

Appendix “A”

Statement of Work

IT – Design-Build of the connectivity,
audiovisual, smart glass and smart lighting
systems

1. General Information

1.1 Background

The Government of Canada, acting through the Department of Foreign Affairs, Trade and Development (DFATD), is relocating its Chancery and the Canadian Cultural Centre in Paris, France (hereinafter referred to as Chancery). The project is being procured via a Design-Build agreement which forms part of a real estate exchange agreement between Canada and a Paris based Developer.

The Developer is responsible for the design, construction, commissioning, and hand-over of the new Chancery and the Canadian Cultural Centre. Additionally, the Developer is responsible for obtaining building permits and for financing the project up to the moment of title transfer which will occur following occupation by the Chancery. The proposed project entails the complete renovation of an existing building (7 storeys above ground and 2 basement levels) to provide a total enclosed area of 8,300 M2 (usable floor area). The design and construction of the new chancery shall meet the design and life safety requirements of the National Building Code of Canada as well as applicable French building codes and regulations. In the event of conflicting requirements, it is most likely that the more stringent code shall apply.

The Design-Build excludes DFATD's own specialist fit-out works (comprising specialist installations and equipment), however the Developer will facilitate DFATD's performance of such specialist fit-out works, by providing DFATD and DFATD's contractors access to parts or all of the building site, during the construction of the project and prior to DFATD's occupancy of the proposed Chancery and Cultural Centre. The Developer has developed a staggered schedule for the availability of the new building floors for Canada's usage. The floors shall be made available in groups; the handover of levels +4,+5,+6 is planned to start on October 9th; followed four weeks later by levels +1,+2 and +3; and followed four weeks later by the ground floor and the two basement levels.

Target Project Milestone Dates:

| | |
|--|------------------------------|
| Start of DFATD services installation | October 2017 |
| Occupancy | February 2018 |
| Planned installation by the Contractor | October 2017 – February 2018 |
| End of close-out phase | Summer 2018 |

Note: The above are target dates and are subject to change.

1.2 Objective of the Work

The objective of this Work is to renovate the Cultural Centre, and other rooms as specified, in the new Chancery building located on Rue du Faubourg Saint-Honoré – 130, 75008 Paris. It shall consist of a detailed design package, the supply and installation of the cabling, audiovisual equipment, smart glass (if applicable) and smart lighting systems as per Article 3. Description of the Rooms, unless otherwise noted that DFATD shall provide the materials or equipment.

The Contractor must supply, install and connect the smart glass (if applicable), the audiovisual equipment, as well as all the associated electrical wiring, in coordination with the General Contractor's electrician if needed.

Transportation, labour, detailed plans, and the supply and install are part of the Contractor's responsibilities.

The Contractor must ensure coordination with the various stakeholders and tradespeople under its responsibility. Documents, information and plans must be shared with all required parties in a timely manner. Therefore, once the contract is awarded to the Contractor, a first meeting shall confirm the required conditions to support the Contractor's installation, along with the proposed

Appendix "A"

schedule of equipment acquisition to support a well-synchronised delivery to the site, since there is limited storage space available to the Contractor on the construction site.

The administrative clauses governing this project must be strictly enforced in accordance with the administrative regulations of DFATD and the Chancery in Paris.

1.3 Acronyms

| Term | Definition |
|--------------|--|
| AV | Audio-Visual |
| GUI | Graphical User Interface |
| HD | High Definition |
| MM | Multimedia |
| RF | Radio Frequency |
| RU | Rack Unit (1.75 inches) |
| SI | Simultaneous Interpretation |
| SOW | Statement of Work |
| IP | Internet Protocol |
| UHF | Ultra-High frequency |
| SHF | Super High frequency |
| MIDI | Musical Instrument Digital Interface |
| CCU | Camera Control Unit |
| RGB | Red, Green, Blue (analog video connector) |
| RGBHV | RGB Horizontal sync Vertical Sync |
| DLP | Digital Light Processing |
| LCD | Liquid Crystal Display |
| DFATD | Department of Foreign Affairs, Trade and Development |
| HDMI | High-Definition Multimedia Interface. |
| TNT | Paris TNT. |
| DMX controls | Digital Multiplex Controls. |
| LED | Light Emitting Diode. |
| ERCO rails | ERCO track is a track lighting system. |
| THX | "THX" high fidelity audio/visual standard. |

1.4 Errors and Omissions

- 1.4.1 Omissions and / or errors in the SOW documents not reported at the time of response does not relieve the Contractor of the responsibility for providing properly functioning systems as specified herein.
- 1.4.2 The Contractor must provide the equipment, installation material and labour required to fulfill the requirements and intent of the SOW whether or not enumerated explicitly.
- 1.4.3 The Contractor must provide all wiring, terminations, adapter assemblies and power supplies related to equipment functions whether specifically enumerated herein or not.
- 1.4.4 Upon award of contract, the Contractor must review all reference drawings and site conditions and report any discrepancies, including those related to conduit routing and sizing, to the DFATD Representative. The Contractor must report these discrepancies immediately.

2. Project Scope and Tasks

2.1 Schedule

The Work should occur per the estimated schedule presented in the following table:

| Item | Date |
|---|---|
| Kick off Meeting | Starting within 15 business days of contract award |
| Shop Drawing Review Meetings | Starting within 15 business days of contract award |
| Software/Programming Review Meetings | Starting within 15 business days of contract award |
| Delivery of new equipment | In coordination with the phased floor handover dates |
| Facility Available for Installation of Equipment | Phased Floor Handover Dates: Floors +4, +5, +6 : October 2017 Floors +1, +2, +3 : November 2017 Floors RDC, SS1, SS 2: December 2017 |
| Testing and Commissioning | March 2018 |
| Substantial Completion | March 2018 |
| Rooms turned over and ready for use by the Chancery | February 5, 2018 |
| Delivery of “As-Built” Plans and Documentation | February 2018 |
| Training | February 2018 |

These dates may need to change at the discretion of DFATD.

The Contractor must adhere to the construction schedule as stipulated by the DFATD.

The Contractor must review the Project schedule and establish milestones for the Work which must work in concert with the project schedule. The Contractor must inform the DFATD Representative in writing of any issues which may impact delivery of the project on the dates specified.

2.2 Administrative Standards and Clauses

2.2.1 The equipment must meet European electrical standards, safety standards and the various regulations in effect under French and European law (EC, TUV/GS, UL/CUL, FCC class A, FCC class B, NOM, CCC, PSB, etc.).

2.2.2 This project must also respect European Conformity (EC) standards in terms of safety plans, labour agreements, health regulations, civil liability and insurance (personal, responsibility for others, etc.).

2.3 Tasks

2.3.1 General Specifications

- i. The Contractor must propose solutions that are the best suited in terms of interior design, electrical equipment and audiovisual equipment.
- ii. The Contractor is required to perform an acoustics study to ensure the optimal quality of the sound diffusion.
- iii. The rooms must provide quality auditory and viewing comfort that is at the cutting edge of technology.
- iv. The rooms must be easy to use by anyone. Control must be ensured through centralized management systems equipped with wall-mounted panels and touch screens.

- v. The Contractor is responsible for the following: installing the proposed equipment, assuming responsibility for any ceiling cut-outs, drilled holes and deliveries by organizations certified to integrate suspended equipment (speakers, projectors, perches, etc.); taking responsibility for drilled holes to connect audiovisual equipment; adapting if necessary the ceiling installations so they are installed properly; taking responsibility for table cut-outs for the integration of retractable connection boxes; installing and sorting audiovisual cables; training users, etc.

2.3.2 Procurement

The Contractor must procure all equipment, materials, and cables as specified in Appendix "A" Statement of Work.

2.3.3 Shipping and Transportation

The Contractor is responsible for coordinating shipping and transportation with the DFATD Representative.

2.3.4 Installation

Proper mounting of all new devices is the responsibility of the Contractor. Note that all cables and connectors and connector plates are to be provided by the Contractor, unless indicated otherwise.

2.3.5 Removal and Disposal

Removing of all non-required equipment and cabling. Some equipment needs to be left as is for re-use. The Contractor must confirm with the DFATD Representative first before cutting and removing any cables that appear to be unused and that are not part of the existing multimedia systems.

Waste removal, landfill fees, containers and other associated services are the Contractor's responsibility.

2.3.6 Testing

The Contractor must test all installations and programming.

2.3.7 Comments

The Contractor must provide the necessary materials needed for overall operations and must respect the technical characteristics described in the specifications. No additional materials shall be accepted unless these characteristics are respected.

2.3.8 License of Programming Software and Programs

2.3.8.1 The Contractor must register any programming tools to the DFATD.

2.3.8.2 The Contractor must assign the system programming to DFATD. The Contractor must ensure that any changes or adjustments to programming are updated immediately and provided to DFATD.

2.3.8.3 The Contractor must ensure that the programming for this project is kept confidential and is not distributed in whole or part to any other party unless directly involved and listed as part of the Contractor or their Sub-Contractors.

2.3.9 Reviews

For each stage of the work plan, the Contractor must coordinate with the DFATD Representative and receive approval of all required submittals prior to proceeding to the next steps of the work plan.

2.4 Design Package

A detailed Design Package must be prepared by the Contractor for all rooms identified in Article 2.5 List of Rooms Included in the SOW. This package must include but not be limited to the following:

2.4.1 Summary of the Work required

The Contractor must provide a summary of the Work including the design, supply, install and support systems described in Article 2.6 Description of the Rooms.

2.4.2 Equipment List

The Contractor must provide a detailed Equipment List with all planned equipment. The following information must appear: Manufacturer, Model, Quantity, Unit Price, Notes (notes could include reasons for product substitution such as: product no longer available).

| Manufacturer | Model | Description | Quantity | Unit price | Notes |
|--------------|-------|-------------|----------|------------|-------|
|--------------|-------|-------------|----------|------------|-------|

Where pieces of equipment include accessories and/or options, extra lines can be inserted in the spreadsheet.

2.4.3 Installation plan

The Contractor must provide system screen and flow design, and an outline of planned acceptance testing.

2.4.4 General Audio-Visual Design Layout

The Contractor must prepare a technical drawing that must illustrate the location of main audio/video equipment (displays, speakers, video conference cameras, control panels, etc.), smart glass, equipment racks, custom furniture, for each room as required.

2.4.5 Detailed Audio-Visual Design

The Contractor must prepare for all rooms identified in in Article 2.5 List of Rooms Included in the SOW technical drawings which illustrate all audio/video, control equipment, and smart glass (if applicable); as well as each link and input between all systems. This plan must be detailed and must clearly indicate all connections between each audio/video and control node in the plan. Technical drawing files shall be submitted as specified in Article OR15 of the Contract.

2.4.6 Connectivity - Cabling and Wiring Plans for Proposed Solutions

Clean and precise cabling/integration plans must be provided in the Design Package so the DFATD Representative can analyze the solutions proposed by the Contractor.

2.4.7 Client Training

The Contractor must provide an outline of planned client training and a list of training material to be provided. The Contractor must submit an agenda to the DFATD Representative for review prior to scheduling the training sessions.

2.4.8 Spec Sheets

The Contractor must provide a folder of specification sheets for all products.

2.4.9 On-going support procedures

The Contractor must include the on-going support procedures in the final As-built plans as an SLA outlining support and maintenance procedure.

Appendix “A”

2.4.10 As-built plans.

2.4.10.1 Final As-Built drawings and documents must be provided at the end of the Commissioning phase.

2.4.10.2 Drawings must be neat and organized to show all information including cable numbering scheme and cable pull lists. Submit drawings in PDF and AutoCAD formats as per Article OR15 in the Contract. Drawings are to be Architectural D size (24” by 36”). Drawings must still be readable when printed in Architectural C size (18” x 24”).

