

	<p>Centre Industrial Consultancy & Sponsored Research, IIT Madras Chennai 600 036 PURCHASE SECTION Email: tender@imail.iitm.ac.in Telephone:(044) 2257 9763 GSTIN: 33AAAAI3615G1Z6</p>	
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The Senior Manager (Project Purchase)

Date: 15.06.2022

Open Tender Reference No: IT/ICSR/23/2022/HALL2PRO

GEM NAR ID: GEM/GARPTS/26052022/D91EVJK4VN09

Due Date/Time: 05.07.2022@ 3:00 PM

Dear Sir/ Madam,

On behalf of the IC&SR, IIT Madras, Tenders are invited in two bid system from **Class-I local suppliers and Class II local suppliers**, namely technical and financial bids for

**“SUPPLY, INSTALLATION AND COMMISSIONING OF AUDIO AND VIDEO
CONFERCING SYSTEM IN IC&SR of IIT MADRAS AS PER DESIGN “**

conforming to the specifications enclosed in **Annexure ‘1’**

Tender Documents may be downloaded from Central Public Procurement Portal <https://etenders.gov.in/eprocure/app>. Aspiring Bidders who have not enrolled / registered in e-procurement should enroll / register before participating through the website <https://etenders.gov.in/eprocure/app>. The portal enrolment is free of cost. Bidders are advised to go through instructions provided at **“Help for contractors”**. [Special Instructions to the Contractors/Bidders for the e-submission of the bids online through this eProcurement Portal”

Bidders can access tender documents on the website (For searching in the NIC site, kindly go to Tender Search option and type ‘IIT’. Thereafter, click on “GO” button to view all IIT Madras tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <https://etenders.gov.in/eprocure/app> as per the schedule attached.

No manual bids will be accepted. All tender documents including pre-qualification, Technical and Financial bids should be submitted in the E-procurement portal.

Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be placed in the technical part of the bid, wherever applicable. Samples if called for, should be submitted free of charges, and collected back at the supplier’s expenses.

1	<p>LAST DATE for receipt of Tender</p> <p>PRE-BID Meeting</p> <p>Date & Time of opening of Tender</p>	<p>: 05.07.2022@ 3:00 PM</p> <p>: 24.06.2022 @ 3 PM, Hall 2 IC & SR, Before joining this meeting, bidders should send email with details of person who will attend this meeting and their company details along with your queries to tender1@icsrpis.iitm.ac.in on or before 23.06.2022 @ 05:00 PM</p> <p>: 06.07.2022@ 3:00 PM</p>
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GUIDELINES, TERMS AND CONDITIONS OF TENDER

A	Submission of Tender	<p>: As per the directives of Department of Expenditure, this tender document has been published on the Central Public Procurement Portal URL: https://etenders.gov.in/eprocure/app</p> <p>The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal</p> <p>More information useful for submitting online bids on the CPP Portal may be obtained at: https://etenders.gov.in/eprocure/app</p> <p>All tender documents including Technical Bid & Financial Bid should be submitted separately in online CPP portal as per the specified format only. Right is reserved to ignore any tender which fails to comply with the above instructions. No manual bid submission will be entertained.</p>
B	Instructions for online bid submission	<p>: REGISTRATION</p> <ul style="list-style-type: none"> • Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal URL: https://etenders.gov.in/eprocure/app by clicking on “Online Bidder Enrollment”. Enrolment on the CPP Portal is free of charge. • As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts. • Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal. • Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.) https://eprocure.gov.in/eprocure/app with their profile. • Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse. <p>Bidder then may log in to the site through the secured log-in by entering their user ID / password and the password of the DSC / eToken.</p>
C	Searching for tender documents	<p>: </p> <ul style="list-style-type: none"> • There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal. • Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective “My Tender” folder. This would enable the CPP Portal to intimate the bidders through SMS / email in case there is any corrigendum issued to the tender document. • The bidder should make a note of the unique Tender ID assigned to each tender; in case they want to obtain any clarification / help from the Helpdesk.

