Ref. Ares(2021)2678439 - 21/04/2021

ANNEX II + III: TECHNICAL SPECIFICATIONS + TECHNICAL OFFER

Contract title: Supply of Equipment for the Measures for Struggling with the Covid-19 Pandemia in Railway Transport

Publication reference: NEAR/ANK/2021/EA-LOP/0047

Columns 1-2 should be completed by the contracting authority
Columns 3-4 should be completed by the tenderer
Column 5 is reserved for the evaluation committee

Annex III - the contractor's technical offer

The tenderers are requested to complete the template on the next pages:

- Column 2 is completed by the contracting authority shows the required specifications (not to be modified by the tenderer),
- Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words ‘compliant’ or ‘yes’ are not sufficient)
- Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offered specifications.

The tenderer should avoid copying the specifications required from Column 2 to specifications offered in Column 3. Column 3 shall be filled by the tenderer with the exact/real specification for the offered supplies.

Each offered supplies must be stated with brand / product name, product version and product/part number. The tenderer shall identify model and manufacturer of each individual item in their technical offer. Offers that do not permit to identify clearly and precisely the existence of the items with all the proof documents and/or certifications requested through this annex may be rejected by the evaluation committee.

1. General Requirements

1.1. Offered supplies must be provided complete with necessary accessories and/or parts to ensure that the supplied items are capable of operating to required technical and quality specifications.

1.2. The contractor is fully responsible for proper connections of supplied items to existing infrastructure for smooth installation and operation.

1.3. The type of voltage in Turkey is 220 V (mono phase) and 380 V (tri phase + neutral). All hardware must be suitable for direct connection to the standard power outlets in Turkey. The type of electrical outlets generally installed in Turkey is the type with 2 side mounted earthing poles (EUROPLUG). All plugs of all items will have to fit exactly. The contractor shall evaluate the supplied current, the quality of the current and the fluctuations and take necessary precautions to avoid damages to the equipment.

1.4. The supplies must be compliant with EU regulations and international standards. Offers that do not permit to identify precisely the regulations which were implemented for the offered items, may be rejected by the evaluation committee. Wherever reference is made in the technical specifications to specific standards and codes to be met, provisions of the latest edition or revision of the relevant standards in effect, shall apply, unless otherwise stated in this technical specification.

1.5. The supplies should comply with the regulations concerning safe operation, energy saving and environmental safety, in line with the policies or the practical measures in use within the EU and Turkey. Evaluation Committee may further request additional information/confirmation for the standards.

1.6. During the installation of supplied items, the contractor will be responsible for providing measures for any Health & Safety risks associated with supplies provided.

1.7. System components and whole system must be compatible with each other "as a whole". Any interoperability problems between software and hardware – if applicable - must be resolved by the contractor at no additional cost to TCDD and the Contracting Authority.

1.8. All offered goods must be suitable for operation in the climatic conditions in a place of delivery (please refer to "Draft Contract and Special Conditions, including annexes").

1.9. For warranty, the contractor shall comply with the special and general conditions Article 32 and 33, Regulation of Turkish Law as published on Official Gazette no.29029 dated 13.06.2014.

2. Technical documentation to be provided by the tenderer

2.1. Following documentations shall be provided by the tenderer together with their tenders:

2.1.1. The tenderer shall provide **the concept design** of the Items 1.1 and 1.2 in DWG and PDF format. As a minimum, the concept design shall include:

- General layout plan (1/100),
- Water pipeline layouts,
- Electricity layouts.
- Process and instrumentation diagram for disinfection system.

2.1.2. **The detailed design** of Items 1.1 and 1.2 in DWG and PDF format shall be provided by the contractor within 30 days after the commencement and submitted to the Contracting Authority for an approval.

2.1.3. **As-built design** of Items 1.1 and 1.2 in DWG and PDF format shall be provided by the contractor after issuance of the Provisional Acceptance.

2.2. Other documentation to be provided by the contractor:

- Original certificate of origin documents,
- Operation and maintenance manuals - all supplies must be offered with original set of operation and maintenance manuals in English and in Turkish language (if commercially available). If manuals are not in Turkish language, a "Quick Guide" in Turkish shall be supplied,
- Warranty document of the manufacturer and/or authorized dealer/distributor of manufacturer.