2.5 List of Rooms Included in the SOW

The Contractor must design, supply, install and connect the audiovisual equipment and smart glass (if applicable), as well as all the associated electrical wiring for the following locations, including several multipurpose rooms:

| Floor | Room Number | Name | Area (approximately) | Dimensions (approximately) |
|------------------|-------------|--------------------------------|-----------------------|----------------------------|
| Basement 2 (SS2) | S2-28 | Cafeteria/ Drivers | 21 m ² | 3.5m x 6m |
| Basement 1 (SS1) | S1-14 | Multipurpose room | 105 m ² | 8.7m x 12m |
| | S1-19 | TV studio | 21.5 m ² | 4.3m x 5m |
| | S1-21 | Videoconferencing room | 42.6 m ² | 6m x 7.1m |
| | S1-26 | Canada Club | 46.28 m ² | 5.2m x 8.9m |
| | S1-32 | Fitness room | 95.95 m ² | 10.1m x 9.5m |
| Ground Floor | S1-39 | Exhibition room | 171.45 m ² | 13.5m x 12.7m |
| | RC-10 | Main desk of the Chancery | 3.68 m ² | 2.3m x 1.6m |
| | RC-14 | Waiting room, groups 11 and 12 | 38.64 m ² | 4.6m x 8.4m |
| | RC-33 | Gathering area | 26.8 m ² | 4m x 6.7m |
| Level +1 (R1) | RC-37 | Auditorium | 155.4 m ² | 14m x 11.1m |
| | R1-05 | Collaborative space | 6 m ² | 2m x 3m |
| | R1-06 | Security office | 42.12 m ² | 5.4m x 7.8m |
| | R1-25 | Cafeteria | 23 m ² | 5m x 4.6m |
| | R1-26 | Training room | 32 m ² | 8m x 4m |
| | R1-31 | Kitchen | 23 m ² | 5m x 4.6m |
| | R1-35 | Open Workstation - Group 12 | 6 m ² | 3m x 2m |
| Level +2 (R2) | R1-36 | Open Workstation - Group 12 | 6 m ² | 3m x 2m |
| | R2-05 | Meeting room (HOM) | 39.9 m ² | 4.7m x 8.5m |
| | R2-06 | Open Workstation - Group 4 | 6 m ² | 3m x 2m |
| | R2-17 | Meeting room | 18.5 m ² | 5.3m x 3.5m |
| Level +3 (R3) | R2-27 | Kitchen | 23 m ² | 5m x 4.6m |
| | R3-29 | Meeting room | 18.5 m ² | 5.3m x 3.5m |
| | R3-34 | Kitchen | 23 m ² | 5m x 4.6m |
| Level +4 (R4) | R3-36 | Meeting room | 18.5 m ² | 5.3m x 3.5m |
| | R4-06 | Meeting room | 18.5 m ² | 5.3m x 3.5m |
| | R4-11 | Meeting room | 18.5 m ² | 5.3m x 3.5m |
| | R4-28 | Meeting room | 18.5 m ² | 5.3m x 3.5m |
| Level +5 (R5) | R4-29 | Kitchen | 23 m ² | 5m x 4.6m |
| | R5-06 | Meeting room | 18.5 m ² | 5.3m x 3.5m |
| | R5-26 | Kitchen | 23 m ² | 5m x 4.6m |
| Level +6 (R6) | R5-28 | Meeting room | 18.5 m ² | 5.3m x 3.5m |
| | R6 | Meeting room | 135 m ² | 15m x 9m |

Floor and ceiling heights can be found in Appendix “B”.

2.6 Description of the Rooms

The minimum equipment specifications described for each room below are detailed in Article 3. Technical Specifications.

2.6.1 Description of “Cafeteria/Drivers” S2-28

The S2-28 Cafeteria is for Chancery drivers. It must be equipped with a standard 55” TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.2 Description of “Multipurpose Room” S1-14

The S1-14 Multipurpose Room will be suitable for all types of conferences, meetings, training sessions, etc. (capacity: 60 to 100 people). It must be equipped with a fixed LCD WUXGA 16/10 projector and an electric tensioned screen 240 x 150 cm. It shall be used to show “computer” presentations and documents from two GBHV/Audio/HDMI connection boxes, the first placed in a floor box in the room on the screen side and the second is place in the technical room located in the rear. All the controls, matrices, interfaces and processors shall be located in the technical room. The floor box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 3x XLR + 2x network + 2x power EU

The sound diffusion shall consist of ceiling speakers, a powerful stereo amplifier, a mixing board and wired and wireless microphones.

A management system and wireless touch screen and ad hoc interfaces shall enable easy control over the entire AV installation. This system must also provide control over the existing lighting through a separate interface.

2.6.3 Description of “TV Studio” S1-19

The S1-19 TV Studio shall be used for web applications, capturing images/sound and broadcasting them “live” or “delayed” on social networks with interventions from several moderators.

It shall include a fixed motorized camera mounted on the ceiling or the wall, a mobile camera and sturdy tripod on rollers, two table and mobile quality microphones, a video and audio mixing board, a multimedia recorder, control monitors (live/preview/control) a green/blue key screen for integrating a background image when recording or broadcasting, specific lighting for camera angles, as well as all the necessary interfaces, computers and accessories.

2.6.4 Description of “Videoconferencing Room” S1-21

The S1-21 Videoconferencing Room is to be used as its name suggests for single or multipoint videoconferencing. It must be equipped with a professional minimum 70” monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table and a videoconferencing system provided by DFATD. The table box shall include RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE).

It must be completed by a management system and wireless touch screen and ad hoc interfaces enabling easy control over the entire AV installation.

This system will also provide control over the existing lighting through a separate interface.

2.6.5 Description of “Canada Club” S1-26

The Canada Club is a relaxation area similar to a pub. It is meant for Chancery visitors and personnel. The Canada Club must be equipped with standard 90” television and adjustable wall mounts for retransmitting TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

The Contractor must supply and install a new basic sound system for playing music via CD/DVD/Blu-ray and multimedia players (tablets, telephones, iPods, MP3 players, etc.).

2.6.6 Description of “Fitness Room” S1-32

The Fitness Room is a space dedicated to Chancery personnel and must be equipped with multiple sports training equipment and allows for group exercise. Three existing televisions must be installed along with a new basic sound system for playing music via CD/DVD/Blu-ray and multimedia players (tablets, telephones, iPods, MP3 players, etc.).

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.7 Description of “Exhibition Room” S1-39

The Exhibition Room will be suitable for all types of exhibitions and conferences on occasion (capacity: 100 to 150 people).

It must be equipped with ceiling sound with an amplifier in the technical room of the auditorium and multiple perches and stage projectors.

The scenic lighting includes 5 perches equipped with multiple “Schuko” connectors (or equivalent, as approved by DFATD), as well as DMX controls, various LED projectors and a DMX control console with tablet-based controls.

The console must be controllable through the management system located in the auditorium. The Contractor must propose all the necessary interfaces and wiring.

The architectural lighting must also be included. There are currently ERCO rails. Only the dimmable spots must to be provided and installed.

The whole is completed by movable architectural panels for hanging works of art (canvases, framed photos, light sculptures, etc.).

All the equipment is integrated in part in the rack of the technical room for the auditorium and in the storage room adjacent to the exhibition room.

2.6.8 Description of “Main Desk of the Chancery” RC-10

The main desk of the Chancery must be equipped with two professional 42” monitors and their adjustable wall mounts that will be connected to computers provided by the IT service from Canada.

2.6.9 Description of "Waiting Room, Groups 11 and 12" RC-14

The Waiting Room (groups 11 and 12) must be equipped with a standard 65/70" TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.10 Description of "Gathering Area" RC-33

The Gathering Area must be equipped with ceiling speakers connected to an amplifier located in the technical room of the auditorium. The sound must be diffused from the abovementioned room and will come from a variety of sources (auditorium, independent sound, music, etc.).

2.6.11 Description of "Auditorium" RC-37

The Auditorium must be suitable for all types of conferences, meetings, shows or concerts (capacity: 100 to 150 people).

It must be equipped with 2 mobile 3DLP WUXGA 16/10 projectors making it possible to show multiple images or a panoramic image on a wall or projection screen 1000 x 350 cm. They are used to display "computer" presentations and document as well as HDTV video from various RGBHV/Audio/HDMI connection boxes located in the auditorium or technical room.

All the controls, matrices, interfaces and processors must be located in the technical room.

A camera monitoring system is also required to record meetings/conferences, to give presentations using the projectors or broadcast to the network through streaming.

The sound diffusion system must include 3 diffusion systems, the first being a ceiling type meant mainly for voice, the second being the Dolby pro logic/THX type for "image/computer" projections (or equivalent, as approved by DFATD), and lastly the third being a basic system for diffusing sources of sound from the reception area.

An array of MIDI bus audio connections is also required for concerts where it is necessary to capture/diffuse the sound from specific instruments. These systems must be completed by microphones, audio readers, recorders, processors, etc.

A centralized management system and wireless touch screen and ad hoc interfaces must enable easy control over the entire AV installation. This system must also provide control over the existing lighting through a separate interface.

Stage lighting at the front of the auditorium including three perches, LED projectors and a DMX control console with tablet-based control is also required. It must be controllable in tandem by the centralized management system.

The Contractor must include all the necessary interfaces and wiring.

Connection boxes and infrared digital transmission wires will make it possible to install mobile equipment for simultaneous translation.

Table boxes must include: Table AV/RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x USB + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE).

Floor boxes must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital, 2x XLR audio + 2x network + 2x power EU

All the audiovisual equipment must be integrated in a 19” rack placed in the technical room.

2.6.12 Description of “Collaborative Area” R1-05

The R1-05 Collaborative Area must be equipped with a standard 42” TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.13 Description of “Security Office” R1-06

The Security Office must be equipped with three professional 70” monitors and their adjustable ceiling pole mounts that will be connected to computers provided by the IT service from Canada.

2.6.14 Description of “Cafeteria” R1-25

The R1-25 Cafeteria is for Chancery drivers. It must be equipped with standard 55” television and adjustable wall mounts for retransmitting TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.15 Description of “Training Room” R1-26

The Training Room is to be used as its name suggests for training Chancery personnel. It must be equipped with a 90” professional monitor, an adjustable wall mount and a universal AV connection box integrated into the instructor’s table.

It must be completed by a basic centralized management system (6 to 12 keys) and ad hoc interfaces that allow for easy control over the entire AV installation.

2.6.16 Description of “Meeting Room” R1-31

The R1-31 Meeting Room must be equipped with a professional minimum 70” monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table and a videoconferencing system provided by Canada.

It must be completed by a centralized management system, a wired touch screen and ad hoc interfaces that allow for easy control over the entire AV installation from a table box. Table AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

This system will also provide control over the existing lighting through a separate interface.

2.6.17 Description of “Open Workstation - Group 12” R1-35

The R1-35 Open Workstation area must be equipped with a standard 32 to 42” TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.18 Description of "Open Workstation - Group 12" R1-36

The R1-36 Open Workstation area must be equipped with a standard 32 to 42" TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.19 Description of "Meeting Room (HOM)" R2-05

Meeting room R2-05 is for both regular meetings and videoconferencing. It must be equipped with a professional 65/70" monitor provided by the IT service from Canada. The adjustable wall mount and the universal AV connection box integrated into the meeting table must be provided. The AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

The windows in this room will be covered with a polarized opaque film that can be turned on or off from the centralized management system. (OFF: opaque film, ON: transparent film) and a control cable.

2.6.20 Description of "Open Workstation - Group 4" R2-06

The R2-06 Open Workstation area must be equipped with a standard 32" TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD will provide a coaxial cable and electrical outlet for each television.

2.6.21 Description of "Meeting Room" R2-17

The R2-17 Meeting Room must be equipped with a professional minimum 70" monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table installation from a table box. Table AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

It must be completed by a basic centralized management system (6 to 12 keys) and ad hoc interfaces that allow for easy control over the entire AV installation.

