



Republic of the Philippines  
Department of Science and Technology

**ADVANCED SCIENCE AND TECHNOLOGY INSTITUTE**



ASTI-FM 03-10  
REV 0/2 APR 2018


**DOST-ASTI Bids and Awards Committee  
Notice of Negotiated Procurement -Two Failed Biddings**

RFQ No.: 18-08-2079	Date: Oct-29-2018
PR No.: PDH2-18-08-6327	Date: Aug-14-2018

The Advanced Science and Technology Institute (ASTI) , through its Bids and Awards Committee, will undertake **Negotiated Procurement:Two-failed Biddings** for the item/s listed below. Interested proponents are invited to attend **Negotiated Conference** at ASTI Building, Ground Flr. ASTI Bldg, C. P. Garcia Ave, U.P.Campus Diliman, Quezon City on: **November 5,2018 , 3:00 PM.**

For inquiries, you may call the BAC Secretariat at **+63 2 426-9759/60 local 1206/1212** and look for Ms. Katherine B. Ramos.

Respectfully,

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

ITEM NO.	TECHNICAL SPECIFICATIONS	QTY	UNIT	UNIT PRICE	TOTAL PRICE
1	<p><b>EMS (Susceptibility/ Immunity) Measurement Test System</b> Electromagnetic Susceptibility (EMS) TURNKEY SYSTEM</p> <p>- This purchase requisition is for a Turnkey EMS Test System inclusive of design, supply, integrate, install and commission with the existing Electro Magnetic Interference (EMI) Test System. The test system shall be for full compliance, fully automated, controlled by a modular based test system software for testing various electronic and electrical equipment according to latest editions of the following standards:</p> <p>IEC 61000 4-2/ Electrostatic Discharge (ESD) Immunity IEC 61000-4-3/ Radio Frequency (RF) Radiated Immunity IEC 61000-4-4/ Electrical Fast Transients (EFT)/Burst Immunity IEC 61000-4-5/ Surge/Combination Wave Immunity IEC 61000-4-6/ RF Conducted Immunity IEC 61000-4-8/ Power Frequency Magnetic Field Immunity IEC 61000-4-9/ Pulse Frequency Magnetic Field Immunity IEC 61000-4-11/ Voltage Dip, Interruption, Variation Immunity IEC61000-6-1/ Residential, Commercial, light Industrial Immunity IEC61000-6-2/ Industry Immunity</p>	1	lot	80000000.00	80,000,000.00

ASTI Bldg., U.P. Technology Park Complex, C.P. Garcia Ave., Diliman, Quezon City, Philippines 1101  
• Website: www.asti.dost.gov.ph • E-mail: info@asti.dost.gov.ph • Tel. No.s: +632 927-2541, +632 927-3502, +632 426-9759, +632 426-9760  
• Fax No.: +632 925-8598

ISO 11452-2/ Automotive RF Radiated Immunity  
ISO 11452-4/ Automotive Bulk Current Injection  
CISPR 14-2  
CISPR 35

Bidders must be able to provide a turnkey solution for a complete EMS test setup. Bid price should be inclusive of all costs necessary (permits, taxes and duties, etc.) DDP (Delivered Duty Paid). DDP will be based on the rules of Inco terms 2010.

Progressive payment terms:

1. Compliance of EMS Test System Factory Acceptance Test (FAT): 10 percent
2. Supply, delivery and installation of EMS Test Systems: 40 percent
3. Commissioning of EMS Test Systems: 30 percent
4. Completion of EMS Test System Training (SAT): 20 percent

Although the Bid will be for one (1) lot, we will be requiring that the External Provider still have to indicate the prices of each item individually (for future reference).

After Sales Service & Maintenance:

The External Provider (Principal) shall have a local service & calibration center based in the Philippines for diagnosis, maintenance and repair of test and measurement instruments. They must provide a list of their service centers.

Warranty:

During the Warranty period, the External Provider upon proper notification of the Buyer shall:

- (1) Send representatives within two (2) calendar days to verify and troubleshoot the issue upon notification. Experts shall arrive within a seven (7) calendar days at the site where the defect(s) of Supplies is (are) found to repair or replace;
- (2) Bear all expenses arising from this repair/replacement;
- (3) Must immediately notify the Buyer and/or End User in case the Supplies cannot be repaired on site;
- (4) Notify the Buyer estimated time for repair/replacement but the period for repair/replacement shall not be longer than five (5) weeks from the dispatch date of the defective and/or damaged items;
- (5) Bear all costs arising from or in connection with the repair and/or replacement, including but not limited to customs duties, taxes and transportation fees;
- (6) Bear all costs arising from and/or in connection with the delay in case the items dispatched for repair/replacement cannot be returned within the stipulated time;
- (7) Extend the warranty period in days, from the day the issue has been reported to the day the repair/replacement has been successfully made, after

the verification of the issue.

Any replacement or repair provided under warranty period shall be warranted by the External Provider for at least another 3 (three) months on top of the remaining warranty period from the date of finishing repair and/or installation of replaced items. Extended warranty shall only cover the repaired part of the equipment.

Warranty: 3 years

Delivery Date: On or before February 28, 2019.