3. Installation and commissioning requirements for Items 1.1 and 1.2

3.1. Full installation and commissioning shall be borne by the contractor.

3.2. Consumptions on site during the installation and commissioning shall be borne by the contractor.

3.3. The contractor shall make available to himself all tools, materials and equipment required for transport, assembling, installation and commissioning.

3.4. The contractor shall provide all tools and equipment needed for testing of supplies.

3.5. The contractor shall perform onsite installation and commissioning of the supplies by trained and authorized personnel including unloading, furnishing to designated location, unpacking, assembling and connection to main supply and removal of packing materials from site in accordance with Article 29 of Special Conditions.

3.6. Connection to main electrical, mechanical, water, air and/or gas supplies from the existing infrastructure shall be done by the contractor according to the rules and regulations of Turkey. Recovering of any damage to building structure that may occur during the installation and commissioning is under the responsibility of the contractor.

3.7. Application to relevant authorities for a subscription to utility connections such as electricity, water, etc. shall be under the responsibility of the contractor.

3.8. All software must be delivered and installed in electronic version. All software must be licensed to TCDD.

4. Installation and commissioning requirements for Item 1.3

4.1. Full installation and commissioning shall be borne by the contractor.

4.2. The contractor shall make available to himself all tools, materials and equipment required for transport, assembling, installation and commissioning.

4.3. The cable works for installation of the camera and laptop shall be realized by the contractor.

5. Health & Safety

5.1. The contractor shall be fully responsible for applying the Health and Safety procedures in accordance with the legislation published by the Republic of Turkey Ministry of Family, Labor and Social Services during the manufacturing, delivering, assembling, installation, commissioning and testing. Moreover, the contractor will be responsible for advising TCDD and the Contracting Authority of any Health & Safety risks associated with supplies provided and of suitable protective measures.

5.2. Supplies shall be designed to operate safely taking into account the characteristics of the terrain and its surroundings, atmospheric and meteorological conditions, any possible structures and obstacles located in the vicinity either on the ground or in the air in such a way as to cause no nuisance or pose no danger under any operational or servicing conditions or in the event of an operation to rescue persons.

6. Trainings

6.1. Following installation and commissioning of supplies, the contractor shall provide trainings for TCDD staff.

6.2. The tenderers shall include in their offer a training plan according to requirements in this Technical Specifications (duration, topics provided in tables hereunder are requested as minimum). The contractor (if required) may extend training durations and topics covered.

6.3. Trainings shall be realized in Turkish language.

6.4. Trainings shall be provided by qualified instructors.

6.5. All necessary accessories, materials and documentation for the trainings shall be provided by the contractor.

6.6. Unless otherwise required, trainings shall be realized in TCDD facilities in Turkey.

6.7. The trainings shall be recorded by the contractor and provided as a separate media to TCDD for future use.

Item No.	Description of the Item	Content of the Trainings	Min Number of Training days / per Item	Max Number of Participants / per Item
Item 1.1 Item 1.2	Open roof train disinfection system Closed roof train disinfection system	For each Lot, the trainings shall include theoretical training and applied training. The trainings shall cover following topics: • Overview and terminology, • Usage and operation of the system, • Consumables, • Maintenance and troubleshooting, • User interface and software, • Usage of PLC and automation, • Emergency measures , • Health and Safety.	**2**	**8**

Item No.	Description of the Item	Content of the Trainings	Min Number of Training days	Max Number of Participants
Item 1.3 Item 1**.4**	Thermal detection camera with display Laptop	The training shall include theoretical training and applied training. The trainings shall cover following topics: • Overview and terminology, • Usage and operation of the camera and integration with the system, • User interface and software.	**1**	**38**

7. Warranty requirements

7.1. The contractor shall provide 2 years warranty for all items. The Evaluation Committee may request additional information/confirmation for the warranty requirements. Failure to provide the documentary proof requested may lead to rejection of the offer.

7.2. Only original or approved by the manufacturer(s) spare parts should be used in any repair service.

7.3. The contractor should provide available software updates during the warranty period.

7.4. Please refer to Article 33.1 of Special Conditions of the Contract.

7.5. For Items 1.1 and 1.2, the tenderer shall submit a list of spare part and consumables for informative purposes only.

8. Visibility

8.1. Proper material and size compatible with specifications and dimensions of supplies shall be offered by the contractor and approved the Contracting Authority after the commencement of the contract.