2.6.22 Description of "Kitchen" R2-27

The R2-27 Kitchen must be equipped with a standard 55" TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.23 Description of "Meeting Room" R3-29

The R3-29 Meeting Room must be equipped with a professional minimum 70" monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table. The table AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

It must be completed by a basic centralized management system (6 to 12 keys) and ad hoc interfaces that allow for easy control over the entire AV installation.

2.6.24 Description of "Kitchen" R3-34

The R3-34 Kitchen must be equipped with a standard 55" TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.25 Description of "Meeting Room" R3-36

The R3-36 Meeting Room must be equipped with a professional minimum 70" monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table. The table AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

It must be completed by a basic centralized management system (6 to 12 keys) and ad hoc interfaces that must allow for easy control over the entire AV installation.

2.6.26 Description of "Meeting Room" R4-06

The R4-06 Meeting Room must be equipped with a professional minimum 70" monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table. The table AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

It must be completed by a basic centralized management system (6 to 12 keys) and ad hoc interfaces that must allow for easy control over the entire AV installation.

2.6.27 Description of "Meeting Room" R4-11

The R4-11 Meeting Room must be equipped with a professional minimum 70" monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table. The table AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

It must be completed by a basic centralized management system (6 to 12 keys) and ad hoc interfaces that allow for easy control over the entire AV installation.

2.6.28 Description of "Meeting Room" R4-28

The R4-28 Meeting Room must be equipped with a professional minimum 60" monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table. The table AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

It must be completed by a basic centralized management system (6 to 12 keys) and ad hoc interfaces that allow for easy control over the entire AV installation.

2.6.29 Description of "Kitchen" R4-29

The R4-29 Kitchen must be equipped with a standard 55” TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must be responsible for supplying, installing, potentially reinforcing the wall and adjusting each television and its adjustable wall mount. A coaxial cable and electrical outlet will be provided for each television.

2.6.30 Description of “Meeting Room” R5-06

The R5-06 Meeting Room must be equipped with a professional minimum 70” monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table. The table AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

It must be completed by a basic centralized management system (6 to 12 keys) and ad hoc interfaces that allow for easy control over the entire AV installation.

2.6.31 Description of “Kitchen” R5-26

The R5-26 Kitchen must be equipped with a standard 55” TV and shall have an adjustable wall mount that allows for the retransmission of TNT programs.

The Contractor must reinforce the wall, supply, install, and adjust each television. DFATD shall provide a coaxial cable and electrical outlet for each television.

2.6.32 Description of “Meeting Room” R5-28

The meeting room must be equipped with a professional minimum 70” monitor and an adjustable wall mount, quality ceiling sound, a universal AV connection box integrated into the meeting table. The table AV box must include: RGB/HDMI connection including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

It must be completed by a basic centralized management system (6 to 12 keys) and ad hoc interfaces that allow for easy control over the entire AV installation.

2.6.33 Description of “Meeting Room” R6

Meeting Room R6 will be suitable for all types of conferences, meetings, training sessions, etc. (capacity: 20 to 30 people). It must be equipped with a professional minimum 90” monitor and an adjustable wall mount, quality ceiling sound, two universal AV connection boxes integrated into the meeting table and a videoconferencing system provided by Canada.

Table Box must include AV/RGB/HDMI connections including + SXGA HDB15 + audio + HDMI/Digital + 1x Usb + 2x network + 2x Universal power (US/CA/EU/CH/JP/SW/GE)

Floor Box must include RGB/HDMI connections including + SXGA HDB15 + audio + HDMI/Digital + 1xUSB + 2x network + 2x power EU

An array of matrices, interfaces and processors must be used for selecting and broadcasting images and sound. Special care is required in sound processing to avoid any “Larsen/echo” effects.

The sound diffusion must consist of ceiling speakers, a powerful stereo amplifier, a digital mixing board and wired and wireless microphones

A management system and wireless touch screen and ad hoc interfaces must allow for easy control over the entire AV installation. This system must also provide control over the existing lighting through a separate interface.

3. Technical Specifications

3.1 General

- 3.1.1** The connection interfaces, selectors and distribution amplifiers must be designed so that the bandwidth for the computer and video signals is always maintained at more than 1 GHz at +/- 3 dB.
- 3.1.2** The connections and audio cables must be symmetrical with a large bandwidth (more than 100 KHz).
- 3.1.3** Special care must be taken in terms of the quality of the cables and connectors so that the prescribed specifications are respected.
- 3.1.4** The connection interfaces, selectors and distribution amplifiers must be designed so that the bandwidth for the computer and video signals is always maintained at more than 100 KHz at +/- 6 dB.
- 3.1.5** The speakers must be positioned in an optimal manner in the various spaces in order to guarantee good sound diffusion and to avoid Larsen-type effects or echoes.
- 3.1.6** All cables/connectors brand and model MUST be approved by the DFATD Representative. The AV Contractor should get approval from the DFATD Representative before ordering.
- 3.1.7** Any installed cable/connectors not approved by the DFATD Representative may result in removal/replacing at the AV Contractor's expense.

3.2 Wiring and engineering

- i. The video and computer cables must have a bandwidth of 1 GHz in order to provide maximum quality for all types of signals.
- ii. The audio cables must have a low impedance in order to avoid any distortion in the audio signals. They must be the “symmetrical” type with shielding.
- iii. All cable must be labelled as per DFATD labelling standard. Standard will be given to winning proponent.
- iv. The speaker, remote control, electricity, video, computer and audio cables must respect the characteristics mentioned below.

3.2.1 Video cable

- Coaxial type – bandwidth of 1 GHz, impedance: 75 ohms, capacity/m: 40 pF
- Exterior diameter: 7.6 mm

3.2.2 Analog video cable

- 5 x plaited coaxial cables – passing bandwidth of 1 GHz, impedance: 75 ohms
- 10 x multi-strand cables resistance/km: less than 4 ohm
- Capacity/m: 40 pF, exterior diameter: 33 mm

3.2.3 Digital video cable

- DVI-D/HDTV/HDMI - bandwidth of 10.95 GHz, impedance: 100 ohms

- Attenuation: less than 10 dB/10 m
- Resolution: 1920x1200 to 4096x2160 pixels
- Exterior diameter: 15.6 mm

3.2.4 Micro/line audio cable for cable tray

- Multi-strand with 3 conductors + double exterior shielding, resistance/100 m: <19 ohms
- Capacity/m: less than 78 pF, exterior diameter: maximum of 5 mm

3.2.5 Micro/line audio jumper cable

Since this is a jumper cable, it must be able to support a weight of 100 kg (1 person) and be equipped with XLR male/female gold contact connectors on the ends.

- Multi-strand with 3 conductors + double exterior shielding, resistance/100 m: <19 ohms
- Capacity/m: less than 78 pF, exterior diameter: maximum of 6.5 mm
- Length: 10 metres

3.2.6 Digital audio cable

- Multi-strand with 3 conductors + double exterior shielding, resistance/100 m: <20 ohms
- Capacity/m: less than 40 pF, impedance < 110 ohms, exterior diameter: maximum of 6 mm

3.2.7 Speaker cable

- Multi-strand with two 2.5 mm² conductors, flexible with exterior PVC protection
- Resistance/100 m: less than 2.8 ohms, capacity/m: less than 50 pF
- Exterior diameter: maximum of 14 mm

3.2.8 AV digital transmission cable

- FTP category 6 – 4x 2x0.57mm
- AES/EBU digital audio
- Double exterior shielding, resistance/100 m: < 16 ohms
- Capacity/m: less than 77 pF
- Impedance < 100 ohms
- Max. time/skew/100 m: 14 nanoseconds
- Exterior diameter: maximum of 8 mm

3.2.9 Remote cable

- Multi-strand, twisted pair, shielded, resistance/km: less than 4 ohms
- Capacity/m: less than 40 pF, exterior diameter: maximum of 10 mm
- Number of conductors: 10, conductor section: 0.4 mm²

3.2.10 Electric cable

- Single-phase 16-ampere electric cable

All electric cables to be used in the audiovisual installation must be 3 x 2.5 mm² and must comply with French standards and the prescriptions in the applicable technical regulations.

- Single-phase 16-ampere extension cord

All electric cables to be used in the audiovisual installation must be 3 x 2.5 mm² and must comply with French standards and the prescriptions in the applicable technical regulations. Extension cords must have certified 16-ampere male and female connects at the ends.

3.2.11 Audiovisual electric cable

- 16-ampere electric cable

All electric cables to be used in the audiovisual installation must be 4 x 2.5 mm² and must comply with French standards and the prescriptions in the applicable technical regulations.

3.3 Connection boxes:

- i. The minimum specifications required for connection boxes are as follows. Type depends on size and grade (standard/normal or professional) specified in Article 3. Description of Rooms.
- ii. The various connection boxes must be used in interconnecting audiovisual equipment, furnishings or mobile equipment. They must meet EC standards.

3.3.1 Wall/floor multimedia connection box, type 1

- Dimensions: 5 cm x 26 cm
- Material: Black painted steel
- Insulation between connectors: higher than 10 MΩ, assembled using threaded screws
- Video/RGB/HS/VS bandwidth: > 500 MHz at +/- 6 dB
- Digital bandwidth (HDMI/DVI): > 10 GHz at +/- 6 dB
- Audio bandwidth: > 100 KHz at +/- 6 dB
- Connections:
 - 2x XLR for wired desk microphones
 - 4x RJ45 for network or AV connection through a wall patch in the technical room
 - 1x HDMI
 - 1x VGA + audio
 - 2x BNC SDI
- Assembly: threaded screws
- Face thickness: 2 mm

3.3.2 Wall/floor multimedia connection box, type 2

- Dimensions: 10 cm x 10 cm
- Material: Black painted steel
- Insulation between connectors: higher than 10 MΩ, assembled using threaded screws
- Bandwidth: > 1GHz MHz at +/- 6 dB
- Connections:
 - 1x BNC- RG58 – 50 ohms
 - 1x power 230 VAC – 16A power for infrared radiator/emitter translation
- Assembly: threaded screws
- Face thickness: 2 mm

3.3.3 Wall/floor multimedia connection box, type 3

- Dimensions: 60 cm x 45 cm
- Material: Black painted steel
- Insulation between connectors: higher than 10 MΩ, assembled using threaded screws
- Video/RGB/HS/VS bandwidth: > 500 MHz at +/- 6 dB
- Digital bandwidth (HDMI/DVI): > 10 GHz at +/- 6 dB
- Audio bandwidth: > 100 KHz at +/- 6 dB
- Connections:
 - 8x XLR audio for microphone/line “sound” or recording

- 8x RJ45 for network or AV connection
- 1x HDMI
- 1x VGA + audio
- 2x BNC SDI

- Assembly: threaded screws
- Face thickness: 2 mm

3.3.4 Wall/floor multimedia connection box, type 4

- Dimensions: 60 cm x 45 cm
- Material: Black painted steel
- Insulation between connectors: higher than 10 M Ω , assembled using threaded screws
- Video/RGB/HS/VS bandwidth: > 500 MHz at +/- 6 dB
- Digital bandwidth (HDMI/DVI): > 10 GHz at +/- 6 dB
- Audio bandwidth: > 100 KHz at +/- 6 dB
- Connections:
 - 8x XLR audio for microphone/line "sound" or recording
 - 8x RJ45 for network or AV connection
 - 6x BNC SDI
 - 2x BNC – RG58 – 50 ohms

- Assembly: threaded screws
- Face thickness: 2 mm

3.3.5 Wall/floor multimedia connection box, type 5

- Dimensions: 26 cm x 17 cm
- Material: Brushed aluminium
- Insulation between connectors: higher than 10 M Ω , assembled using threaded screws
- Video/RGB/HS/VS bandwidth: > 500 MHz at +/- 6 dB
- Digital bandwidth (HDMI/DVI): > 10 GHz at +/- 6 dB
- Audio bandwidth: > 100 KHz at +/- 6 dB
- Connections:
 - 1x HDMI
 - 1x VGA + audio
 - 2x RJ45
 - 2x USB
 - 2x Universal power (EU/UK/CA/US/DE/JP/CN)

- Assembly: threaded screws
- Face thickness: 2 mm

3.3.6 Wall/floor multimedia connection box, type 6

- Dimensions: 20cm x 17cm
- Material: Brushed aluminium
- Insulation between connectors: higher than 10 M Ω , assembled using threaded screws
- Video/RGB/HS/VS bandwidth: > 500 MHz at +/- 6 dB
- Digital bandwidth (HDMI/DVI): > 10 GHz at +/- 6 dB
- Audio bandwidth: > 100 KHz at +/- 6 dB
- Connections:
 - 1x HDMI
 - 1x VGA + audio
 - 2x RJ45
 - 2x USB

- 2x Universal power (EU/UK/CA/US/DE/JP/CN)
- Assembly: threaded screws
- Face thickness: 2 mm

3.4 Video and IT Technical Specifications

- i. The minimum specifications required for video and IT are as follows. Type depends on size and grade (standard/normal or professional) specified in section 3. Description of Rooms.