Duties and Responsibilities of the Supplier:

1. Supply complete turnkey system with the specifications equal to or better than as shown below.
2. Conduct comprehensive training for three (3) key ASTI and EPDC personnel responsible for EMC tests during the Factory Acceptance Test (FAT) for at least two (2) standard measurements and a maximum of six (6) participants from ASTI and EPDC that will oversee the Factory Acceptance Test (FAT). Conduct full comprehensive training for at least 5-10 ASTI and EPDC personnel after installation and commissioning of the Turnkey system for the Site Acceptance Test (SAT).
3. Provide at least two (2) copies of the operations and training manual/documentation for the Turnkey system in printed (hard copy) and electronic (soft copy) formats.
4. Provide technical support and warranty for three (3) years. The Supplier shall render after sales services to the EPDC Project.
5. Ensures that the existing EMI Test System will not be affected (with regards to test integrity) due to the installation.

Responsibilities of ASTI and EPDC Project Team:

- Reject any unit or any part thereof that fail to pass any test and/or inspection or do not conform to specifications.
- The Supplier shall either rectify or replace such rejected unit or parts thereof or make corrections necessary to meet the specifications at no cost to ASTI, and shall repeat the test and/or inspection, at no cost to ASTI.

Others:

- Technical support for Three (3) years (includes aftersales services & maintenance)
- Customer concerns shall have response within two (2) days upon receipt of notification. Expert Technical Assistance within one (1) week.

Technical Specifications:

- The EMS test system should be supplied in rack(s) with fans and internal cabling.

- Calibration Certificates should be supplied as well as Conformance Certificates (as necessary).
- It must include the following accessories apart from equipment:
  - o Interlocking system to 10m SAC.
  - o Power Distribution unit should be included

#### A. Radiated Immunity Test System

##### 1) 1 set RF Shielded Amplifier Room:

- Dimensions: Approx. 3.1m x 3.1m x 3.0m (LxWxH)
- Shielding Effectiveness (based on EN 50147-1 or MIL-STD-285)
  - \* Shielding Effectiveness Value
    - 100kHz:  $\geq 90$ dB (Magnetic Field)
    - 1MHz:  $\geq 100$ dB (Magnetic Field)
    - 100MHz:  $\geq 100$ dB (Electric Wave)
    - 2GHz:  $\geq 100$ dB (Plane Wave)
    - 10GHz:  $\geq 100$ dB (Micro Wave)
- Construction
  - \* Self-supporting structure
  - \* Outside & inside shielding shall have a smooth surface.
- Flat Floor with anti-static floor cover
  - \* Max. load capacity: 5000 N/m<sup>2</sup>
- Single leaf, manual door
  - \* RF shielded. Door fingers shall not be exposed to pre-vent damages.
  - \* Size: clear opening  $\geq 0.9$ m (w) x 2.0m (h)
- Honeycomb air vents with Waveguide ventilation
  - \* Quantity: 4 pcs
- Power line filters: 1- $\Phi$  (2-lines) 270 VAC/ 30A (for lighting, emergency light, receptacles, EUT, etc.)
- Power line filters: 3- $\Phi$  (4-lines) 480 VAC/ 30A (for power amplifier, etc.)
  - \* Attenuation (insertion loss)  $\geq 100$ dB ( $150$ kHz  $\leq f \leq 18$ GHz)

##### 2) 1 set RF Power Amplifier:

- General requirement:
  - a. To fulfil 80MHz – 1GHz, 30V/m @ 3meter distance 80%AM for horizontal & vertical (IEC 61000-4-3:2006 Ed. 3.0)
  - b. Fulfils 80MHz – 200MHz, 100V/m @ 1m distance for vertical for ISO 11452-2 (automotive)
  - c. Also fulfils 200MHz – 1GHz, 200V/m @ 1m distance for vertical and horizontal for ISO 11452-2 (automotive)
- Frequency range: 80MHz – 1GHz
- Nominal input impedance: 50 $\Omega$
- Power output
  - \* min. 1000W (<400MHz) @ P1dB
  - \* min. 850W (>400MHz) @ P1dB
- Gain flatness:  $\pm 3.0$ dB
- With built-in or external Directional Coupler
- Remote control via LAN or GPIB

##### 3) 1 set RF Power Amplifier:

- General requirement:

a. To fulfil 1GHz – 6GHz, 30V/m @ 1m distance for vertical and horizontal, 80%AM (IEC 61000-4-3:2006 Ed. 3.0)

b. Also fulfils 1GHz-4GHz, 200V/m @ 1m distance for vertical and horizontal, for ISO 11452-2 (automotive)

- Frequency range: 1GHz - 6GHz
- Nominal input impedance: 50Ω
- Power output:
  - a. 1GHz – 2.5GHz: min. 300W @ P1dB
  - b. 2.5GHz – 6GHz: min. 100W @ P1dB
- Gain flatness/Variation: ±3.0dB
- With built-in or external Directional Coupler
- Remote control via LAN or GPIB

4) 1 set Power Meter:

- 4 channels
- Frequency range: sensors dependent
- Remote control via LAN or GPIB
- Can be Rack Mounted with adapter

5) 2 units Power sensor:

- One for forward power & one for reverse power
- Frequency range: 9kHz – 6GHz
- Power measuring range: -55dBm to +10dBm
- SWR: ≤ 1.15: 1 (9kHz to 2GHz)
- SWR: ≤ 1.35: 1 (2GHz to 6GHz)
- With Calibration Certificate from OEM

6) 1 set RF Switching Unit:

