHz ~4GHz), -100dBm~+0dBm (4GHz ~6.1GHz), -50dBm~0dBm (Low band), 0.25dB resolution 3. Working mode: CW mode, frequency sweeping, frequency hopping, pulse modulation and simultaneous I&Q modulation (100KB data buffer) 4. Analog modulation: AM, FM, PM 5. Digital modulation: ASK, FSK, 4FSK, GFSK, MSK, GMSK,SFSK, and more modulation signal based on the I&Q engine 6. Phase modulation: BPSK, 4PSK, 8PSK, 16QAM, 32QAM, 64QAM and more modulation signal based on the I&Q engine 7. Low band function: Sin wave, I&Q modulation, arbitrary signal waveform (raw data file) and modulated any low band signal into RF signal with AM, FM and PM. 8. Pulse signal modulation: pulse width 0.25us~5s, repeat time: 40us~20S (single frequency), 400us~20s (Sweeping and hopping) 9. Warranty: at least one (1) year  Inclusive of all government fees, taxes and duties. Delivery Period: 60 days upon receipt of NTP	1	unit	60000.00	60,000.00
5	<b>Benchtop Precision Digital Multimeter</b> Specifications: 1. Type: Bench 2. Absolute Maximum DC Current Measurement: 10.1A dc 3. Absolute Maximum AC Current Measurement: 10.1A ac 4. Absolute Maximum AC Voltage Measurement: 750V ac 5. Absolute Maximum Resistance Measurement: 120MΩ 6. Absolute Maximum DC Voltage Measurement: 1010Vdc 7. Absolute Maximum Temperature Measurement: +400 °C, +760 °C, +1000 °C, +1300 °C, +1372 °C, +1768 °C, +1820 °C 8. Absolute Maximum Capacitance Measurement: 120μF 9. Functions Measured: AC Current, AC Voltage, Capacitance, Continuity, DC Current, DC Voltage, Diode, Frequency, Period, Resistance, Temperature 10. True RMS: Yes 11. Maximum Frequency: 300kHz 12. Resistance Measurement Resolution: 1μΩ 13. Temperature Measurement Resolution: 0.001 °C 14. Capacitance Measurement Resolution: 0.01pF	1	unit	125000.00	125,000.00

	<p>15. Maximum Operating Temperature: +50°C  16. Battery Type: Li-Ion  17. Safety Category Voltage: 1000V  18. Minimum Operating Temperature: 0°C  19. Battery Life: 3 years  20. Safety Category Level: CAT II  21. Warranty: at least one (1) year</p> <p>Inclusive of all government fees, taxes and duties.  Delivery Period: 60 days upon receipt of NTP</p>				
6	<p><b>Dual Display Handheld Digital Multimeter</b>  Specifications:  1. Measurement Function: DC voltage, AC voltage, DCV+ACV, DC current, AC current, DCA+ACA, resistance, frequency, temperature, capacitance, duty cycle, decibel calculation, continuity check, diode test, low-power resistance  1.1. For AC voltage/current, RMS/MEAN detection can be switched.  1.2. For AC voltage/current, the low-pass filter can be turned on/off.  2. Data hold/auto hold/peak hold, range hold, maximum/minimum/average values resistance, capacitance zero, relative and percentage value calculation, manual-mode memory, logging-mode memory, auto power off, backlight (white LED)  3. Display: 5-digit LCD 7-segment  4. Digital display: Main display; [50,000] counts  5. Sub-display; [50,000] counts  6. Bar graph display: 51-segment  7. Polarity indicator: "-" appears automatically when the polarity is negative  8. Overrange indicator: "OL"  9. Basic accuracy: 0.020%  10. True RMS measurement  11. Simultaneous measurement and display of DC and AC  12. Switchable RMS/MEAN detection  13. Low-pass Filter (LPF)  14. AC50mV range  15. Low-Power resistance measurement  16. With full Support for Data Management  17. With large-capacity logging-mode memory  18. USB communication, application software (Optional DMM communication package)  19. Conforms to safety standards EN61010-1 1000V CAT, 600V CAT.  20. Safety shutters for preventing erroneous insertion of test leads into current measurement terminals  21. Operating temperature range: -20 to +55°C  22. Storage temperature range: -40 to +70°C  23. Closed Case Calibration  24. Warranty: at least one (1) year</p> <p>Inclusive of all government fees, taxes and duties.  Delivery Period: 60 days upon receipt of NTP</p>	2	unit	40000.00	80,000.00
7	<p><b>Handheld Digital Multimeter</b>  I. Specifications:  1. Maximum voltage between any terminal and earth</p>	10	unit	28500.00	285,000.00