3.4.1 Tri-DLP Video/Computer projector – 1920 x 1200 pixels, type 1

The projector must include lenses and a ceiling mount.

- Technology: Tri-DLP
- 1920 x 1200 active points matrix / 2048 x 1534 compressed points
- Colours: 16.7 million / bandwidth: 300 (600) MHz
- Horizontal frequency: 15 KHz to 100 KHz
- Vertical frequency: 50 to 100 Hz
- Start-up menu: icons, VERY USER FRIENDLY
- Digital functions (Zoom, keystone, PIP)
- Zoom lenses: 2 at 4.5 – min/max size: 1 to 15 metres / Zoom Objective
- Light intensity: 14,500 ANSI lumen
- Contrast ratio: 2400: 1
- IR/Cable/USB remote
- 2 x 465-watt lamps – 2000/2500 hours
- 1x video input, 1x YUV input, 1x Data / UXGA input, 1x analog RGBS, 1x HDMI, 1x DVI, 1x SDI, 1x HDBaseT
- Video standard: Pal/Secam/NTSC, HDTV1080
- Computer standard: VGA/SVGA/XGA/SXGA/MAC/Workstation
- RS232/IR/Ethernet controls
- External noise: < 46 dB

3.4.2 Tri-DLP Video/Computer projector – 1920 x 1200 pixels, type 2

The projector must include lenses and a ceiling mount.

- Type: Tri-LCD
- 1920 x 1200 active points matrix/2048 x 1534 compressed points
- Colours: 16.7 million / bandwidth: 300 (600) MHz
- Horizontal frequency: 15 KHz to 100 KHz
- Vertical frequency: 50 to 100 Hz
- Start-up menu: icons, VERY USER FRIENDLY
- Digital functions (Zoom, keystone, PIP)
- Zoom lenses: 1.8–2.5 – min/max size: 1 to 15 metres / Zoom Objective
- Light intensity: 5400 ANSI lumen
- Contrast ratio: 5000:1
- IR/Cable/USB remote
- 1 x 335-watt lamps, UHB, version 5 – 2000/4000 hours
- 1x video input, 1x Y/C input, 1x Data / UXGA input, 1x analog RGBS, 1x HDMI
- Video standard: Pal/Secam/NTSC, HDTV1080, HDTV720
- Computer standard: VGA/SVGA/XGA/SXGA/MAC/Workstation
- RS232/IR/Ethernet controls
- External noise: < 29 dB

3.4.3 Projection screen, type 1, roll-down, 2.40 m x 1.50 m

The screen must include all its accessories, telescopic arms and mounts.

- Size of white fabric 2.40 m (width) x 1.50 m (height)
- Stretched fabric, flat white on a cable
- Thickness: 3 mm
- Gain: x 1.1
- Viewing angle: 50°
- Fabric is water washable, fireproof and perforated
- 220-Volt electric motor, pre-set
- Screen storage system: 20 x 20 x 320 cm – ral 9001

3.4.4 PRO LED/LCD video/computer monitor, type 1

- Screen size: 23 inches – 16/9 format – LED backlighting
- Type: LCD – technology: IPS
- Continuous use: 24/7
- Luminosity: 250 cd/m²
- Contrast ratio: > 1000:1
- H/V viewing angle: 178°
- Resolution: 1920 x 1080 points
- Horizontal frequency: 15 KHz to 80 KHz
- Vertical frequency: 56 to 75 Hz
- 1x WUXGA, 1x DVI, 1x HDMI, 1x Audio
- Sound: 2x 2 watts
- Dimensions: 535 x 390 x 55 mm
- Power consumption: < 22 watts
- Weight: < 6 kg

3.4.5 PRO LED/LCD video/computer monitor, type 2

- Screen size: 24 inches – 16/10 format – LED backlighting
- Type: LCD – technology: IPS
- Continuous use: 24/7
- Luminosity: 250 cd/m²
- Contrast ratio: > 1000:1
- H/V viewing angle: 178°
- Resolution: 1920 x 1200 points
- Horizontal frequency: 15 KHz to 80 KHz
- Vertical frequency: 56 to 75 Hz
- 1x WUXGA, 1x DVI, 1x HDMI, 1x Audio
- Sound: 2x 2 watts
- Dimensions: 535 x 390 x 55 mm
- Power consumption: < 22 watts
- Weight: < 6 kg

3.4.6 PRO LED/LCD video/computer monitor, type 3

- Screen size: 43 inches – 16/9 format – LED backlighting
- Type: LCD – technology: TFT
- Continuous use: 24/7
- Luminosity: 450 cd/m²
- Contrast ratio: > 1000:1
- H/V viewing angle: 178°
- Resolution: 1920 x 1080 points
- Horizontal frequency: 15 KHz to 64 KHz

- Vertical frequency: 50 to 85 Hz
- IR/cable remote
- 1x WUXGA, 1x RGBS analog, 1x DVI, 1x HDMI, 1x SD card, 1x USB, 1x Audio, 1x HDBaseT
- RS232/IR/Ethernet controls
- Sound: 2x 7 watts
- Size: 970 x 560 x 46 mm
- Power consumption: < 80 watts
- Weight: < 11 kg

3.4.7 PRO LED/LCD video/computer monitor, type 4

- Screen size: 49 inches – 16/9 format – LED backlighting
- Type: LCD – technology: TFT
- Continuous use: 24/7
- Luminosity: 450 cd/m²
- Contrast ratio: > 1000:1
- H/V viewing angle: 178°
- Resolution: 1920 x 1080 points
- Horizontal frequency: 15 KHz to 64 KHz
- Vertical frequency: 50 to 85 Hz
- IR/cable remote
- 1x WUXGA, 1x RGBS analog, 1x DVI, 1x HDMI, 1x SD card, 1x USB, 1x Audio, 1x HDBaseT
- RS232/IR/Ethernet controls
- Sound: 2x 7 watts
- Dimensions: 1100 x 640 x 46 mm
- Power consumption: < 90 watts
- Weight: < 16 kg

3.4.8 PRO LED/LCD video/computer monitor, type 5

- Screen size: 55 inches – 16/9 format – LED backlighting
- Type: LCD – technology: TFT
- Continuous use: 24/7
- Luminosity: 450 cd/m²
- Contrast ratio: > 1000:1
- H/V viewing angle: 178°
- Resolution: 1920 x 1080 points
- Horizontal frequency: 15 KHz to 64 KHz
- Vertical frequency: 50 to 85 Hz
- IR/cable remote
- 1x WUXGA, 1x RGBS analog, 1x DVI, 1x HDMI, 1x SD card, 1x USB, 1x Audio, 1x HDBaseT
- RS232/IR/Ethernet controls
- Sound: 2x 7 watts
- Size: 1235 x 710 x 46 mm
- Power consumption: < 110 watts
- Weight: < 19 kg

3.4.9 PRO LED/LCD video/computer monitor, type 6

- Screen size: 60 inches – 16/9 format – LED backlighting
- Type: LCD – technology: UV² A LCD
- Continuous use: 24/7

- Luminosity: 700 cd/m²
- Contrast ratio: > 4000:1
- H/V viewing angle: 178°
- Resolution: 1920 x 1080 points
- Horizontal frequency: 15 KHz to 64 KHz
- Vertical frequency: 50 to 85 Hz
- IR/cable remote
- 1x WUXGA, 1x RGBS analog, 1x DVI, 1x HDMI, 1x DP, 2x Audio
- RS232/IR/Ethernet controls
- Sound: 2x 10 watts
- Dimensions: 1380 x 795 x 40 mm
- Power consumption: < 205 watts
- Weight: < 33 kg

3.4.10 PRO LED/LCD video/computer monitor, type 7

- Screen size: 70 inches – 16/9 format – LED backlighting
- Type: LCD – technology: UV² A LCD
- Continuous use: 24/7
- Luminosity: 700 cd/m²
- Contrast ratio: > 4000:1
- H/V viewing angle: 178°
- Resolution: 1920 x 1080 points
- Horizontal frequency: 15 KHz to 64 KHz
- Vertical frequency: 50 to 85 Hz
- IR/cable remote
- 1x WUXGA, 1x RGBS analog, 1x DVI, 1x HDMI, 1x DP, 2x Audio
- RS232/IR/Ethernet controls
- Sound: 2x 10 watts
- Dimensions: 1580 x 920 x 40 mm
- Power consumption: < 275 watts
- Weight: < 44 kg

3.4.11 PRO LED/LCD video/computer monitor, type 8

- Screen size: 80 inches – 16/9 format – LED backlighting
- Type: LCD – technology: UV² A LCD
- Continuous use: 24/7
- Luminosity: 470 cd/m²
- Contrast ratio: > 5000:1
- H/V viewing angle: 178°
- Resolution: 1920 x 1080 points
- Horizontal frequency: 15 KHz to 64 KHz
- Vertical frequency: 50 to 85 Hz
- IR/cable remote
- 1x WUXGA, 1x RGBS analog, 1x DVI, 1x HDMI, 1x DP, 2x Audio
- RS232/IR/Ethernet controls
- Sound: 2x 10 watts
- Dimensions: 1850 x 1075 x 96 mm
- Power consumption: < 285 watts
- Weight: < 58 kg

3.4.12 PRO LED/LCD video/computer monitor, type 9

- Screen size: 90 inches – 16/9 format – LED backlighting

- Type: LCD – technology: UV² A LCD
- Continuous use: 24/7
- Luminosity: 700 cd/m²
- Contrast ratio: > 5000:1
- H/V viewing angle: 178°
- Resolution: 1920 x 1080 points
- Horizontal frequency: 15 KHz to 64 KHz
- Vertical frequency: 50 to 85 Hz
- IR/cable remote
- 1x WUXGA, 1x RGBS analog, 1x DVI, 1x HDMI, 1x DP, 2x Audio
- RS232/IR/Ethernet controls
- Sound: 2x 10 watts
- Dimensions: 2060 x 1198 x 123 mm
- Power consumption: < 665 watts
- Weight: < 75 kg

3.4.13 LED/LCD TV, type 1

- Screen size: 32 inches – 16/9 format – LED backlighting – Type: LCD – TFT
- Luminosity: 280 cd/m² – dynamic contrast: > 1M: 1 – H/V viewing angle: 178°
- Resolution: 1920 x 1080 points – 400 Hz
- 3x HDMI, 1x SXGA+audio, 1x AVmini, 1x peritel, 2x USB, 1x RJ45, 1x Wlan, 1x RF TNT, 1x RF SAT
- TV system: ATV pal/Secam, DTV DVB-T/T2/C/S/S2+MPEG4
- APPS : Youtube, Facebook, Twitter, web browser, Aquos NET
- DLNA Miracast reader, Widi, WiFi
- Sound: 2 x 8 watts – IR remote
- Dimensions: 730 x 426 x 68 mm – Power consumption: < 70 watts – Weight: < 4.5 kg