D	Preparation of bids	: <ul style="list-style-type: none"> • Bidder should take into account any corrigendum published on the tender document before submitting their bids. • Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid. • Bidder, in advance, should prepare the bid documents to be submitted as indicated in the tender document / schedule and generally shall be in PDF / XLS formats as the case may be. Bid documents may be scanned with 100 dpi with black and white option. • To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, GSTIN Details, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “My Documents” area available to them to upload such documents. These documents may be directly submitted from the “My Documents” area while submitting a bid and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.
E	Submission of bids	: <ul style="list-style-type: none"> • Bidder should log into the site well in advance for bid submission so that he/she can upload the bid in time i.e. on or before the bid submission date and time. Bidder will be responsible for any delay due to other issues. • The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document. • A standard BOQ format has been provided in Annexure-5 with the tender document to be filled by all the bidders. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are required to download the BOQ file, open it and complete the detail with their respective financial quotes and other details (such as name of the bidder). If the BOQ file is found to be modified by the bidder, the bid will be rejected. • The server time (which is displayed on the bidders’ dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission. • The Tender Inviting Authority (TIA) will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders due to local issues. • The uploaded tender documents become readable only after the tender opening by the authorized bid openers. • Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details. • Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

F	Assistance to bidders	: <ul style="list-style-type: none"> • Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender. • Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is [0120-4200462, 0120-4001002, 0120-4001005]
G	General Instructions to the Bidders	: <ul style="list-style-type: none"> • The tenders will be received online through portal https://etenders.gov.in/eprocure/app. In the Technical Bids, the bidders are required to upload all the documents in pdf format. • Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through https://etenders.gov.in/eprocure/app • Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site https://etenders.gov.in/eprocure/app under the “Information about DSC”.
2	Marking on Technical Bid	: <ol style="list-style-type: none"> i. The vendor eligibility criteria, scope of work and technical Specification along with bill of materials details for this tender is given in <u>Annexure 1 to 3.</u> ii. The tenderer shall go through the Annexures and submit the technical bid. iii. The Floor plan of Board room is given in <u>Annexure -2</u> iv. The AV Line Diagram is given in <u>Annexure -3.</u> v. The Technical bid should be submitted in the proforma given as per <u>Annexure -4</u> vi. All technical bids should have the page-wise heading as “Technical Bid” and page no. in all pages with seal and signature of authorized signatory. The total no. of pages should be mentioned at the last page of the documents. <p>The technical bid should consist of all technical details along with catalogue/brochure, model number and other technical, commercial terms and conditions. The technical bid should contain only technical details called for in the prescribed proforma along with the supporting documents. No other details apart from the technical details should be submitted in the technical bid. If any deviation in this regard is found in the technical bid submitted, the tender will be summarily rejected.</p>

3	Marking on Financial Bid	: <ol style="list-style-type: none"> i. Financial bid should be submitted in the prescribed proforma format as per <u>Annexure-5</u> in <u>xls format (BOQ)</u> through e-tender only. No manual or other form of submission of Financial Bid will not be entertained. ii. Financial bid should indicate item-wise price <u>for all the items</u> mentioned in the technical bid. iii. Total value in the financial bid should be indicated in figures & words clearly.
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4	<p>EMD: The EMD of Rs.1,60,000 to be transferred to the account details mentioned in Annexure 10 and proof should be enclosed in the Technical Bid. Any offer not accompanied with the EMD shall be rejected summarily as non-responsive.</p> <p>The EMD of the unsuccessful bidders shall be returned within 30 days of the end of the bid validity period. The same shall be forfeited, if the tenderers withdraw their offer after the opening during the bid validity period. The Institute shall not be liable for payment of any interest on EMD.</p> <p>EMD is exempted for Micro and Small Enterprises (MSE) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) and Startups as recognized by Department of Industrial Policy & Promotion (DIPP). (MSE/MSME/DIPP PROOF should be enclosed in the cover containing technical bid).</p>
5	<p>Performance Security: -</p> <p>The successful bidder should submit Performance Security for an amount of 3% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD, FD Receipt in the name of “The Registrar, IIT Madras” from any scheduled commercial bank or Bank Guarantee from any scheduled commercial bank in India. The performance security should be furnished within 14 days from the date of the purchase order.</p> <p>Performance Security in the form of Bank Guarantee: - In case the successful bidder wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed directly to IIT Madras from the Bank.</p> <p>The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.</p>
6	<p>Preparation of Tender: The bidders should submit the bids in two bid system as detailed below.</p> <p>Bid I Technical Bid</p> <p>The technical bid should consist of Pre-Qualification Criteria (Bidder Eligibility Criteria - I & II) and technical specification compliance sheet as per Annexure 4.</p> <p>Bid II Financial Bid</p> <p>The financial bid should be submitted in excel format (BoQ) as per the proforma (Annexure 5) uploaded in the e-Tender web site. The Quoted price should be for supply and installation of the item and inclusive of all cost and statutory levies at IIT Madras..</p>
7	<p>Prices:</p> <ul style="list-style-type: none"> i. The prices quoted must be Nett considering all scope of work, terms & conditions and as per the technical specification mentioned in Annexures 1 -3. The prices quoted by the bidders should be inclusive of GST and other statutory levies. ii. The percentage of tax etc. included in the price should be indicated in clear terms. If the inclusive price is not given, we will treat your offered rate as inclusive rate and comparison be made with others. If at the time of comparison of your offer without taxes etc. is happen to be lowest, you are bound to supply as per the offered rate, i.e. without taxes etc. iii. Prices should be quoted in INR only. <p>All conditional tenders will be summarily rejected.</p>