- General requirement:
  - \* Designed for EMS Measurement, switching from single signal source to multiple amplifiers, support multiple paths of power reading, support interlock interface with chamber's door
- Must have automatic switching capability, controllable via system software and manual front panel control
- Frequency range: DC – 18GHz
- 2 x RF relay, SP6T & 4x RF Relay SPDT
- Remote Control via LAN or GPIB
- Modular in design, usable up to 40GHz, additional 12 path switching for possible future upgrade
- Can be Rack Mounted with adapter

7) 1 set Log-periodic antenna for IEC 61000-4-3 testing:

- Frequency range: 80MHz to 6000MHz
- Isotropic Gain @ 80MHz: ≥ 6.7dBi
- VSWR: < 2
- Max input power:
  - 3500W @ 200MHz
  - 1500W @ 1000MHz
  - 1000W @ 2500MHz
  - 650W @ 6000MHz
- With complete antenna adapter and movable Stand
- Automatic Linear polarization with pneumatic and electric remote control

- 8) 1 set Log-periodic antenna for ISO 11452-2 testing:
- Frequency range: 80MHz to 1000MHz
  - Isotropic Gain @ 80MHz:  $\geq 6.5\text{dBi}$
  - VSWR:  $< 1.5$
  - Max input power: 2000 W
  - With movable Stand
  - Automatic Linear polarization with pneumatic and electric remote control

- 9) 1 set Horn Antenna for ISO 11452-2 testing:
- Frequency range: 1GHz – 4GHz
  - Gain: minimum 11dBi @ 1GHz
  - VSWR:  $< 1.6$  (typ./average)
  - Max input power: 500W @ 4GHz
  - With complete antenna adapter and stand

- 10) 1 set Field Monitoring Equipment:
- Electric field sensor
  - Isotropic detection (X,Y,Z axis reading)
  - Frequency range: 100kHz – 6GHz
  - Dynamic range: 0.5 to 800V/m
  - Laser power supply
  - With Calibration Certificate from OEM
  - Low dielectric probe stand
  - Fiber-optic link control line

- 11) EUT Low Dielectric Table
- Size: 150cm x 100cm x 80cm (L x W x H)
  - Load capacity: 100kg
  - Polystyrene/Styrofoam material
  - Base and Table Dielectric Constant:  $< 1.03$
  - Laminated Top Dielectric Constant:  $< 3.0$
  - With EUT placement grid on test table top

#### B. Conducted Immunity Test System

- 1) 1 set Power Meter
- 4 channels
  - Frequency range: sensors dependent
  - Remote control via LAN or GPIB
  - Can be Rack Mounted with adapter
- 2) 3 units Power sensor
- One for forward power, one for reverse power, one for calibration path
  - Frequency range: 9kHz – 6GHz
  - Power measuring range: -55dBm to +10dBm
  - SWR:  $\leq 1.15: 1$  (9kHz to 2GHz)
  - SWR:  $\leq 1.35: 1$  (2GHz to 6GHz)
  - With Calibration Certificate from OEM
- 3) 1 set RF Power Amplifier
- General requirement

- a. To fulfil 150kHz – 80MHz, 10Vrms 80%AM (IEC 61000-4-6:2006 Ed. 2.2)
  - b. Also covers ISO11452-4 (automotive) 1MHz – 400MHz, 200mA substitution test
  - Frequency range: 10kHz – 400MHz
  - Power output:  $\geq 250$  W @ P1dB
  - Gain Variation / Flatness:  $\pm 3$  dB
  - With built-in or external directional coupler
  - Remote control via LAN or GPIB
- 4) 1 set Coupling Decoupling Network (CDN)
- Supply Line
    - a. 1 Line, (a pair)
    - b. 2/3 Lines, Switchable, 16A
    - c. USB connector
    - d. T8S
  - With calibration sets
- 5) 1 set EM Clamp
- Compliant to IEC61000-4-6 Ed. 4 requirement
  - Coupling aperture: 20mm
  - Input power rating:
    - a. 150kHz to 100MHz: 100W CW
    - b. 100MHz to 230MHz: 100W CW
    - c. 230MHz to 1GHz: 50W CW
  - Include calibration adapter
  - Decoupling Clamp Included, 20mm coupling aperture
- 6) 1 set Bulk Current Injection (BCI)
- Compliant to IEC61000-4-6 Ed. 4 requirement
  - Current Injection Probe
    - a. Frequency range: 10kHz to 400MHz
    - b. Window diameter: 43mm
    - c. Outside diameter:  $> 112$ mm
    - d. Max. input power: 1000W
    - e. Calibration jig included
  - Monitoring Probe
    - a. Frequency range: 10kHz to 400 MHz
    - b. Insertion loss: Typical approx. -22dB
    - c. Transfer impedance: typical approx.  $4\Omega$  (100kHz to 230MHz)
- 7) 1 set Oscilloscope
- Input channels:  $\geq 2$
  - Analog bandwidth:  $\geq 3$ GHz
  - Rise time/fall time:  $\leq 118$  ps (10% to 90% at  $50\Omega$ ) or less
  - RMS noise floor at  $50\Omega$  (typ.)
    - a. 1 mV/div  $\leq 0.16$  mV
    - b. 20 mV/div  $\leq 0.35$  mV
    - c. 50 mV/div  $\leq 0.8$  mV
    - d. 200 mV/div  $\leq 3.40$  mV
  - Waveform arithmetic/measurement
    - \* Peak to peak, minimum, maximum, average, RMS