3.4.14 LED/LCD TV, type 2

- Screen size: 43 inches – 16/9 format – LED backlighting – Type: LCD – TFT
- Luminosity: 300 cd/m² – Dynamic contrast: > 1M: 1 – H/V viewing angle: 178°
- Resolution: 1920 x 1080 points – 400 Hz
- 3x HDMI, 1x SXGA+audio, 1x AVmini, 1x peritel, 2x USB, 1x RJ45, 1x Wlan, 1x RF TNT, 1x RF SAT
- TV system: ATV pal/Secam, DTV DVB-T/T2/C/S/S2+MPEG4
- APPS: Youtube, Facebook, Twitter, web browser, Aquos NET
- DLNA Miracast reader, Widi, WiFi
- Sound: 2x 8 watts – IR remote
- Dimensions: 966 x 558 x 68 mm – Power consumption: < 70 watts – Weight: < 7.5 kg

3.4.15 LED/LCD TV, type 3

- Screen size: 49 inches – 16/9 format – LED backlighting – Type: LCD – TFT
- Luminosity: 300 cd/m² – dynamic contrast: > 1M: 1 – H/V viewing angle: 178°
- Resolution: 1920 x 1080 points – 400 Hz
- 3x HDMI, 1x SXGA+audio, 1x AVmini, 1x peritel, 2x USB, 1x RJ45, 1x Wlan, 1x RF TNT, 1x RF SAT
- TV system: ATV pal/Secam, DTV DVB-T/T2/C/S/S2+MPEG4
- APPS: Youtube, Facebook, Twitter, web browser, Aquos NET
- DLNA Miracast reader, Widi, WiFi
- Sound: 2x 8 watts – IR remote

- Dimensions: 1099 x 634 x 69 mm – Power consumption: < 150 watts – Weight: < 11 kg

3.4.16 LED/LCD TV, type 4

- Screen size: 55 inches – 16/9 format – LED backlighting – Type: LCD – TFT
- Luminosity: 300 cd/m² – dynamic contrast: > 1M: 1 – H/V viewing angle: 178°
- Resolution: 1920 x 1080 points – 400 Hz
- 3x HDMI, 1x SXGA+audio, 1x AVmini, 1x peritel, 2x USB, 1x RJ45, 1x Wlan, 1x RF TNT, 1x RF SAT
- TV system: ATV pal/Secam, DTV DVB-T/T2/C/S/S2+MPEG4
- APPS: Youtube, Facebook, Twitter, web browser, Aquos NET
- DLNA Miracast reader, Widi, WiFi
- Sound: 2x 8 watts – IR remote
- Dimensions: 1238 x 715 x 70 mm – Power consumption: < 150 watts – Weight: < 15 kg

3.4.17 LED/LCD TV, type 5

- Screen size: 65 inches – 16/9 format – LED backlighting – Type: LCD – TFT
- Luminosity: 400 cd/m² – dynamic contrast: > 1M: 1 – H/V viewing angle: 178°
- Resolution: 3840 x 2160 points – 400 Hz
- 3x HDMI, 1x SXGA+audio, 1x AVmini, 1x peritel, 2x USB, 1x RJ45, 1x Wlan, 1x RF TNT, 1x RF SAT
- TV system: ATV pal/Secam, DTV DVB-T/T2/C/S/S2+MPEG4
- APPS : Youtube, Facebook, Twitter, web browser, Aquos NET
- DLNA Miracast reader, Widi, WiFi
- Sound: 2x 8 watts – IR remote
- Dimensions: 1452 x 8500 x 70 mm – Power consumption: < 180 watts – Weight: < 26 kg

3.4.18 Wall mount, type 1

The tilting wall mount must be attached to the wall (gypsum plasterboard) reinforced by the Contractor to ensure that it is properly secured for all types of monitors weighing less than 50 kg.

- Up/down tilt +/- 15°
- Sturdy metal
- Weight supported: 50 kg

3.4.19 Wall mount, type 2

The tilting wall mount must be attached to the wall (gypsum plasterboard) reinforced by the Contractor to ensure that it is properly secured for all types of monitors weighing less than 100 kg.

- Up/down tilt +/- 15°
- Sturdy metal
- Weight supported: 100 kg

3.4.20 Full-motion wall mount, type 1

The full-motion wall mount must be attached to the wall (gypsum plasterboard) reinforced by the Contractor to ensure that it is properly secured for all types of monitors weighing less than 50 kg.

- Trunnion-style, double articulating
- Right/left swivel +/- 20°

- Up/down tilt +/- 15°
- Sturdy metal
- Weight supported: 50 kg

3.4.21 Full-motion wall mount, type 2

The full-motion wall mount must be attached to the wall (gypsum plasterboard) reinforced by the Contractor to ensure that it is properly secured for all types of monitors weighing less than 100 kg.

- Trunnion-style, double articulating
- Right/left swivel +/- 20°
- Up/down tilt +/- 15°
- Sturdy metal
- Weight supported: 100 kg

3.4.22 ANALOG/DIGITAL matrix

- Inputs: 16x universal 4K (RGB/HDMI/SDI/HDBaseT)
- Outputs: 16x universal 4K (RGB/HDMI/SDI/HDBaseT)
- Transfer rate: 10.2 Gbps
- Deep Color control
- Compatibility: HDCP, EDID, audio 7.1
- Technology: Fast switching 3D + Intelligent EDID
- Bandwidth: 2 GHz
- Input/output connections: HDMI 3.0/WUXGA/HDBaseT/SDI
- RS232 + Ethernet control

3.4.23 DIGITAL matrix, type 1

- Inputs: 8x HDMI
- Outputs: 8x HDMI
- Transfer rate: 6.75 Gbps
- Deep Color control
- Compatibility: HDCP, EDID, audio 7.1
- Technology: Fast switching 3D + Intelligent EDID
- Bandwidth: 2 GHz
- Input/output connections HDMI 3.0
- RS232 + Ethernet control

3.4.24 DIGITAL matrix, type 2

- Inputs: 8x 3G-SDI – 75 ohms
- Outputs: 8x 3G-SDI – 75 ohms
- Genlock: 2x (loop)
- SMPTE standard 259M/344M
- Transfer rate: 540 Mbps
- RS232 + Ethernet control

3.4.25 PC RGB/HV connection interface

- 1 input interface with internal auto-amplified loop
- 2 RGB/HS/VS/CS outputs analog VGA/SVGA/XGA
- Bandwidth: 350 GHz
- Gain adjustment + equalization
- Integrated 100–230 volt power supply
- Computer cable set: 2x VGA/SVGA/XGA/SXGA + audio

- Output connection: HDB15 + 3.5mm mini-jack
- Optional transport case

3.4.26 PC DIGITAL connection interface

- 1 HDMI input interface
- 3 HDMI outputs
- Bandwidth: 2 GHz

3.4.27 Audio extraction interface

- 1 HDMI input interface + audio mini-jack
- 1 HDMI audio output + audio mini-jack
- Bandwidth: 2 GHz
- HDCP compliant, HDTV compatible
- I-EDID Pro detection/automatic RGB/YUV detection
- Audio extraction: ARC and HDMI standard

3.4.28 Video processor/RGB/Digital

- Inputs: AV, YC, DVI, HDMI, RGB/HS/VS analog and DisplayPort
- Outputs: 1x HDMI, AV/YC/RGBS analog, YUV + genlock
- Input frequencies: 15 KHz to 92 KHz, Resolution: 640 to 3840 pixels
- Output frequencies: 15 KHz to 81.5 KHz, Resolution: 640 to 3840 pixels
- Number of colours: 16.7 million, anti-flicker circuit, Zoom function up to 200%
- Image mode: PIP and split-screen
- Image position: adjustable horizontally and vertically
- RS232 + Ethernet control

3.4.29 Digital transmission interface

- Input: 2x HDMI, 1x WUXGA + audio mini-jack
- Output: 1x HDBaseT, 1x HDMI + audio mini-jack
- Resolution: maximum 3840 x 2160p
- Bandwidth: 2 GHz
- HDCP compliant, HDTV compatible
- I-EDID Pro detection/automatic RGB/YUV detection
- Audio extraction: ARC and HDMI standard

3.4.30 Digital receiver interface

- Input: 1x HDBaseT
- Output: 1x HDMI + audio mini-jack
- Resolution: maximum 3840 x 2160p
- Bandwidth: 2 GHz
- HDCP compliant, HDTV compatible
- I-EDID Pro detection / automatic RGB/YUV detection
- Audio extraction: ARC and HDMI standard

3.4.31 Image/sound transmission interface

- Input: 2, 4 and 5 GHz Wi-Fi connection – IEEE 802.11
- Range: > 20 metres
- Output: 1x HDMI + audio mini-jack
- Resolution: Maximum 1920 x 1200p
- Bandwidth: 2 GHz
- Security: WPA2-PSK
- Sources shown: Maximum 2

- Courses connected: Maximum 16 (2 in standard)
- Power consumption < 20 watts – Dimensions: 210 x 155 x 140 mm

3.4.32 Blu-ray player

- Format: Blu-ray, DVD, video CD, audio CD, PAL/NTSC – 720p, 1080i and 1080p
- Standards: DVD, DVD+R, DVD-R, DVD+RW, DVD-RW, CD, CD-R, CD-RW, CD MP3, DivX
- Digital/analog video converter 10 bit at 27 MHz
- Image preset: auto or manual VFP processor
- Variable forward and backward scan, forward and backward slow mode, resume function
- Digital/analog audio converter 24 bits at 96 KHz, dynamic: 108 dBV
- Dolby Digital DTS/MPEG audio output (or equivalent, as approved by DFATD)
- K2 interface 96 KHz, IR and RS232 control
- Video outputs: 1x Y/C, 1x AV, 1x RGB, 1x Component, 1x HDMI
- Audio outputs: 1x G/D, 1x optical digital output, 1x coaxial digital output, 1x headset
- Weight: 6.7 kg

3.4.33 HD camera, type 1

- HDTV resolution: 1920 x 1080p
- Sensor: CMOS 1/2.8" – 2 megapixels progressive
- Optical zoom: 30x
- Shutter: Auto/manual
- White balance: AWB/MWB/One push WB/Indoor/Outdoor/Fluorescent
- Direction/rotation/tilt: 270° horizontal / 110° vertical
- Speed: 150°/second
- RS422/VISCA control
- Presets: 50
- Outputs: 3G-SDI/HDMI/CVBS
- Dimensions: 220 x 180 mm
- Weight: < 3 kg
- Power consumption: < 50 watts

3.4.34 Camera control unit (CCU)

- Number of cameras: Maximum 4
- Standard: VISCA/RS422
- Motor controls: 4x pan/tilt/zoom via joystick
- Camera controls: 4x focus/shutter/50 presets
- Preset call command: 16x
- Mode: Auto/manual focus and shutter/ATW
- LCD screen for viewing settings
- Dimensions: 310 x 190 x 80 mm
- Weight: < 2 kg
- Power consumption: < 30 watts

3.4.35 Digital recorder

- Inputs: 1x HD-SDI + 2x balanced audio
- Outputs: 1x HD-SDI, 1x HDMI + 2x balanced audio
- Resolution: 1920 x 1080p
- Recording standard: HD mode 10/25/35/65/100 Mbps GOP 4:2:4/4:2:2, SD mode 8/15/30/50 Mbps GOP 4:2:0/4:2:2
- Format: MXF/OP1a, MOV, QuickTime

- Control: RS232/422 + GPI interface
- Display: LCD 4x32 characters
- Medium: 2x SATA SSD hard drive – 250 GB
- Mode: Auto/manual focus and shutter/ATW
- LCD screen for viewing settings
- Dimensions: 444 x 44 x 320 mm
- Weight: < 5 kg
- Power consumption: < 20 watts

3.4.36 Virtual TV studio console

- Inputs: 2x HD-SDI, 1x HDMI + 2x balanced audio
- Monitor outputs: 2x HD-SDI
- Control outputs: 2x DVI, 2x HDMI, 1x DisplayPort
- Cutting/editing: Virtual studio with 30 pack + titles and images
- Controls: Camera pan/tilt/zoom + chroma and luma keys
- Recording standard: H254/MPEG2
- Network broadcast: TS HTTP, TS RTP, TS UDT, TS RTSP, FLV HTTP and RTMP Unicast and Multicast
- Social network compatibility: YouTube and Adobe Connect
- Recording medium: HDD 1 TB + SSD 300 GB
- Includes: 3x monitors, 1x fixed HD camera with pan/tilt, 1x mobile camera, 1x lighting set, 1x green key 350 x 250 cm

3.4.37 Video streamer

- Inputs: 1x HD-SDI, 1x HDMI + 1x stereo audio
- Outputs: 1x HD-SDI, 1x HDMI + 1x stereo audio
- Control/broadcast: 1x RJ45 Ethernet 1 Gigabit
- Broadcast: 2x video/audio stream H264
- Effect: split screen / image in image
- Resolution: 1920 x 1080p
- Recording standard: H264 dual stream
- Controls: RS232 and web interface
- Medium: 2x USB + 1x SD card
- Network compatibility: Adobe Flash server, Wowza, VLC multimedia player, Windows Media Player, etc.
- Dimensions: 216 x 160 x 145 mm
- Weight: < 1 kg
- Power consumption: < 45 watts

3.5 Audio specifications

The minimum specifications required for audio are as follows. Type depends on size and grade (standard/normal or professional) specified in Article 3. Description of Rooms.