- ground: 600 V
- 2. Surge protection: 6 kV peak per IEC 61010-1 600 V CAT III, Pollution Degree 2
- 3. Fuse for A input: 11 A, 1000 V FAST 17 kA Fuse
- 4. Display:
  - 4.1. Digital: 6,000 counts, updates 4/sec
  - 4.2. Bar Graph: 33 segments, updates 32/sec
- 5. Operating Temperature: -10 °C to +50 °C; Storage: -40 °C to +60 °C
- 6. Operating altitude: 2,000 m
- 7. Battery:
  - 7.1. Type: 9 Volt Alkaline, NEDA 1604A/IEC 6LR61
  - 7.2. Life: 400 hours typical, without backlight
- 8. Safety compliances: ANSI/ISA 82.02.01 (61010-1) 2004, CAN/CSA C22.2 No 61010-1-04, UL 6101B (2003) and IEC/EN 61010-1 2nd Edition for measurement Category III, 600 V, Pollution Degree 2, EMC EN61326-1
- 9. Certifications: UL, CSA, TUV, N10140, VDE
- 10. IP rating (dust and water protection): IP42
- 11. Warranty: at least one (1) year

II. Features:

- 1. With integrated technology for non-contact voltage detection similar or better than VoltAlert
- 2. With automatic AC/DC voltage selection modes to provide faster and more accurate readings
- 3. Provides low input impedance to help prevent false readings due to ghost voltage
- 4. With large white LED backlight for working in poorly lit areas
- 5. True RMS capabilities for accurate measurements on non-linear loads
- 6. Measures 10 A (20 A overload for 30-seconds)
- 7. Measures resistance, continuity, frequency, and capacitance
- 8. Provides Min/Max/Average to record signal fluctuations
- 9. Includes holster with probe holders for easy storage
- 10. With compact ergonomic design for one-handed operation
- 11. Fits into magnetic hanger for hands-free operation

Inclusive of all government fees, taxes and duties  
 Delivery Period: 60 days upon receipt of NTP

8	<p><b>Low Noise Amplifier</b></p> <p>Specifications:</p> <ul style="list-style-type: none"> <li>1. 1.4 dB NF Low Noise Amplifier</li> <li>2. Operating from 10 MHz to 3 GHz with 34 dB Gain, 11 dBm P1dB and SMA</li> <li>3. Frequency Range: 0.01 ~ 3GHz</li> <li>4. Small Signal Gain: 32.53 ~ 436.5dB</li> <li>5. Gain Flatness: <math>\pm 0.75 \sim \pm 1</math>dB</li> <li>6. Gain Variance at OTR: 1.25dB</li> <li>7. Output at 1 dB Compression Point: +10 ~ +11dBm</li> <li>8. Output 3rd Intercept Point: +25dBm</li> <li>9. Noise Figure (50 MHz to 3 GHz): 1.4 ~ 1.7dB</li> <li>10. Input VSWR: 1.4:1 ~ 1.6:1</li> <li>11. Output VSWR: 1.4:1 ~ 1.6:1</li> <li>12. Reverse Isolation: 40 ~ 50dB</li> </ul>	1	unit	60000.00	60,000.00
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	<p>13. Operating DC Voltage: 10, 12, 15 Volts  14. Operating DC Current: 85, 95, 105 mA  15. Operating Temperature Range: -40 ~ +85°C  16. Warranty: at least one (1) year</p> <p>Inclusive of all government fees, taxes and duties.  Delivery Period: 60 days upon receipt of NTP</p>				
9	<p><b>Benchtop Electronic DC Load</b>  Specifications:  1. Single input rating  1.1. Voltage: 0 to 150 V  1.2. Current: 0 to 60 V  1.3. Power: 350 W  1.4. Minimum Operating Voltage: 1.3V (@ 60A)  1.5. Resistance: 350kΩ  2. CC Mode  2.1. Range: 0 to 6A (low range), 0 to 60A (high range)  2.2. Resolution: 1mA  2.3. Accuracy ±(0.05% + 0.05%FS)  2.4. Temperature Coefficient: 100ppm/°C  3. CV Mode  3.1. Range: 0 to 15V (low range), 0 to 150V (high range)  3.2. Resolution: 1mV (low range), 5mV (high range)  3.3. Accuracy ±(0.05% + 0.02%FS) (low range), ±(0.05% + 0.025%FS) (high range)  3.4. Temperature Coefficient: 50ppm/°C  4. CR Mode  4.1. Range: 0.08Ω to 15Ω (low range), 2Ω to 15kΩ (high range)  4.2. Resolution: 2mA/Vsense  4.3. Accuracy: Vin/Rset*(0.2%) + 0.2%IFS  5. CP Mode  5.1. Range: 0 to 350W  5.2. Resolution: 100mW  6. CC Continuous Mode  6.1. Frequency Range: 0.001Hz to 30kHz  6.2. Frequency Accuracy: 0.8%  6.3. Frequency Resolution: ±0.5%  6.4. Duty Cycle Range: 5% to 95%, 1%  7. Slew Rate  7.1. CC Slew Rate: 0.001A/μs to 0.5A/μs (low range), 0.001A/μs to 5A/μs (&gt;5V) (high range)  7.2. Resolution: 0.001A/μs  7.3. Accuracy: 5% + 10μs  8. Current Readback  8.1. Range: 0 to 60A  8.2. Resolution: 0.1mA  8.3. Accuracy: ±(0.05% + 0.05%FS)  8.4. Temperature Coefficient: 50ppm/°C  9. Voltage Readback  9.1. Range: 0 to 150V  9.2. Resolution: 1mV  9.3. Accuracy ±(0.05% + 0.02%FS)  9.4. Temperature Coefficient: 20ppm/°C  10. Protection Functions: Over-current protection (OCP), over-voltage protection (OVP), over-power protection (OPP), over-temperature protection (OTP), as well as local / remote reverse voltage (LRV / RRV) protection.</p>	2	unit	90000.00	180,000.00