### C. System Accessories

- 1) 1 set Integrated System Software (Radiated Immunity)
  - Functionality – Control the complete EMS test system with drivers for wide selection of measuring instruments and system components such as test receiver, spectrum analyzer, signal generator, antenna mast, turntable and etc.
  - Shall be compliance to IEC 61000-4-3 latest standard
  - Shall come with latest requirement for amplifier 2dB linearity check function
  - Measurement results shall display the results for factor measurement of level monitoring, calibration of injection level, saturation check and immunity measurement
  - Shall be able to perform 16-points uniformity test as per IEC 61000-4-3
  - Field probe position points shall be able to set from 1 point to 16 points or more during uniformity test
  - Software shall support simultaneously 1, 2, 3 and 4 probes for uniformity test
  - Uniformity test shall be able to be saved and continued the next day by recalling the same saved file name
  - Software shall support existing R&S SMB100A RF Signal Generator
  - Software shall support at least 3 different mainstream manufacturer of RF signal generators and power meters for easy replacement during service period
  - Shall have function to export uniformity measure result, calibration reference result, linearity check result and immunity test results to excel, words.
  - Measurement setup shall include measurement graph, monitoring frequency, SG level, level meter level, field strength level, forward power and reverse power in one window
  - Testing measurement condition shall be able to be saved and load from measurement software
  - Fail point shall be able to be marked during immunity measurement with remarks and comments
  - Amplifier Linearity Check measurement shall be done easily in one window displaying one graph showing frequency, forward power, reverse power, power difference and Total Judgement
  - Amplifier Linearity check calibration output difference for upper and lower tolerance shall be able to be easily changed to adapt future changes in standard.
  - Software shall have one-point fast verification check function to be used for daily or weekly or monthly check of system stability compare to the reference measurement during uniformity measurement
  - Measurement of Immunity frequency shall be able to be set 3 modes :
    - a. step mode (start & stop frequency) with interval in percentage or frequency
    - b. point mode (dedicated frequency point)
    - c. step + point mode for flexible testing
  - Modulation of Test level shall be able to be set for



AM, FM, Pulse or external signal generator

- Measurement shall be able to be paused during measurement
- Frequency point shall be able to be freely moved during measurement process
- Real time monitoring of forward power and reverse power shall be display on software
- Shall have the ability to set upper & lower limit of forward and reverse power reference to the calibration power to ensure safety of system
- Shall have the ability to set upper limit of signal generator output to protect the system
- Software shall have function to input factor for field probe calibration factor
- Software shall have function to input factor of forward and reverse power of the amplifier
- Operating system compatibility: Latest Windows versions

2) 1 sets Integrated System Software (Conducted Immunity)

- Functionality - Control the complete EMS test system with drivers for wide selection of measuring instruments and system components such as test receiver, spectrum analyzer, signal generator, and etc.
- Software shall support at least 3 different mainstream manufacturer of RF signal generators and power meters for easy replacement during service period
- Shall have function of Saturation Check to perform in order to verify that the amplifier is not saturated as per new requirement in IEC 61000-4-6
- Measurement results display to display the results for factor measurement of level monitoring, calibration of injection level, saturation check and immunity measurement
- Shall have function to export factor level monitoring path, calibration result, saturation test result, and immunity test results to excel, words.
- Measurement display shall include measurement graph, monitoring frequency, input level, output level, SG level, level meter level, forward power, reverse power and SWR power in one window
- Testing measurement condition shall be able to be able to be saved and load from measurement software
- Calibration of injection level setting shall be able to factor in level monitor path with additional factor setting
- Saturation Check measurement shall be done easily in one window displaying one graph showing frequency, test level, SG level, monitor level, level meter level, level difference, forward power, reverse power, power difference and Total Judgement
- In saturation check calibration, changes of power difference for upper and lower tolerance shall be able to be easily changed to adapt future changes in standard.
- Judgement of saturation check shall be able to be selected either judge by power difference or judge by monitor level difference
- Measurement of Immunity frequency shall be able to

be set 3 modes:

- a. step mode (start & stop frequency) with interval in percentage or frequency
  - b. point mode (dedicated frequency point)
  - c. step + point mode for flexible testing
- Measurement of Immunity Test level shall be able to be set in Voltage, Voltage (e.m.f.) or current with start and stop test level.
  - Modulation of Test level shall be able to be set for AM, FM, Pulse or external signal generator
  - Measurement shall be able to be paused during measurement
  - Frequency point shall be able to be freely moved during measurement process
  - Software shall have real time monitoring of forward power and reverse power display on software
  - Software shall have ability to set upper & lower limit of forward and reverse power reference to the calibration power to ensure safety of system
  - Software shall have ability to set upper limit of signal generator output to protect the system
  - Software shall come with function to compare calibration factors to observe the stability of the measurement of different time
  - Shall be working with existing RF Signal Generator (R&S SMB100A)
  - Operating system compatibility: Latest Windows version

3) 2 sets Control PC/Laptop

- Intel Core i7 Processor or better
- Memory 8GB (2x4GB) or better
- 1TB 7200RPM S-ATA HDD or better
- Integrated Intel HD Graphics 2000 or better
- Windows 10-64bit or better
- 23" Wide Monitor

4) 1 set Cables

- Optical cabling, RF cabling, GPIB adapter and cable that will be suitable for the application and implementation of the system.