8.2. Label shall be designed in accordance with the enclosed sign without any distortion.

8.3. Label shall be colored, readable, visible and durable.

8.4. For the Items 1.1 and 1.2 - Project Sign Board:

The contractor shall erect project sign boards at the main entrance to the sites on which the names of the Contract, the Contracting Authority, TCDD, the contractor and the information required by the Contracting Authority will be stated. The design of the sign board shall comply with EU Visibility Rules and require the approval of the Contracting Authority.

The signboard shall comply with "Communication and Visibility in EU-financed external actions guide" and shall be not less than 2 x 2 meters with the EU-Turkey partnership logo in Turkish and English language.



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EuropeAid No	
Item / Birim No	
Fixed Asset / Demirbaş No	







LOT 1: The equipment for struggling with the Covid-19 Pandemia in railway transport

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1.1	**Open roof train disinfection system** To be delivered, installed and commissioned by the contractor at the location in Edirne, Turkey according to Appendix 1.			
	Manufacturer's name:			
	Country of origin:			
	Quantity: 1			
	Open roof train disinfection system shall include an open roof tunnel steel structure as follows:			
1.1.1	The tunnel steel structure shall have following dimensions: • 16.0 ± 0,5 meter length • 4.5 ± 0,1 meter height (the height shall have final adjustments according to electrification of the rails presented at the final location) • 4.0 ± 0,1 meter width			
1.1.2	The tunnel polycarbonate lateral sides shall be enclosed along 16.0 ± 0,5 meter length and 4 ± 0,1 meter height.			
1.1.3	The minimum steel profile to be used for tunnel frame sides shall be designed and constructed according to regulation under Official Gazette 29614. (https://www.resmigazete.gov.tr/eskiler/2016/02/20160204-2.htm)			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	All the metal structure used in the construction shall be galvanized. The overall structure shall be modular and partial replacement of the damaged sides (during operation, unintended crashes from the loads of the train) shall be possible without demounting the entire system.			
1.1.4	The tunnel steel structure with concrete foundations and polycarbonate lateral sides shall be designed and constructed according to regulation under Official Gazette 29614.			
1.1.5	The tunnel foundations shall be made of minimum C25 grade concrete, designed and constructed according to regulation under Official Gazette 30364. https://www.resmigazete.gov.tr/eskiler/2018/03/20180318M1.htm			
1.1.6	The tunnel structure shall be designed and constructed to resist earthquakes according to regulation under Official Gazette 30364.			
1.1.7	The tunnel structure shall be designed and constructed to resist movements of trains according to regulation under Official Gazette 30364.			
1.1.8	The tunnel structure shall be designed and constructed to resist weather conditions at the exact location of the tunnel (Appendix 1) according to regulation under Official Gazette 30364.			
1.1.9	All metal materials to be used in open-air space shall be designed and produced for corrosion resistance according to regulation under Official Gazette 29614. All metal materials shall be galvanized and painted according to			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	regulation under Official Gazette 29614.			
	Open roof train disinfection system shall be designed and installed to provide train disinfection as follows:			
1.1.10	The disinfection system shall provide disinfection of train roof and side surfaces without leaving any cleaning gaps during train passage through the tunnel. Disinfection of train shall be initiated with a signal coming from sensors installed at entry and exit of the tunnel.			
1.1.11	The disinfection system shall have a capacity to disinfect trains entering the tunnel in a both directions with a speed of max 20 km/h in total length of trains of 23.000 m ± 10.000 m.			
1.1.12	The train shall be disinfected in single pass without reversing.			
1.1.13	The train disinfection system shall be controlled by the Programmable Logic Controller (PLC) for a full automation (including wagon counting).			
1.1.14	PLC shall consist of following elements: • PLC software • PLC interface / control panel - for automated operation, detection of malfunction and alert of administrator. The screenshots of the software should be provided in the offer.			