8	<p>Signing of Tender:</p> <p>The Tender is liable to be rejected if complete information is not given therein or if the particulars and date (if any) asked for in the schedule to the Tender are not fully filled in or not duly signed/authenticated. Specific attention is drawn to the delivery dates and terms and conditions enclosed herewith. Each page of the technical bid required to be signed and bears the official seal of the tenderers.</p> <p>If the application is made by a firm in partnership, it shall be signed (with seal) by all the partners of the firm above their full typewritten names and current addresses or alternatively by a partner holding power of attorney for the firm in which case a certified copy of the power of attorney shall accompany the application. A certified copy of the partnership deed along with current addresses of all the partners of the firm shall also accompany the application.</p> <p>If a limited company or a corporation makes the application, it shall be signed by a duly authorized person holding power of attorney for signing the application, in which case a certified copy of the power of attorney shall accompany the application. Such limited company or corporation may be required to furnish satisfactory evidence of its existence. The applicant shall also furnish a copy of the Memorandum of Articles of association duly attested by a Public notary.</p>
9	<p>Period for which the offer will remain open:</p> <p>The Tender shall remain open for acceptance/validity till: 120 days from the date of opening of the tender. However, the day up to which the offer is to remain open being declared closed holiday for the Indian Institute of Technology Madras, the offer shall remain open for acceptance till the next working day.</p>
10	<p>For the same tender, either the OEM or the authorized dealer/service provider can only quote. But both of them cannot quote separately for the same tender.</p>
11	<p>Public Procurement – Preference to Make in India:</p> <p>This tender will be evaluated based on Public Procurement (Preference to Make in India) DIPP, MoCI Order No. 45021/2/2017-PP (BE II) dated 16th September 2020 and other subsequent orders issued therein. Accordingly, preference will be given to the Make in India products while evaluating the bids, however, it is the sole responsibility of the bidder(s) to specify the product quoted by them is of Make in India product along with respective documentary evidence as stipulated in the aforesaid order in the technical bid itself. Necessary self- certification about the classification of the supplier/bidder as per the above order should be submitted by the bidder in Annexure-6A and 6B. Non-submission of self-certification will lead to rejection of bid out rightly and the bidder will be treated as non-local supplier. The bidder offering imported products will fall under the category of Non-local suppliers. They can't claim themselves as Class-I Local Suppliers/Class-II Local Suppliers by claiming services such as transportation, insurance, installation, commissioning, training and after sales service support like AMC/CAMC etc. as local value addition.</p>