5) 1 set Rack

- 19" Rack and AC power distribution unit suitable to the system

D. Transient Test Requirements

1) 1 set Electrostatic Discharge Tester

- Discharge Voltage:
  - a. 1kV to 30KV (Air)
  - b. 1kV to 30KV (Contact)
- Battery &/or mains powered with display on ESD Gun.
- User replaceable battery feature (Requires AA size rechargeable battery in the ESD pistol and not requiring the disassembly/assembly of the battery pack

- that will void the warranty of the equipment).
- ESD pulse holding time  $\geq 5s$  (IEC 61000-4-2)
- Polarity: Positive/ Negative/ Alternate
- Discharge Network:  $150pF/330\Omega$  (IEC61000-4-2)
- ESD Voltage verification kit with measurement from oscilloscope
- ESD Target with vertical plate as per requirements in IEC 61000-4-2
  - a. Variation of insertion loss:  $<0.5$  dB up to 1GHz
  - b. Frequency range: up to 4GHz
  - c. Input impedance: less than 2.1 ohm
  - d. Input voltage: 30 kV
  - e. Current range: 0 – 120A
  - f. Come with stand supporting ESD Gun during verification

2) 1 set Multi-Transient Generator

- Coupling/Decoupling network at mainframe: AC/DC 300V, 16A
- EUT input with overcurrent protection
- Built-in EUT voltage, current and frequency monitor show on front screen
- Built-in temperature and humidity sensor
- Front panel impulse voltage & current monitor via BNC
- Large touch screen operation
- Front panel input power selection buttons
- IEC 61000-4-4 Electrical Fast Transient(EFT) / Burst
  - a. Burst Voltage: 500V to 4000V (level 1 – 4)
  - b. Burst Frequency: 1kHz to 1000kHz
  - c. Burst time: 0.01ms to 30ms
  - d. Rep. Time: 1ms – 1000ms
- IEC 61000-4-5, Surge (1.2/50us – 8/20us)
  - \* General Requirement:
    - a. High energy spikes like a lightning surge can be coupled from the nearby Power line back to the local power grid.

All equipment connected to the power grid will experience the high energy spikes

    - b. Surge Voltage: 500V to 4000V (level 1 – 4)
    - c. Surge Current: 250A to 2000A
    - d. Rep. Time: minimum 1 per 5 seconds @ 4kV
    - e. Phase Syn:  $0^\circ$  to  $359^\circ$
- IEC 61000-4-11, Dips & Drops
  - a. Voltage Requirement: 0% to 100% Automatic Variable
  - b. Peak In-rush: 500A
  - c. Switching Times: 1 to  $5\mu s$  (100 $\Omega$  load)
  - d. Event Time:  $50\mu s$  to 30s,
  - e. Phase Synchronization:  $0^\circ$  to  $359^\circ$  ( $1^\circ$  Step)
  - f. Internal Couplers
    - i) EUT Supply: 16A max, 1- $\Phi$ ,
    - ii) EUT Vac: 0 to 250Vrms, 50/60Hz
    - iii) EUT Vdc: 20 to 300Vdc
    - iv) Ethernet control as the system may need to be moveable between SAC and CR.
- High Speed Telecom line Coupler
  - a. Maximum Surge Test Voltage: 4kV (1.2 / 50  $\mu s$  pulse as per IEC 61000-4-5)
  - b. Common mode coupling to 8 symmetrical lines

- c. 25Ω, 40Ω, 80Ω, 160Ω, 320Ω coupling elements with capacitive coupling elements
- d. Applications –Ethernet 1Gbps,
- e. 8 wire unshielded twisted pair (UTP) cable
- f. EUT Voltage: max 300Vdc
- g. EUT Current: max 1A
- Capacitive Coupling clamp for IEC61000-4-4 (Dataline and Telecom lines)
  - a. Cable Diameter: Up to 70mm
  - b. Come with verification plate as per IEC 61000-4-4
- IEC 61000-4-8, IEC 61000-4-9, Power and Pulse Magnetic Field
  - a. Power Field Strength: 1 to 1000A/m (level 5)
  - b. Pulse Field Strength: up to 1000A/m (level 5)
  - c. Minimum coil size: 1m x 1m with stand, 1-Turn coil
  - d. Come with Current clamp meter for calibration
- Verification Accessories for EFT & Surge
  - a. Voltage Differential Probe for surge voltage
  - b. Current Probe for surge current
  - c. Calibration adapters 50ohm and 1kohm for EFT
  - d. Calibration adapters for direct pulse output and CDN output for IEC 61000-4-4 & IEC 61000-4-5
- Windows Software for Multi-Generators with reporting capabilities