1.1.15	The disinfection system shall consist of elements to be integrated,			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	automatized and controlled with Programmable Logic Controller (PLC) to secure train disinfection (according to 1.1.10, 1.1.11 and 1.1.12): 1. Water tank - min 500 L capacity galvanized and modular structure, linked with the booster for storage of cleaning water to be mixed with disinfection liquid (Item 1.1.22). 2. Disinfection liquid tank - min 250 L capacity linked with dosing pump for storage of disinfection liquid (Item 1.1.22) to be mixed with cleaning water. 3. Booster - min 3 bar capacity. Water delivered to the pressure pump with the booster should not contain any air. 4. Pressure pump - to secure pumping of liquid coming out from dosing pump. 5. Vacuum pump – to pump the anti-freeze if used by the design back into storage after disinfection. 6. Filter - to avoid blockage of liquids passing through the system (able to work in min 10 bars). 7. Stainless steel pipes - to transport liquid from tanks to nozzles. The pipes should be covered with material protecting water from freezing. 8. Dosage pumps and monitoring system - electronic frequency controlled for monitoring the mixture and dosage. Shall have capacity of min 10 l/h and shall have min IP65 protection. Dosage pumps shall be equipped with control valves. 9. Nozzles – for a disinfection, equipped with automation sensors for the system control. Nozzles shall have a mechanism and a structure to prevent freezing. 10. Cabin - to protect persons, mechanical and electrical items from weather conditions and to enable operation of the disinfection system. The cabin shall have following dimensions: 2,50 m x 2,50			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	m x 2,40 m (minimum dimensions). The cabin shall be equipped with a thermo system with thermostat to maintain working temperature between min 4 ^{o}C and max 18 ^{o}C. The cabin shall be fully enclosed and panels shall be min 4 mm sandwich type. The cabin must have heating isolation and its door shall have keyed locked mechanism. 11. The system shall ensure that nozzles and pumps to seize operation if low level of liquid is detected. A warning message should be sent by the system to the operators if low level of liquid is detected. 12. There shall be a min 7" digital operator screen at the control cabin.			
1.1.16	The high-pressure pumps used by the system shall have working capacity of min 120 bars and min 20 kW power. The flow rate of each pump shall be min 100 l/minute.			
1.1.17	Umbrella-shaped hollow cone nozzles shall be made of 303 or better stainless steel. Minimum number of nozzles shall be 180.			
1.1.18	**Sensors:** • Sensors compatible with PLC system should be installed for start/stop automation during train disinfection. • Sensors shall initiate train disinfection when a train enters (min 5 m distance) and stop the disinfection when train leaves the tunnel in both directions. Sensors should be connected with PLC for wagon counting			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	function.			
1.1.19	LED tunnel lightening should be installed to provide tunnel lighting during disinfection and/or maintenance operation.			
1.1.20	Connection to mains from the control cabin / general system shall be on a distance up to 20 meters.			
1.1.21	All the external cables, pipes and connections of the system shall be installed within protective ducts/channels/housings from external factors.			
1.1.22	250 lt biocidal disinfection liquid according to regulation under Official Gazette 31066. (https://www.resmigazete.gov.tr/eskiler/2020/03/20200312-6.htm) Disinfection liquid can be used after diluting with water at a maximum ratio of 1/200.			
1.2	**Closed roof train disinfection system** This picture of the closed roof train disinfection system is provided for illustration only:			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	 • To be delivered, installed and commissioned by the contractor at the location in Ardahan, Turkey according to Appendix 2.			
	Manufacturer's name:			
	Country of origin:			
	Quantity: 1			
	Closed roof train disinfection system shall include a tunnel <u>steel structure</u> as follows:			
1.2.1	The tunnel steel structure shall have following dimensions: • 16.0 ± 0,5 meter length • 4.5 ± 0,1 meter height (the height shall have final adjustments according to electrification of the rails presented at the final location) • 4.0 ± 0,1 meter width			
1.2.2	The tunnel polycarbonate lateral sides shall be enclosed along 16.0 ± 0,5 meter length and 4 ± 0,1 meter in height.			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1.2.3	The minimum steel profile to be used for tunnel frame sides shall be designed and constructed according to regulation under Official Gazette 29614. The minimum steel profile to be used for roof shall be designed and constructed according to regulation under Official Gazette 29614. (https://www.resmigazete.gov.tr/eskiler/2016/02/20160204-2.htm) All the metal structure used in the construction shall be galvanized. The overall structure shall be modular and partial replacement of the damaged sides (during operation, unintended crashes from the loads of the train) shall be possible without demounting the entire system.			