3.5.1 Amplifier, type 1

- Power: 2x 300/500 watts RMS at 8 Ω or 1x 1380 watts (bridge)
- Balanced stereo input + 6 dB
- Bipolar class AB
- Monitoring of audio sources with protection
- 2x fans
- IN connections: XLR 3-pin
- OUT connections: SpeakON
- Audio distortion: less than 0.008%

- Frequency response: 20 Hz to 20 KHz at +0.5 dB
- Input sensitivity and impedance: 775 mV/20K Ω
- Noise: less than 105 dB
- Power consumption: 1400 watts
- Weight: < 19 Kg

3.5.2 Amplifier, type 2

- Power: 9x 150/200 watts RMS at 8 Ω – class D
- Inputs: 6x stereo audio, 2x digital co-ax, 2x digital optical, 7x HDMI, 2x component
- Outputs: 6x stereo audio, 2x HDMI, 1x component
- Control: RS232 + network
- Processing: Air studio, Dolby Surround(or equivalent, as approved by DFATD), DTS, DTS-HD, DSD, MCACC
- Network compatibility: DLNA FireConnect, Chromecast, Apple AirPlay, Spotify, internet radio
- Built-in radio tuner: AM/FM
- IN connections: CINCH
- OUT connections: screw terminals
- Audio distortion: less than 0.005%
- Frequency response: 20 Hz to 40 KHz at +0.5 dB
- Power consumption: 800 watts maximum
- Weight: < 20 Kg

3.5.3 Amplifier, type 3

- Power: 2x 50/80 watts RMS at 8 Ω
- Inputs: 1x balanced mic, 4x stereo audio
- Outputs: 2x stereo audio
- Control RS232
- IN connections: CINCH
- OUT connections: screw terminals
- Audio distortion: less than 0.05%
- Frequency response: 20 Hz to 40 KHz at +0.5 dB
- Power consumption: 180 watts maximum
- Weight: < 7 Kg

3.5.4 Amplifier, type 4

- Power: 2x 120 watts RMS at 8 Ω
- Balanced stereo input + 6 dB
- Monitoring of audio sources with protection
- IN connections: screw terminals
- OUT connections: screw terminals
- Audio distortion: less than 0.05%
- Frequency response: 20Hz to 20Khz at +0.5 dB
- Power consumption: 240 watts maximum
- Weight: < 2 Kg

3.5.5 Amplifier, type 5

- Power: 2x 40 watts RMS at 8 Ω – class D
- Balanced stereo input + 6 dB
- IN connections: screw terminals
- OUT connections: screw terminals
- Audio distortion: less than 0.05%

- Frequency response: 20 Hz to 20 KHz at +0.5 dB
- Power consumption: 100 watts maximum
- Weight: < 1 Kg

3.5.6 Amplifier, type 6

- Power: 2x 40 watts RMS at 8 Ω – class D
- Multimedia mini-system
- AM/FM radio reception + Internet radio
- CD/MP3 player
- Basis for multimedia player (telephone, iPod, tablet, etc.)
- Audio distortion: less than 0.05%
- Frequency response: 20 Hz to 20 KHz at +0.5 dB
- Power consumption: 90 watts maximum
- Weight: < 3 Kg

3.5.7 Speaker, type 1

- Coaxial two-way flush-mount speaker, 100 volts/16 ohms
- Frequency response: at +/- 3 dB: 80 Hz to 20 KHz
- Sensitivity at 1 metre: 89 dB
- RMS power: 7.5/15/30/60 watts
- Impedance: 16 ohms
- Integrated steel resonance chamber
- Weight: < 4 Kg

3.5.8 Speaker, type 2

- Suspended two-way coaxial speaker, 100 volts/8 ohms
- Frequency response: at +/- 3 dB: 78 Hz to 18 KHz
- Sensitivity at 1 metre: 90 dB
- RMS power: 7.5/15/30/60 watts
- Impedance: 8 ohms
- Polystyrene chamber with fastener for rigging
- Weight: < 4 Kg

3.5.9 Speaker, type 3

- Two-way flush-mount speaker
- Frequency response: at +/- 3 dB: 52 Hz to 20 KHz
- Sensitivity at 1 metre: 87 dB
- RMS power: 10–100 watts
- Impedance: 8 ohms
- Weight: < 1.5 kg

3.5.10 Speaker, type 4

- Visible three-way bass reflex speaker, 8 ohms
- Frequency response: at +/- 3 dB: 50 Hz to 28 KHz
- Sensitivity at 1 metre: 88 dB
- Maximum output: 110 dB
- RMS power: 120 watts
- Impedance: 8 ohms
- Weight: < 13 Kg

3.5.11 Speaker, type 5

- Visible three-way dipole speaker
- Frequency response: at +/- 3 dB: 100 Hz to 28 KHz

- Sensitivity at 1 metre: 85 dB
- Maximum output: 107 dB
- RMS power: 100 watts
- Impedance: 8 ohms
- Weight: < 8 Kg

3.5.12 Speaker, type 6

- Visible three-way bass reflex speaker
- Frequency response: at +/- 3 dB: 60 Hz to 28 KHz
- Sensitivity at 1 metre: 89 dB
- Maximum output: 113 dB
- RMS power: 200 watts
- Impedance: 8 ohms
- Weight: < 18 Kg

3.5.13 Speaker, type 7

- Visible sub-bass speaker
- Frequency response: at +/- 3 dB: 26 Hz to 140 KHz
- Maximum output: 111 dB
- RMS power: 500 watts
- Power consumption: 600 watts
- Weight: < 22 Kg

3.5.14 Speaker, type 8

- Active speaker
- Inputs: XLR symmetrical connector + 6.3 mm jack
- Frequency response: at +/- 3 dB: 80 Hz to 13 KHz
- Adjustable power: 0–10 watts
- Power consumption: 15 watts
- Dimensions: 200 x 120 x 120 mm – Weight: < 2 kg

3.5.15 Digital audio mixer

- Number of inputs: 12x mono symmetrical, Obam, Clink and Telco
- Number of output channels: 12x mono symmetrical, Obam and Clink
- Input impedance: 10 Kohms, 48-volt switchable phantom power supply
- Output impedance: 50 to 600 ohms
- Input gain: -20 to 64 dB
- Output gain: -100 to 20 dB
- Bandwidth: 20 Ghz
- Digital processing: Larsen effect suppression, echo suppression, 1/3 octave EQ filter, adjustable delay, gate, DSp
- Audio distortion: less than 0.006%
- Frequency response: 20 Hz to 22 KHz at 02/-0.3 dB
- Signal-to-noise ratio: greater than 109 dB
- Controls: RS232, network and IN/OUT via DB25
- Power consumption: < 150 watts
- Dimensions: 484 x 350 x 45 mm – Weight: < 6 kg

3.5.16 Analog audio mixer

- Number of inputs 14/4/2
- Number of output channels: 3x XLR channel and stereo jack
- 14x mic/XLR line/6.3 mm jack inputs – impedance 60Ω/2kΩ -6dbV at -20dbV in mic and -30dbV to 10dbV in line

- 3x 6.4 stereo jack and cinch inputs
- Independent volume adjustment for each source via rotating cursor
- OUTPUT volume adjustment
- Display of audio levels on a 4LED bar graph
- Independent overload indicator for each source
- Six-band equalizer
- Audio distortion: less than 0.006%
- Frequency response: 20 Hz to 50 KHz at 0/+1 dB
- Headset jack for monitoring
- Signal-to-noise ratio: greater than 90 dB
- Weight: < 11.10 kg

3.5.17 Wired console microphone, type 1

- Flexible microphone on shock mount
- Length: 30 to 40 cm
- Type: 48-volt electret
- Bandwidth: 40 Hz to 18.000 Hz
- Cell type: Cardioid
- Signal-to-noise ratio: greater than 65 dB
- Maximum distortion: 1%
- Equivalent output noise: 29 dB SPL

3.5.18 Wired hand microphone, type 2

- Bandwidth: 50 Hz to 16.000 Hz
- Cell type: Super-cardioid electret
- Sensitivity: 1.3 mV/Pa (-58 dBV)
- Impedance: 600 ohms
- Connection: XLR symmetrical

3.5.19 UHF digital diversity microphone, type 1 (to be provided with battery and charger)

- Robust handheld microphone pack/transmit + receive on 250 frequencies ADJUSTABLE + AES 256 bit encryption
- Digital audio conversion definition: 24 bit
- Audio dynamic: > 120 dB
- Bandwidth: 40 Hz to 20.000 Hz
- Cell type: Cardioid
- Transmission power: 50 MW/100 metres
- Signal-to-noise ratio: greater than 100 dB
- Maximum distortion: 0.3%
- Output level: -6 dB / 400 mV
- Switchable frequencies: between 470 MHz and 868 MHz
- Connection: XLR and 6.3 mm jack
- Transmission power: 2x 1.5-volt DC AA batteries or lithium-ion battery

3.5.20 UHF digital diversity microphone, type 2 (to be provided with battery and charger)

- Headset/Lavalier microphone, transmit + receive on 250 frequencies ADJUSTABLE + AES 256 bit encryption
- Digital audio conversion definition: 24 bit
- Audio dynamic: > 120 dB
- Bandwidth: 40 Hz to 20.000 Hz
- Cell type: cardioid

- Transmission power: 50 MW/100 metres
- Signal-to-noise ratio: greater than 100 dB
- Maximum distortion: 0.3%
- Output level: -6 dB / 400 mV
- Switchable frequencies: between 470 MHz and 868 MHz
- Connection: XLR and 6.3 mm jack
- Transmission power: 2x 1.5-volt DC AA batteries or lithium-ion battery

3.5.21 UHF digital antenna distributor

- Inputs: 2x BNC coax connectors, 50 ohms
- Outputs: 2x BNC coax, 50 ohms + 14–18 volt power supply
- Operating frequency: 470 to 900 MHz
- Output level: -0.5 to + 3dB
- Power consumption: < 80 watts
- Dimensions: 484 x 190 x 45 mm – Weight: < 2 kg

3.5.22 UHF DIGITAL antenna

- Inputs: 1x BNC coax, 50 ohms
- Adjustable gain: -6 dB to + 12 dB
- Operating frequency: 470 to 790 MHz
- Dimensions: 400x380x35 mm – Weight: < 1 kg