### 3) Programmable Power Source

- The AC and DC power sources shall be able to provide three phases, split phase and single phases output modes.
- The output shall be able to provide three phase AC and any single combination phase either AC or DC simultaneously.
- The output voltage shall be 0-310 V ac (Line to Neutral), 0-540 V ac (Line to Line) and 0-425 V dc.
- The AC total rated power output of three phase and single phase shall be  $\geq 15$  kW
- The DC total rated power out shall be  $\geq 15$  kW.
- The output voltage waveform shall be able to produce in sine wave, square wave, triangle wave and clipped wave
- The frequency output shall be able to generate at DC and between 15 Hz to 1200 Hz with resolution  $\leq 0.01$  Hz.
- The AC/DC RMS current in 3 and 2 phase modes shall be  $\geq 40$  Ampere RMS for AC mode and  $\geq 20$  Ampere RMS for DC mode.
- The AC/DC RMS current in 1 phase mode shall be up to  $\geq 125$  Ampere for AC mode and  $\geq 62$  Ampere for DC mode.
- The current resolution shall be  $\leq 0.01$  Ampere.
- The current phase angle range shall be at 0 to 359.9 degree.
- The Harmonic Distortion shall be  $\leq 0.5\%$  for 50Hz and 60Hz
- The output noise shall be  $\leq 150$ mV at 50Hz and 60Hz.
- The load regulation at AC mode shall be  $\leq 0.05\%$
- The efficiency of the power source shall be  $\geq 85\%$ .
- The power source shall have measurement function

to monitor the voltage, current, power and true power on all phases.

- The weight Programmable power source shall be  $\leq$  55 kg for portability

#### E. Transient Testing Room Layout

- External Provider has to provide and do all electrical and grounding installation (ie: outlets, ground plates, etc.) as indicated in the Electrical outlet layout for Transient Testing Room and provide all necessary tables and chairs needed in the Transient Immunity test measurements. This should be supervised by a PRC Licensed Engineer (Civil and Electrical).
- External Provider has to provide a detailed Transient Testing Room Layout that indicates the location of the different test setups in their proposal.
- Provide all necessary peripherals of the test setup in the Transient Testing room for the following tests:
  - a. Harmonics and Flicker setup (Table and chair only)
  - b. Conducted Transient Immunity measurement according to IEC61000-4-4, IEC61000-4-5, IEC61000-4-11
  - c. Magnetic Field Immunity measurement according to IEC61000-4-8, and IEC 61000-4-9
  - d. ESD Simulator Test measurement according to IEC61000-4-2
- Room location: Transient Testing Room
- Note: Please refer to the attached document for the EMC Laboratory Floor Layout and Transient Testing Room Electrical Outlet Layout. (Annex A- EMC Laboratory Floor Layout, 1 page; Annex B- Transient Testing Room Electrical Outlet Layout, 1page).

#### F. Other Requirements

##### 1) EMS Test and Measurement Systems for Factory Acceptance Test (FAT)

- FAT shall be conducted at an established overseas factory test site. It shall cover the following fields: quantity, marking, origin, technical specifications, operation under applied standards.

- Testing of test instruments would be carried out by External Provider as part of factory acceptance for the following tests:

- a. Radiated Immunity measurement according to CISPR 14-2, CISPR 20, CISPR 24, CISPR 35, IEC61000-4-3, IEC61000-6-1, and IEC61000-6-2

- b. Conducted Immunity measurement according to IEC61000-4-6

- c. Conducted Transient Immunity measurement according to IEC61000-4-4, IEC61000-4-5, IEC61000-4-11

- d. Magnetic Field Immunity measurement according to IEC61000-4-8, IEC 61000-4-9

- e. ESD Simulator Test measurement according to IEC61000-4-2

- f. Automotive RF Radiated Immunity measurement according to ISO 11452-2

g. Automotive Bulk Current Injection measurement according to ISO 11452-4

- A comprehensive training of at least two (2) measurement standards that will be agreed upon by the external provider and the end user. This must be provided by the external provider to at least three (3) representatives of the end user during FAT.
- External Provider shall issue a certificate of completion for the tests and putting into operation for Supplies and System stating that said verification has been performed and that the Supplies' functions have been successfully tested and they can perform in accordance with the Technical specifications as stated in the Technical document.
- Two (2) ASTI Project representatives shall sign on the Certificate.
- If the two (2) ASTI Project representatives, fail to sign the Certificate of Acceptance, the External Provider shall be notified in writing the reasons for the failure.
- A maximum of six (6) participants from ASTI and EPDC, will oversee the Factory Acceptance Test (FAT), pre-delivery inspection and FAT technical training.
- All costs shall be borne by the External Provider.
- Number of Days for FAT: 5 days (Monday-Friday).

2) EMS Test and Measurement Systems for Site Acceptance Test (SAT)

- SAT of measuring instruments shall cover the following fields: quantity, marking, origin, technical specifications, and operation under applied standards.

- Testing of test instruments would be carried out by External Provider as part of SAT for the following tests:
  - a. Radiated Immunity measurement according to CISPR 14-2, CISPR 20, CISPR 24, CISPR 35, IEC61000-4-3, IEC61000-6-1, and IEC61000-6-2
  - b. Conducted Immunity measurement according to IEC61000-4-6
  - c. Conducted Transient Immunity measurement according to IEC61000-4-4, IEC61000-4-5, IEC61000-4-11
  - d. Magnetic Field Immunity measurement according to IEC61000-4-8
  - e. ESD Simulator Test measurement according to IEC61000-4-2
  - f. Automotive RF Radiated Immunity measurement according to ISO 11452-2
  - g. Automotive Bulk Current Injection measurement according to ISO 11452-4
- During SAT, The training must be provided to at least 10 pax.
- External Provider and Representative shall sign on the Certificate.
- If Representative fail to sign the Certificate of Acceptance upon completion of the tests, the representative shall immediately notify the External Provider in writing the reasons for the failure.
- A Full comprehensive training must be provided



TOTAL APPROVED BUDGET FOR THE CONTRACT:

Php 80,000,000.00

**GUIDELINES**

**A. Submission of Quotations**

1. The quotation should include the RFQ or the P.R. Number found above.
2. Pictures or brand/model names or numbers, if applicable, should be specified in the quotation.
3. The quotations shall include the signature of the company's representatives.