1.2.4	The tunnel steel structure with concrete foundations and polycarbonate lateral sides shall be designed and constructed according to regulation under Official Gazette 29614.			
1.2.5	Tunnel foundations shall be made of minimum C25 grade concrete, designed and constructed according to regulation under Official Gazette 30364. https://www.resmigazete.gov.tr/eskiler/2018/03/20180318M1.htm			
1.2.6	The tunnel structure shall be designed and constructed to resist earthquakes according to regulation under Official Gazette 30364.			
1.2.7	The tunnel structure shall be designed and constructed to resist movements of trains according to regulation under Official Gazette 30364.			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1.2.8	The tunnel structure shall be designed and constructed to resist weather conditions at the exact location of the tunnel (Appendix 2) according to regulation under Official Gazette 30364.			
1.2.9	All metal materials to be used in open-air space shall be designed and produced for corrosion resistance according to regulation under Official Gazette 29614. All metal materials shall be galvanized and painted according to regulation under Official Gazette 29614.			
	Closed roof train disinfection system shall be designed and installed to provide train disinfection as follows:			
1.2.10	The disinfection system shall provide full disinfection of train roof and side surfaces without leaving any cleaning gaps during train passage through the tunnel. Disinfection of train shall be initiated with a signal coming from sensors installed at entry and exit of the tunnel.			
1.2.11	The disinfection system shall have a capacity to disinfect trains entering the tunnel in a both directions with a speed of max 20 km/h in total length of trains of 4.500 m ± 2.000 m.			
1.2.12	The train shall be disinfected in single pass without reversing.			
1.2.13	Train disinfection system shall be controlled by the Programmable Logic Controller (PLC) for a full automation (including wagon counting).			
1.2.14	PLC shall consist of following elements:			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	• PLC software • PLC interface / control panel - For automated operation, detection of malfunction and alert of administrator. The screenshots of the software should be provided in the offer.			
1.2.15	The disinfection system shall consist of elements to be integrated, automatized and controlled with Programmable Logic Controller (PLC) to secure train disinfection function and capacity. (defined under 2.1.10, 2.1.11 and 2.1.12): 1. Water tank - min 500 L capacity galvanized and modular structure, linked with the booster for storage of cleaning water to be mixed with disinfection liquid. (Item 1.2.20). 2. Disinfection liquid tank - min 100 L capacity linked with dosing pump for storage of disinfection liquid (Item 1.2.20) to be mixed with cleaning water. 3. Booster - min 3 bar capacity. Water delivered to the pressure pump with the booster should not contain any air. 4. Pressure pump - to secure pumping of liquid coming out from dosing pump. 5. Vacuum pump – to pump the anti-freeze if used by the design back into storage after disinfection. 6. Filter - to avoid blockage of liquids passing through the system (able to work in 10 bars). 7. Stainless steel pipes - to transport liquid from tanks to nozzles. The pipes should be covered with material protecting water from freezing. 8. Dosage pumps and monitoring system - electronic frequency controlled for monitoring the mixture and dosage. Shall have capacity of minimum 10 l/h and shall have minimum IP65 protection. Dosage pumps shall be equipped with control valves.			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
	9. Nozzles – for a disinfection, equipped with automation sensors for the system control. The number of nozzles shall satisfy 2.1.10, 2.1.11 and 2.1.12. Nozzles shall have a mechanism and a structure to prevent freezing. 10. Cabin - to protect persons, mechanical and electrical items from weather conditions and to enable operation of the disinfection system. The cabin shall have min following dimensions: 2,50 m x 2,50 m x 2,40 m (minimum dimensions). The cabin shall be equipped with a thermo system with thermostat to maintain working temperature between min 4 ^{o}C and max 18 ^{o}C. The cabin shall be fully enclosed and panels shall be min 4 mm sandwich type. The cabin must have heating isolation and its door shall have keyed locked mechanism. 11. The system shall ensure that nozzles and pumps to seize operation if low level of liquid is detected. A warning message can be sent by the system to the operators if low level of liquid is detected. 12. There shall be a min 7" digital operator screen at the control cabin.			