3.5.23 SHF DIGITAL AUDIOCONFERENCE PRESIDENT MICROPHONE (to be provided with battery and charger)

- Goose-neck microphone with base and battery
- 1x speak button/1x priority/mute button
- 128 bit/24 bit encryption
- PDA/GSM anti-interference system
- Standard: ETSI and IEEE 802.1 (AVB)
- Frequency: 2.4–5.2 and 5.8 GHz
- Modulation: DSSS/QPSK/BPSK
- Number of channels: 4
- Bandwidth: 40 Hz to 24.000 Hz
- Cell type: Cardioid
- Transmission power: 20 dB
- Battery: NiMH – 2 Ah

3.5.24 SHF DIGITAL AUDIOCONFERENCE DELEGATE MICROPHONE (to be provided with battery and charger)

- Goose-neck microphone with base and battery
- 1x speak button
- 128 bit/24 bit encryption
- PDA/GSM anti-interference system
- Standard: ETSI and IEEE 802.1 (AVB)
- Frequency: 2.4–5.2 and 5.8 GHz
- Modulation: DSSS/QPSK/BPSK
- Number of channels: 4
- Bandwidth: 40 Hz to 24.000 Hz
- Cell type: Cardioid
- Transmission power: 20 dB
- Battery: NiMH – 2 Ah

3.5.25 Central SHF DIGITAL AUDIOCONFERENCE

- Frequency: 2.4–5.2 and 5.8 GHz
- 128 bit/24 bit encryption
- Standard: ETSI and IEEE 802.1 (AVB)
- Modulation: DSSS/QPSK/BPSK
- Number of channels: 4
- OLED display
- Free/busy channel indicator
- Output: 6.3 mm front jack, XLR symmetrical = Cinch asymmetrical + terminals + 2x RF
- Input:
- Transmission power: 20 dB
- Power supply: 100–240 volts – Consumption: < 25 watts

3.5.26 AUDIOCONFERENCE charging pack

- Number of units: 10
- Charge: 12 volt DC
- Dimensions: 80 x 37 x 76 cm
- Power supply: 100–240 volts – Consumption: < 200 watts

3.5.27 Digital audio recorder

- Number of inputs: 2x analog, 1x SPDIF, 1x AES/EBU
- Number of output channels: 2x XLR channel and stereo jack
- Recording on SD card
- Standard MP2/WAV/MPEG Layer III
- Conversion frequency: 96 KHz PCM and 320/160 Kbps MP3
- Frequency response: 20 Hz to 40 KHz at +/- 1 dB
- OLED display with bar graph
- Control by USB, RS232 and parallel
- Maximum number of audio files: 999
- Headset jack for monitoring
- Signal-to-noise ratio: greater than 96 dB
- Rack format: 19 inches 1 U
- Weight: 3.80 kg

3.5.28 MIDI expansion card

- Inputs: 32x XLR female mono symmetrical
- Outputs: 16x XLR male mono symmetrical
- Ports: 2x AES50, 1x Ultranet, 2x ADAT OUT 2x AES /EBU, 1x USB
- Connection: by Ultranet or MIDI protocol
- Control: by network
- Dimensions: 485x380x135 mm – Weight: < 3 kg

3.6 Centralized Management Specifications

System with a central unit connected to the audiovisual equipment and allowing for the control of the equipment by means of colour touch screens of various sizes, wired or wireless (set up on tables or built into the walls or furnishings).

The central unit must be equipped with various interfaces for such control.

The minimum specifications required for the central units are as follows. Type depends on size and grade (standard/normal or professional) specified in Article 3.Description of Rooms.

3.6.1 Controller, type 1

- Centralized control by means of 3-series multi-task microcomputer
- Internal memory: EEPROM 4 GB/SDRAM 1 GB
- 8x dry on/off contacts
- 6x RS232/RS485/RS422 ports
- 8x IR/serial ports
- 8x digital inputs/outputs
- 2x network
- 1x CNET

3.6.2 Controller, type 2

- Centralized control by means of 3-serial multi-task microcomputer
- Internal memory: EEPROM 4 GB/SDRAM 512 Mb
- 8x dry on/off contacts
- 3x RS232/RS485/RS422 ports
- 8x IR/serial ports
- 8x digital inputs/outputs
- 1x network
- 1x CNET
- 1x external power supply

3.6.3 Controller, type 3

- Centralized control by means of 3-serial multi-task microcomputer
- Internal memory: EEPROM 4 GB/SDRAM 256 Mb
- 2x dry on/off contacts
- 1x RS232/RS485/RS422 ports
- 2x IR/serial ports
- 2x digital inputs/outputs
- 1x CNET
- 1x network and POE power supply

3.6.4 Controller, type 4

- MCU basic – 8 buttons
- Internal memory: EEPROM 64K
- 2x dry on/off contacts
- 1x RS232/RS485/RS422 ports
- 2x IR/serial ports
- 1x network
- 12-volt power supply

3.6.5 Control screen, type 1

- 7-inch touch screen
- Technology: Capacitive
- Brightness: 300 nit/cd/m2 and adjustable contrast by means of a setup menu
- Contrast ratio: 350:1
- Resolution: 800x480p
- 262k – level of colours
- RAM: 1 GB RAM flash memory
- Flash memory: 4 GB
- 5x control buttons
- Ethernet connection: UTP 100 Mb
- H264 compatible

- POE power supply – 48 volts

3.6.6 Control screen, type 2

- 10-inch touch screen
- Technology: Capacitive
- Brightness: 400 nit/cd/m2 and adjustable contrast by means of a setup menu
- Contrast ratio: 800:1
- Resolution: 1280 x 800p
- 16.7M – level of colours
- RAM: 1 GB RAM flash memory
- Flash memory: 4 GB
- 5x control buttons
- Ethernet connection: UTP 100 Mb
- H264 compatible
- POE power supply – 48 volts

3.6.7 Control screen, type 3 (to be provided with base and transmitter/receiver)

- 5.7-inch wireless touch screen
- Technology: Capacitive
- Brightness: 350 nit/cd/m2 and adjustable contrast by means of a setup menu
- Contrast ratio: 800:1
- Resolution: 640 x 480p
- 262k – level of colours
- RAM: 1 GB RAM flash memory
- Flash memory: 4 GB
- 8x control buttons
- Ethernet connection: UTP 100 Mb
- RF connection: 2.4 GHz – 100 MW – 60 metres
- Wi-Fi connection – IEEE 802.11B/g/n – 15 metres
- H264 compatible
- POE power supply – 48 volts

3.6.8 Control screen, type 4 (to be provided with base and transmitter/receiver)

- 8.7-inch wireless touch screen
- Technology: Capacitive
- Brightness: 300 nit/cd/m2 and adjustable contrast by means of a setup menu
- Contrast ratio: 700:1
- Resolution: 1008x588p
- 16.7M – level of colours
- RAM: 1 GB ram flash memory
- Flash memory: 4 GB
- Ethernet connection: UTP 100 Mb
- RF connection: 2.4 GHz – 100 MW – 60 metres
- Wi-Fi connection – IEEE 802.11B/g/n – 15 metres
- H264 compatible
- POE power supply – 48 volts

3.6.9 Control screen, type 5 (to be provided with base and transmitter/receiver)

- 9.7-inch wireless touch screen
- Technology: Infrared
- Brightness: 300 nit/cd/m2 and adjustable contrast by means of a setup menu
- Contrast ratio: 800:1

- Resolution: 2048 x 1536p
- 16.7M – level of colours
- RAM: 2 GB RAM flash memory
- Flash memory: 16 GB
- Wi-Fi connection – IEEE 802.11B/g/n – 15 metres
- H264 compatible
- 5-volt power supply

3.7 **Stage and Architectural Lighting and Rigging Specifications**

All projectors/lights described are based on the DMX, DALI or 230-volt model. They are all LED technology and controlled by professional consoles that allow for the application of scenarios and the control of several lights simultaneously, both in terms of brightness and colour.

Rigging/perches and the various opticals/lenses are also described.

The minimum specifications required for lighting are as follows. Type depends on size and grade (standard/normal or professional) specified in Article 3.Description of Rooms.

3.7.1 **Projector, type 1 (to be provided with a 5-50° lens and accessories, cables and mount)**

- Technology: 60x LED 7 colours – 20,000 hours
- IP20/CE compliant
- Brightness: 0–5800 lumens
- Colour standard: 3000°K, 5600°K, L179, L010, L106, R05, L194, R54, L019, R08, R89, L213, R80, L202, L328, R3314
- CQS: 88–91
- CMX in/out control – 6 to 10 channels (modes: general, stage, XT arch, high impact, studio, RGB, HIS, HSIC, Plus7, strobe, etc.)
- Power supply: 100–240 volts AC, 50/60 Hz
- Power consumption: < 180 watts
- Weight: < 10 Kg

3.7.2 **Projector, type 2 (to be provided with a 5-50° lens and accessories, cables and mount)**

- Technology: 40x LED 7 colours – 50,000 hours
- IP66/CE compliant
- Brightness: 0–5000 lumens
- Colour standard: 3000°K, 5600°K, L179, L010, L106, R05, L194, R54, L019, R08, R89, L213, R80, L202, L328, R3314
- CQS: 89–94
- CMX in/out control – 6 to 10 channels (modes: general, stage, XT arch, high impact, studio, RGB, HIS, HSIC, Plus7, strobe, etc.)
- Power supply: 100–240 volts AC, 50/60 Hz
- Power consumption: < 150 watts
- Weight: < 8 Kg

3.7.3 **Projector, type 3 (to be provided with accessories)**

- Technology: 3x LED – 50,000 hours – 3000°K
- Brightness: 0–630 lumens
- Control: Light variation by means of PWM power supply 0–230 volts AC
- Lens: Sperolit 30° flood
- Orientation: 0° to 90°
- Fastening: Clip on rail

- Power supply: 0–240 volts AC, 50/60 Hz
- Power consumption: < 10 watts
- Weight: < 1 Kg

3.7.4 Optics, type 1 (to be provided with accessories)

- Technology: EDLT lens tube
- Projection angle: 19°
- Colour: Black
- Weight: < 3 Kg

3.7.5 Optics, type 2 (to be provided with accessories)

- Technology: EDLT lens tube
- Projection angle: 26°
- Colour: Black
- Weight: < 3 Kg

3.7.6 Optics, type 3 (to be provided with accessories)

- Technology: EDLT lens tube
- Projection angle: 36°
- Colour: Black
- Weight: < 3 Kg

3.7.7 Optics, type 4 (to be provided with accessories)

- Technology: EDLT lens tube
- Projection angle: 50°
- Colour: Black
- Weight: < 3 Kg

3.7.8 Optics, type 5 (to be provided with accessories)

- Technology: EDLT ZOOM lens tube
- Projection angle: 25 to 50°
- Colour: Black
- Weight: < 5 Kg

3.7.9 Optics, type 6 (to be provided with accessories)

- Technology: FRESNEL lens adaptor
- Colour: Black
- Weight: < 5 Kg

3.7.10 Optics, type 7 (to be provided with accessories)

- Technology: CYCLO adaptor
- Colour: Black
- Weight: < 5 Kg

3.7.11 Optics, type 8 (to be provided with accessories)

- Technology: Secondary lens medium oval beam
- Angle: 30°x70° – 19 mm
- Colour: Black
- Weight: < 3 Kg

3.7.12 Optics, type 9 (to be provided with accessories)

- Technology: secondary lens marginal oval beam
- Angle: 35°x80° – 19 mm
- Colour: Black

- Weight: < 3 Kg

3.7.13 Lighting console, type 1

- Controls: 65,000 parameters simultaneously/245 DMX/4096 http/LTP
- Outputs: 6x DMX
- Console: 1x 9" touch screen + 15x cursor + 32-key control keyboard + 2x motorized cursor – Wi-Fi control by tablet
- Display: 1x internal 15" monitor + 2x external outputs
- Connections: 6x XLR5 out, 1x XLR5 IN, 2x Ethernet, 1x remote HDB25, 1x MAlink, 2x USB, 2x MIDI, 1x XLR3 audio IN
- Power consumption: < 360 watts
- Power supply: 230 volts AC
- Dimensions 940 x 660 x 250 mm
- Weight: < 32 Kg

3.7.14 Lighting console, type 2

- Controls: 65,000 parameters simultaneously/256 DMX/4096 http/LTP
- Outputs: 6x DMX
- Console: 1x 7" touch screen + Wi-Fi control by tablet
- Display: 2x external outputs
- Connections: 6x XLR5 out, 1x XLR5 IN, 2x Ethernet, 1x remote HDB25, 1x MAlink, 2x USB, 2x MIDI, 1x XLR3 audio IN
- Power consumption: < 1700 watts
- Power supply: 230 volts AC
- Dimensions; 485 x 380 x 126 mm
- Weight: < 12 Kg

3.7.15 Rigging/perch, type 1

Including beam and concrete slab fasteners, control/power cables, safety line and accessories.