**B. Eligibility Requirements**

As per GPPB No. 21-2017 amending the Annex H of the 2016 R-IRR of RA 9184, the following shall be submitted:

**For procurement of goods:**

1. PhilGEPS Certificate of Plantinum Membership  
**Note:** If unavailable, submit the following:
  - a. PhilGEPS Registration Number
  - b. Mayor's Permit or BIR Certificate of Registration

2. Income/Business Tax Return

**Note:** Applicable only for ABCs above Php500,000.00

3. Omnibus Sworn Statement

**Note:** Applicable only for ABCs above Php50,000.00 and must be submitted upon post-qualification

**For procurement of infrastructure:**

1. The requirements for goods.
2. Valid PCAB License.

**For procurement of consulting services:**

1. The requirements for goods.
2. Valid PRC License or Curriculum Vitae.

**NOTE:** For new suppliers, submit a BIR Certificate of Registration for accounting purposes.

**C. Terms and Conditions**

1. Additional requirements, if necessary, may be requested by the BAC depending on the item to be bid.
2. For all kinds of procurement, the bidder who passed the bid evaluation shall submit a duly notarized omnibus sworn statement, unless otherwise provided.
3. All transactions are subject to creditable withholding tax; and final Value Added Tax (VAT) or percentage tax per revenue regulation/s of the Bureau of Internal Revenue (BIR).
4. A penalty of one-tenth of one percent (0.001) of the total value of the undelivered goods/services shall be charged as liquidated damages for every day of delay of the delivery.
5. 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.





## INVITATION FOR NEGOTIATED PROCUREMENT

The Department of Science and Technology (DOST) - Advanced Science and Technology Institute (ASTI), intends to negotiate, for the second time, as authorized by the Head of the Procuring Entity, per BAC Resolution No. 18-10-018 dated 12 October 2018, **SUPPLY AND DELIVERY OF EMS (SUSCEPTIBILITY/IMMUNITY) MEASUREMENT TEST SYSTEM**, with a total Approved Budget for the Contract (ABC) of **Eighty Million Pesos Only (P80,000,000.00)**.

Procurement activities relative to the above procurement project will be conducted in the following schedules:

ACTIVITY	SCHEDULE
Pre-Negotiation Conference	05 November 2018, 3:00 PM
Deadline of Potential Bidders' Clarification	07 November 2018
Release of Supplemental Bid Bulletin	09 November 2018
Submission of Offers	13 November 2018, 12:00 NN
Opening of Offers	13 November 2018, 1:30 PM

The following eligibility and technical documents, as well as the financial proposal must be submitted at the Procurement Management Section, G/F DOST-ASTI Bldg., CP Garcia Ave., UP Campus, Diliman, Quezon City:

### I. ELIGIBILITY AND TECHNICAL REQUIREMENTS

1. Valid and current platinum certificate of PhilGEPS Registration;
2. Duly notarized Omnibus Sworn Statement in accordance with Section 25.3 of the Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184 with attached Secretary's Certificate;
3. Statement of the Bidder's Ongoing Government and Private Contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid;
4. Statement of the Bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid and equivalent to at least fifty percent (50%) of the ABC;
5. Net Financial Contracting Capacity Computation (NFCC) or a committed Line of Credit from a universal or commercial bank. The computation of a prospective bidder's NFCC must be at least equal to the ABC to be bid, calculated as follows:

NFCC = [(Current assets minus current liabilities) (15)]  
minus the value of all outstanding or uncompleted  
portions of the projects under ongoing contracts  
including awarded contracts yet to be started, coinciding  
with the contract to be bid.

6. If applicable, valid joint venture agreement (JVA), in case the joint venture is already in existence. In the absence of a JVA, duly notarized statements from all the potential joint venture partners should be included in the bid, stating that they will enter into and abide by the provisions of the JVA in the event that the bid is successful. Failure to enter into a joint venture in the event of a contract award shall be ground for the forfeiture of the bid security.

Each partner of the joint venture shall submit their respective PhilGEPS Certificates of Registration in accordance with Section 8.5.2 of the IRR of RA No. 9184. The submission of technical and financial eligibility documents by any of the joint venture partners constitutes compliance: Provided, that the partner responsible to submit the NFCC shall likewise submit the Statement of all of its ongoing contracts and Audited Financial Statements.