12	<p>PRE-QUALIFICATION CRITERIA</p> <p>Bidder Eligibility Criteria I:</p> <ol style="list-style-type: none"> 1. Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P-45021/2/2017-PP (BE II) dated 16th September 2020 and other subsequent orders issued therein, shall be eligible to bid in this tender. Declaration for Class-I and Class-II local suppliers should be submitted in the prescribed proforma format as per Annexure-6. 2. Bidder should confirm their acceptance that they comply with the provisions with report to “Guidelines for eligibility of a bidder from a country which shares a land border with India as detailed at Annexure-7. The bidder should submit Certificate for “Bidder from/ Not from Country sharing Land border with India & Registration of Bidder with Competent Authority” as per Order of DoE F.No.6/18/2019-PPD dated 23.07.2020 as mentioned. <p>Bidder Eligibility Criteria II:</p> <ol style="list-style-type: none"> 1. The firm should not have been blacklisted / debarred by any Government/ regulatory bodies in India. A self-declaration format given in Annexure – 8 2. The bidder should submit OEM authorization for all Make/brand of item for which they are submitting the bid (format is given in Annexure-9) 3. The bidder should have similar experience in the last 3 years (2019, 2020 and 2021) in Govt. Institutions/any of Central PSU’s / any of central Government/ autonomous bodies/reputed firms in executing the following works (any one category). <ol style="list-style-type: none"> i) Two (2) similar contracts each costing not less than Rs. 30 Lakhs (Or) ii) One (1) similar contract costing not less than Rs. 50 Lakhs <p>Copies of the documents listed below should be submitted as a proof for the above work experience:</p> <ol style="list-style-type: none"> i) Purchase Order ii) Work Completion Certificates iii) User Performance Certificate from End User 4. The bidder shall have an annual financial turnover of not less than Rs. 2 Crores (Rupees two Crores only) during any two of the last three financial years i.e. 2019-20, 2020-21 and 2021-2022. (Financial statements / certificates issued by Chartered Accountant should be submitted as proof).
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13	<p>Terms of Delivery:</p> <p>Supplier will be fully responsible for the safe carriage, Installation/Commissioning of goods up to the IC&SR, IIT Madras or named place as per PO, Insurance coverage will be in the scope of the supplier. The tenderer should indicate clearly the time required for delivery of the item (subject to the approval of the Executive Committee-IIT-Madras). In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.</p> <p>In the event of delay or non-supply of materials/execution of Contract beyond the date of delivery/completion of job. The penalty will be levied @1% per week of delay subject to a max of 10% of the value of purchase order and if the delay is more than accepted time frame by IIT M, the PO would be partially or fully cancelled and liquidated damages will be enforced accordingly.</p>
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14	<p>Evaluation of Bids:</p> <p>Bid evaluation will take place in two stages.</p> <p>Stage I: Technical Bid evaluation</p> <ol style="list-style-type: none"> 1. Bidder Eligibility Criteria-I will be evaluated first and those bidders who have complied with this criteria alone be evaluated for the Bidder Eligibility Criteria-II and technical Specification evaluation. 2. In the 2nd stage, the Bidder Eligibility Criteria-II and the technical specification offered by the bidders will be evaluated by the technical committee for compliance. The proposed technical specification offered by the bidder should be equivalent or higher to the specifications mentioned in the technical bid. 3. All bidders who have fully complied with Bidder Eligibility Criteria I, II and technical evaluation will only be considered for opening of financial bid. <p>Stage II: Financial Bid Evaluation</p> <p>The financial bid evaluation will be based on price quoted by the bidder (BoQ). The tender will be awarded to the overall L1 bidder for the total work (Comprising all items).</p>
15	<p>Selection of successful bidder and Award of Order</p> <p>The order will be directly awarded to the technically qualified bidder as per the condition in para 3A of DIPP, MoCI Order No. 45021/2/2017-PP (BE II) dated 16th September 2020.</p>
16	<p>Delivery Period: The Items should be delivered within 6 - 8 weeks of issue of Purchase Order. Please indicate the actual delivery period clearly. No further extension of time will be allowed.</p>
17	<p>Payment:</p> <ul style="list-style-type: none"> • No Advance Payment will be made for Indigenous purchase. • Payment will be made only after supply and satisfactory installation.
18	<p>Warranty and Support:</p> <ul style="list-style-type: none"> • All items must have a comprehensive warranty and support for 3 years • The solution provider is responsible for 3 years' service support and in case of any emergency the solution provider should provide engineers on site. • Comprehensive AMC for 4th and 5th years for active components can be quoted as separate line item, this may be quoted as optional.
19	<p>Terms and conditions:</p> <p>Failure to comply with any of the instructions stated in this document or offering unsatisfactory explanations for non-compliance will likely to lead to rejection of offers.</p>
20	<p>Right of Acceptance: IIT MADRAS reserves the right to reject the whole or any part of the Tender without assigning any reason or to accept them in part or full.</p>
21	<p>Transit Insurance: The Purchaser will not pay separately for Transit Insurance.</p>
22	<p>In terms of Rule 173 (iv) of General Financial Rules, 2017 the bidder shall be at liberty to question the bidding conditions, bidding process and/or rejection of its bid.</p>
23	<p>Conditions of contract:</p> <p>Tenderer should quote on the basis of the conditions referred to in Para of the invitation to tender and tender papers. In case these terms and conditions are not acceptable to the tenderer, he should specifically state the deviation(s) there from in the body of the tender.</p>
24	<p>Tenderer shall submit along with this Tender:</p> <p>Name and full address of the Banker and their swift code and PAN No. and GSTIN number.</p>