- Length: 330 cm
- Equipment: 6x Schuko 230 volts AC (or equivalent, as approved by DFATD), 1x XLR DMX + safety lines
- Diameter: 50 mm
- Weight supported: 250 kg

3.7.16 Rigging/perch, type 2

Including beam and concrete slab fasteners, control/power cables, safety line and accessories.

- Length 1000 cm
- Equipment: 18x Schuko 230 volts AC (or equivalent, as approved by DFATD), 3x XLR DMX + safety lines
- Diameter: 50 mm
- Weight supported: 1000 kg

3.8 Audiovisual Rack

- i. The minimum specifications required for audiovisual racks are as follows. Type depends on size and grade (standard/normal or professional) specified in section 3.Description of Rooms.

- ii. The control cabinets must be 19-inch format and be 24, 36 and 42 units in height, and their depth must not exceed 70 cm. They must have lateral detachable panels, rear cable harnesses, a locking glass door, and a locking rear door.

3.8.1 Audiovisual rack, type 1

- Height: 190 cm – 40/42 units
- Depth: 60 cm, Width: 60 cm
- Vented top
- Multiple, adjustable vented shelves
- Steel reinforced front, rear and side panels with locking mechanisms
- 19-inch rear and front lateral rails
- Locking glass door with glass
- Sturdy key lock
- Rear cable harness

3.8.2 Audiovisual rack, type 2

- Height: 110 cm – 20/22 units
- Depth: 60 cm, Width: 60 cm
- Vented top
- Multiple, adjustable vented shelves
- Steel reinforced front, rear and side panels with locking mechanisms
- 19-inch rear and front lateral rails
- Locking steel door with glass
- Sturdy key lock
- Rear cable harness

3.8.3 Audiovisual rack, type 3

- Height: 60 cm – 10/12 units
- Depth: 40 cm, Width: 60 cm
- Vented top
- Multiple, adjustable vented shelves
- Steel reinforced front, rear and side panels with locking mechanisms
- Locking steel door with glass
- Sturdy key lock

3.9 Removable Exhibit Room Panel

- i. The proposed panels must be of a maximum height of 3 m with a minimum width of 1 m. They must be able to be assembled side by side, on right angles or on specific angles (0° to 180°). They must be self-supporting and easy to use.
- ii. They are intended for hanging works (paintings, photographs, possible light sculptures, etc.) and must be easy to take down/set up and transportable to a storage room.

3.10 Optional Technical Items

These items are optional and will be confirmed as per Article **SCC32** of the Contract.

3.10.1 Polarized opaque film specifications (Smart Glass)

Some meeting rooms are equipped with a polarized opaque film. When powered, the film is transparent.

3.10.1.1 Opaque film

- Technology: PLCD

- Colour: Flat white
- Thickness: 0.5 mm
- Dimensions: 1200 x 5000 mm
- Transparency: 90% when powered and 10% when disconnected.
- UV absorption: 95%
- Switching time: 40 milliseconds
- Power consumption: < 6 watts / m2
- Power supply: 60 volts AC

3.10.2 Maintenance Package

A maintenance contract is required for three (3) years. It must include:

- Telephone helpdesk support within one working hour during business hours.
- onsite support within 48 hours during business days and hours.
- an annual preventative maintenance visit once every twelve months.
- an annual maintenance visit report on the audiovisual equipment. The report must be submitted as a PDF copy by email and a hard copy sent to the DFATD Representative.
- minimum one (1) year manufacturer warranty for all products.

3.11 Tools

3.11.1 The Contractor must provide all tools, equipment and testing devices to implement all aspects of the installation.

3.11.2 The Contractor must provide all ladders, lifting devices and scaffolding as required to install equipment.

3.11.3 The Contractor must provide transportation of the installation team and small equipment for the duration of the onsite work.

4. Conditions and Security

4.1 Permits, Codes and Regulations

4.1.1 The Contractor must obtain at no additional expense to DFATD all permits, registrations, licenses, and insurance necessary to execute the work in compliance with all applicable regulations.

4.1.2 The Contractor must perform the work in compliance with all relevant codes and regulations, including those pertaining to worker safety.

4.2 Security

4.2.1 The Contractor must be responsible for security of all personal items as well as supplied equipment and materials until installed into final locations.

4.2.2 Each proposed technician will be supervised by a cleared Canadian security officer when working in the operational or secure zones of the new Chancery.

4.3 Materials Control

4.3.1 The Contractor must be responsible for storing all AV products prior to installation.

4.3.2 DFATD is not responsible for loss of specified system components until permanently fastened to the building or signed over.

4.3.3 All equipment supplied must be new stock.

- 4.3.4 The Contractor must deliver the equipment to the site and provide all hoists and scaffolds necessary to install the equipment.
- 4.3.5 The Contractor must visually inspect all equipment for damage or defects prior to installation. Report all damaged or defective materials to the DFATD Representative.
- 4.3.6 The Contractor must send to the DFATD Representative all statements and correspondence from the Contractor and manufacturers concerning defects or delays.

4.4 Insurance and Safety

- 4.4.1 The Contractor must work in a professional and safe manner. The Contractor must provide equipment such as ladders, extension cords, electric and hand tools, material lifts, personnel lifts and any equipment required for the project.
- 4.4.2 The Contractor must operate all tools and equipment in a proper and safe manner according to manufacturer’s guidelines and construction industry standards.

4.5 Site Access

The Contractor must comply with DFATD’s rules concerning:

- i. Acceptable hours to perform work, Monday to Friday 9:00 to 17:00.
- ii. Security Procedures.
- iii. Parking location: if applicable, fees must remain the Contractors responsibility.
- iv. Materials Storage: the Contractor must remain solely responsible for materials security.
- v. Logistics and Material Handling: the Contractor must provide transport and all material handling equipment for goods to site, coordinating lifts and access etc. with DFATD.
- vi. Sanitary Facilities
- vii. Garbage disposal and associated fees: if applicable, fees are at Contractor’s expense.

Upon acknowledgement of Substantial Completion of the Work, access to the site will be granted only at the discretion of DFATD.

4.6 Conduct of Work

- 4.6.1 The use of impact tools by the Contractor for cutting concrete or for installation of inserts and the use of powder, shot or power-actuated tools is not permitted unless written permission is obtained from DFATD prior to commencing.
- 4.6.2 The Contractor must ensure replacement and / or restoration to original condition any damage or alteration to the building and its contents, e.g. floor, ceiling, walls, furniture, caused by the installation process. Any damage or disfigurement must be remedied at the AV Contractor’s expense.
- 4.6.3 The Contractor must coordinate with the DFATD Representative any sensitive activities, such as high-SPL testing, or special requirements to operate the equipment in potentially unsuitable environmental or power conditions, to maintain the schedule.
- 4.6.4 The Contractor must send to the DFATD Representative all statements and correspondence from AV Contractors and manufacturers concerning defects or delays.
- 4.6.5 The Contractor must confirm all dimensions, distances and placement prior to the installation of equipment. Report any discrepancies to the DFATD Representative prior to installation.

- 4.6.6 The Contractor must maintain an orderly work area and ensure conditions meet industry standards and statutes for safety and work procedures.

4.7 Removal and Disposal of Waste

- 4.7.1 The Contractor must remove and properly dispose of all waste products.
- 4.7.2 The Contractor must abide by project waste disposal procedures as stipulated by the General Contractor.
- 4.7.3 The Contractor must make every effort possible to recycle waste items such as cardboard, metal, plastic etc.

4.8 Contractor Performance

- 4.8.1 The Contractor must provide a complete and working system to comply with the operational capabilities, design and standards of quality stated herein. The Contractor must furnish all equipment, labour and materials required to provide the specified systems, unless otherwise noted herein.
- 4.8.2 If the systems do not fulfill all aspects of this SOW, the Contractor must make any adjustments or any other changes required to bring the installation into conformance with the SOW at no additional cost to DFATD.
- 4.8.3 The Contractor must work in accordance with the best trade practices, fabricate and install all items in accordance with manufacturers' recommendations and the specifications herein. The Contractor must coordinate and consult with the DFATD Representative in order to provide an installation to industry best practices.
- 4.8.4 The Contractor must fully test and calibrate the systems as outlined in this SOW and according to accepted trade practices to the satisfaction of the DFATD Representative.
- 4.8.5 The Contractor must correct deficiencies at no cost to DFATD. Should there be violations or non-compliance to the Codes, the Contractor must correct these at no cost to DFATD. The Contractor must correct the violations within ten days of receiving notice.

4.9 Quality of Installation

- 4.9.1 The Contractor must ensure that the workmanship with reference to this project is of the highest industry standards applicable.
- 4.9.2 The Contractor must provide properly trained, qualified, certified, professional installation technicians and trades people throughout the duration of this project. Individuals working on this project are to be qualified to work with the systems being installed. The Contractor must observe and obey all building codes applicable, safety rules & regulations, and the general rules of the facility as directed. The Contractor must provide the necessary quantity of resources to maintain the schedule.

5. Completion

The scope of work will be considered complete when the following are met:

- i. All equipment is received and installed in place.
- ii. All equipment is powered, clean and fully operational.
- iii. All wiring is completely installed and terminated.
- iv. All signal paths have been tested and functional.

- v. All software, firmware and Operating Systems are setup and functional.
- i. Systems are fully functional.
- ii. Systems have been tested, commissioned and approved by DFATD.
- iii. System manuals and as built drawings have passed review and acceptance by DFATD.
- iv. The User Guides for each system have been delivered and approved by DFATD.
- v. The Training has been delivered to the satisfaction of DFATD.
- vi. The Systems are ready for operation by DFATD.
- vii. All deficiencies have been rectified and signed off by DFATD.

Acceptance of the systems, systems design and performance are at the sole discretion of DFATD.

5.1 Acceptance

The work will be declared complete when systems are fully functional, ready for operation by DFATD and have been tested and commissioned and signed off by the DFATD Representative and DFATD.

6. Project Management

The Contractor must (if requested):

- i. Provide the DFATD Representative with weekly progress reports detailing progress to date and the work planned for the week ahead.
- ii. Attend progress review meetings as directed by the DFATD Representative (weekly).
- iii. Immediately update the DFATD Representative with any issues that require a decision by DFATD to facilitate the installation. To be followed up by email.
- iv. Transmit non-crucial information to the DFATD Representative at any time.
- v. DFATD must authorize all modifications in writing.
- vi. Work through the Contract Authority and in agreement with DFATD on any issues that would modify this contract.

7. Coordination with DFATD and on-site Contractors

- 7.1 The Contractor must coordinate with other onsite contractors and DFATD as applicable.
- 7.2 The Contractor must confirm all mounting locations with the DFATD Representative prior to installation.