7. Bid Securing Declaration or any other form of Bid Security, in an amount not less than the required percentage of the ABC in accordance with the schedule provided for in Section 27.2 of the IRR of RA 9184, as follows:
  - a. Two percent (2%) of the ABC - Cash or cashier's/manager's check issued by a Universal or Commercial Bank;
  - b. Two percent (2%) of the ABC - Bank draft/guarantee or irrevocable letter of credit issued by a Universal or Commercial Bank: Provided, however, that it shall be confirmed or authenticated by a Universal or Commercial Bank, if issued by a foreign bank; or
  - c. Five percent (5%) of the ABC - Surety bond callable upon demand issued by a surety or insurance company duly certified by the Insurance Commission as authorized to issue such security.
8. Conformity/Compliance with Technical Specifications. Bidders must indicate "Comply" or "Not Comply" in each individual parameter of the technical specifications;
9. Conformity with Schedule of Requirements; and
10. The following documents which are required by existing laws and/or by the Procuring Entity:
  - a. Proof of Authority of the Bidder's authorized representative;
  - b. Proof of Offers for manufacturer's supplied items containing all technical information about the product, i.e., product brochures;
  - c. Statement from the Prospective Bidder that it will provide necessary aftersales technical support including trained technician, engineers or personnel, who are competent and qualified to provide aftersales service;
  - d. Troubleshooting escalation procedure, which must include contact details of personnel in charge of technical support;
  - e. Proof of Warranty;
  - f. Customer feedback form with at least Satisfactory Rating from the Prospective Bidder's client, preferably, the client with SLCC (except DOST-ASTI);
  - g. Layout of Transient Testing Room; and
  - h. Bill of Quantities, with complete list of equipment, accessories, among others.

## II. FINANCIAL DOCUMENTS

1. Bid Form; and
2. Completed Price Schedule.

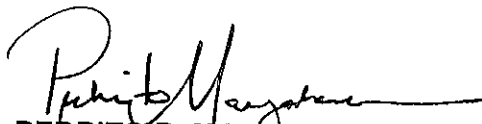
Bidders are required to submit one (1) original and one (1) copy/duplicate of their Eligibility, Technical and Financial documents. The bidders shall bind their original Eligibility, Technical and Financial requirements in one (1) folder, and the copies of which in a separate folder. All copies (original and duplicate) of Eligibility, Technical and Financial Documents shall be sealed in one (1) envelope. To facilitate the evaluation of bid offers, **a)** all forms are attached to this Invitation and **b)** bidders are advised to follow the requirements in the abovementioned checklist when placed in the folder, with documents tabbed and labeled accordingly.

The DOST-ASTI reserves the right to accept or reject an offer, to annul the negotiation process, and to reject all offers/proposals at any time prior to contract award, without thereby incurring liability to affected Bidder/s.

For further information, you may refer to:

**DOST-ASTI BAC Secretariat**

c/o Procurement Management Section  
G/F DOST-ASTI Bldg., CP Garcia Ave.  
UP Campus, Diliman, Quezon City  
Telephone No.: +63 2 426-9760 local 1206/1212  
Email: bac-sec@asti.dost.gov.ph  
Website: asti.dost.gov.ph

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

## OMNIBUS SWORN STATEMENT

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REPUBLIC OF THE PHILIPPINES        )  
CITY/MUNICIPALITY OF \_\_\_\_\_ ) S.S.

### AFFIDAVIT

I, [Name of Affiant], of legal age, [Civil Status], [Nationality], and residing at [Address of Affiant], after having been duly sworn in accordance with law, do hereby depose and state that:

1. **Select one, delete the other:**

*If a sole proprietorship:* I am the sole proprietor or authorized representative of [Name of Bidder] with office address at [address of Bidder];

*If a partnership, corporation, cooperative, or joint venture:* I am the duly authorized and designated representative of [Name of Bidder] with office address at [address of Bidder];

2. **Select one, delete the other:**

*If a sole proprietorship:* As the owner and sole proprietor, or authorized representative of [Name of Bidder], I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached duly notarized Special Power of Attorney;

*If a partnership, corporation, cooperative, or joint venture:* I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable)];

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board;

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. **Select one, delete the rest:**

*If a sole proprietorship:* The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

*If a partnership or cooperative:* None of the officers and members of [Name of Bidder] is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office

or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

*If a corporation or joint venture:* None of the officers, directors, and controlling stockholders of [Name of Bidder] is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. [Name of Bidder] complies with existing labor laws and standards; and
8. [Name of Bidder] is aware of and has undertaken the following responsibilities as a Bidder:
  - a) Carefully examine all of the Bidding Documents;
  - b) Acknowledge all conditions, local or otherwise, affecting the implementation of the Contract;
  - c) Made an estimate of the facilities available and needed for the contract to be bid, if any; and
  - d) Inquire or secure Supplemental/Bid Bulletin(s) issued for the [Name of the Project].
9. [Name of Bidder] did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

IN WITNESS WHEREOF, I have hereunto set my hand this \_\_\_\_ day of \_\_\_\_, 20\_\_ at \_\_\_\_\_, Philippines.

\_\_\_\_\_  
Bidder's Representative/Authorized Signatory

**SUBSCRIBED AND SWORN** to before me this \_\_\_\_ day of [month] [year] at [place of execution], Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her [insert type of government identification card used], with his/her photograph and signature appearing thereon, with no. \_\_\_\_\_ and his/her Community Tax Certificate No. \_\_\_\_\_ issued on \_\_\_\_ at \_\_\_\_\_.

Witness my hand and seal this \_\_\_\_ day of [month] [year].

**NAME OF NOTARY PUBLIC**

Serial No. of Commission \_\_\_\_\_

Notary Public for \_\_\_\_\_ until \_\_\_\_\_

Roll of Attorneys No. \_\_\_\_\_

PTR No. \_\_\_\_\_ [date issued], [place issued]

IBP No. \_\_\_\_\_ [date issued], [place issued]

Doc. No. \_\_\_\_\_

Page No. \_\_\_\_\_

Book No. \_\_\_\_\_

Series of \_\_\_\_\_

\* This form will not apply for WB funded projects.