	<p>11. Stability:  11.1. Current: <math>\pm(0.01\% \pm 10\text{mA})</math>  11.2. Voltage: <math>\pm(0.01\% \pm 10\text{mV})</math>  12. Communications Interfaces  12.1. USB Device: Standard  12.2. USB Host: Standard  12.3. RS232: Standard  12.4. LAN: Standard  12.5. Digital I/O: Standard  13. AC Power Supply  13.1. Voltage: 230V <math>\pm 10\%</math>, 250V max., 50Hz to 60Hz, nom.  13.2. Power: &lt;30VA  14. Environment  14.1. Cooling Method: Fan  14.2. Operating Temperature: 0°C to 40°C  14.3. Storage Temperature: -40°C to 70°C  14.4. Humidity: 5% to 80% RH  14.5. Altitude: &lt;2,000m  15. Warranty: at least one (1) year</p> <p>Inclusive of all government fees, taxes and duties  Delivery Period: 60 days upon receipt of NTP</p>				
10	<p><b>Benchtop LCR Meter</b></p> <p>I. Specifications:  1. Max Capacitance Measurement: 9999F  2. Max Resistance Measurement: 9.999 GΩ  3. Max Inductance Measurement: 9999H  4. Type: Bench  5. Display Type: LCD  6. Power Source: Mains  7. Operating Temperature: 0 - 40°C  8. SCPI-compliant programming (can be programmed remotely via USB (virtual COM), GPIB, and LAN interface using SCPI commands)  9. with compact 2U half-rack form factor with 4.3" color display  10. Warranty: at least one (1) year</p> <p>II. Features:  1. Measurement parameters: L, C, R, Z, G, B, Y, D, Q, θ, DCR  2. With 0.05% best impedance accuracy  3. With test frequency from 20 Hz - 300 kHz and 4-digit resolution  4. With 0.5 Vrms and 1 Vrms selectable test levels  5. Adjustable measurement speed for fast readout or better accuracy  6. 300-point linear and logarithmic sweep function  7. Bin sorting function (9 primary, one secondary and one out-of-spec bin)  8. Save/recall up to 100 setups (10 internal) including 1000 measurements and screenshots</p> <p>III. Includes:  1. Kelvin clip test leads for 4-wire measurements  2. Test fixture which allows users to conveniently measure axial and radial lead type components</p> <p>Inclusive of all government fees, taxes and duties</p>	1	unit	160000.00	160,000.00



Delivery Period: 60 days upon receipt of NTP				
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<b>TOTAL APPROVED BUDGET FOR THE CONTRACT (ABC):</b>	
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<b>Php 1,616,000.00</b>
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<b>RESERVATION CLAUSE</b>
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The Advanced Science and Technology Institute reserves the right to accept or reject any proposal, to annul the bidding process, and to reject all proposals at any time prior to contract award, without thereby incurring any liability to the affected proponent or proponents.
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