1.2.16	The high-pressure pumps used by the system shall have working capacity of min 120 bars and min 20 kW power. The flow rate of each pump used must be min 100 l/minute.			
1.2.17	Umbrella-shaped hollow cone nozzles shall be made of 303 or better stainless steel. Minimum number of nozzles shall be 180.			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1.2.18	**Sensors:** • Sensors compatible with PLC system should be installed for start/stop automation during train disinfection. • Sensors shall initiate train disinfection when a train enters (min 5 m distance) and stop the disinfection when train leaves the tunnel in both directions. Sensors should be connected with PLC for wagon counting function.			
1.2.19	LED tunnel lightening should be installed to provide tunnel lighting during disinfection and/or maintenance operation.			
1.2.20	100 lt biocidal disinfection liquid according to regulation under Official Gazette 31066. (https://www.resmigazete.gov.tr/eskiler/2020/03/20200312-6.htm) Disinfection liquid can be used after diluting with water at a maximum ratio of 1/200.			
1.3	**Thermal detection camera with display**			
	Manufacturer's name; product model/type:			
	Country of origin:			
	Quantity: 19			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1.3.1	Thermal detection camera shall scan and determine temperature of human body through face scanning.			
1.3.2	The camera shall be compliant with ISO/TR 13154:2017 (Medical electrical equipment) standards or EN 61000 (Electromagnetic compability) standards https://www.iso.org/standard/69346.html https://ec.europa.eu/eip/ageing/standards/home/sensors-actuators-and-alarms/en-61000_en.html			
1.3.3	The camera shall have temperature detection range between 30 °C and 45 °C or wider.			
1.3.4	The camera shall scan and determine temperature on a distance from min 2 m.			
1.3.5	The thermal camera resolution shall be min 380 x 280 pixels.			
1.3.6	The camera shall scan and determine temperature of min 5 people at the same time.			
1.3.7	The camera shall have max accuracy range of ± 0.5 °C.			
1.3.8	The camera shall have minimum 9 frame per second (fps)			
1.3.9	The camera shall have integrated 3D sensor			
1.3.10	The camera shall work without need of an operator.			
1.3.11	The camera shall have fake face detection feature.			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1.3.12	Each camera shall also be provided with a separate tripod unit capable of height adjustment from 90 cm to 130 cm (or higher range)			
1.3.13	The camera shall be supplied with all the necessary hardware, equipment, accessories and cables. The camera software shall be compatible with licensed latest version of Windows 10 pro or equivalent operating system.			
1.3.14	Camera software shall have following functions as a minimum: • face thermal scanning, • warning (e.g alarm or visual) to the administration if a threshold value is reached • Customizable text, logo and colors • Turkish language support.			
1.3.15	The camera shall be integrated with an Item 1.4.			
1.4	**Laptop**			
	Manufacturer's name; product model/type:			
	Country of origin:			
	Quantity: 19			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1.4.1	Compatible with Item 1.3			
1.4.2	The CPU benchmark shall be min 11000. https://www.cpubenchmark.net/			
1.4.3	Memory speed min 2100 MHz.			
1.4.4	Processor with min 6 cores.			
1.4.5	Processor base frequency shall be min 2.3 Ghz and can be boosted up to min 4.0 GHz.			
1.4.6	Cache shall be min 12 MB.			
1.4.7	Main memory installed shall be min 8 GB.			
1.4.8	Memory type shall be DDR4.			
1.4.9	SSD type hard drive with min 256 GB capacity.			
1.4.10	Laptop Graphic Processing Unit (GPU) shall be min 4GB GDDR5 memory.			
1.4.11	Minimum 1 x HDMI output.			

1. Item number	2. Specifications required	3. Specifications offered	4. Notes, remarks, ref to documentation	5. Evaluation committee's notes
1.4.12	As a minimum, laptop shall have: • speakers • wi-fi • bluetooth • web-camera (integrated or plug-in) • 2 x USB 3.0 or latest port, • ethernet port			
1.4.13	Min 15-inch size monitor supporting 1920 x 1080 resolution.			
1.4.14	The integrated keyboard of the laptop shall be Turkish-Q and shall have backlit feature. A wireless optical mouse with scroll feature shall also be provided. The mouse shall be of the same brand with the laptop.			
1.4.15	Shall comply with CE and Energy Star compliance. EPEAT 2019 certified.			
1.4.16	Laptops shall have licensed latest +6version of Windows 10 pro or equivalent operating system installed.			
1.4.17	Laptop shall have an original min 3 cell, lithium ion battery. The original power cord shall be included.			
1.4.18	Laptop shall be provided original manufacturer's carrying case.			