25	<p>Disputes and Jurisdiction:</p> <p>Settlement of Disputes: Any dispute, controversy or claim arising out of or in connection with this PO including any question regarding its existence, validity, breach or termination, shall in the first instance be attempted to be resolved amicably by both the Parties. If attempts for such amicable resolution fails or no decision is reached within 30 days whichever is earlier, then such disputes shall be settled by arbitration in accordance with the Arbitration and Conciliation Act, 1996. Unless the Parties agree on a sole arbitrator, within 30 days from the receipt of a written request by one Party from the other Party to so agree, the arbitral panel shall comprise of three arbitrators. In that event, the supplier will nominate one arbitrator and the Project Coordinator of IITM shall nominate an arbitrator. The Dean IC&SR will nominate the Presiding Arbitrator of the arbitral tribunal. The arbitration proceeding shall be carried out in English language. The cost of arbitration and fees of the arbitrator(s) shall be shared equally by the Parties. The seat of arbitration shall be at IC&SR IIT Madras, Chennai.</p> <p>a. The Applicable Law: The Purchase Order shall be construed, interpreted and governed by the Laws of India. Court at Chennai shall have exclusive jurisdiction subject to the arbitration clause.</p> <p>Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.</p>
26	<p>Force Majeure:</p> <p>The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.</p> <p>For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.</p> <p>If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.</p>
27	<p>Risk Purchase Clause: In event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from the other source on the total risk of the supplier under risk purchase clause</p>
28	<p>All information including selection and rejection of technical or financial bids of the prospective bidders will be communicated through e-Tender portal. In terms of Rule 173(iv) of General Financial Rule 2017, the bidder shall be at liberty to question the bidding conditions, bidding process and/or rejection of bids.</p>
29	<p>The tenderer shall certify that the tender document submitted by him / her are of the same replica of the tender document as published by IIT Madras and no corrections, additions and alterations made to the same. If any deviation found in the same at any stage and date, the bid / contract will be rejected / terminated and actions will be initiated as per the terms and conditions of the contract.</p>
30	<p>Due to Covid-19 pandemic the bidders will not be entertained to participate in opening of Bids. Since the tender is e-tender, the opening of the bids may be checked using the respective logins of the bidders.</p>

ACKNOWLEDGEMENT

It is hereby acknowledged that I/We have gone through all the points listed under “Specification, Guidelines, Terms and Conditions” of tender document. I/We totally understand the terms and conditions and agree to abide by the same.

**SIGNATURE OF TENDERER ALONG WITH SEAL
OF THE COMPANY WITH DATE**

ANNEXURE – 1

SUPPLY, INSTALLATION AND COMMISSIONING OF AUDIO AND VIDEO CONFERCING SYSTEM IN IC&SR CONFERENCE ROOM OF IIT MADRAS

(A) PRE-QUALIFICATION CRITERIA

1. Bidder Eligibility Criteria I:

1.1 Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P-45021/2/2017-PP (BE II) dated 16th September 2020 and other subsequent orders issued therein, shall be eligible to bid in this tender. Declaration for Class-I and Class-II local suppliers should be submitted in the prescribed proforma format as per **Annexure-6**

1.2 Bidder should confirm their acceptance that they comply with the provisions with report to “Guidelines for eligibility of a bidder from a country which shares a land border with India as detailed at **Annexure-7**. The bidder should submit Certificate for “Bidder from/ Not from Country sharing Land border with India & Registration of Bidder with Competent Authority” as per Order of DoE F.No.6/18/2019-PPD dated 23.07.2020 as mentioned.

2. Bidder Eligibility Criteria II:

2.1 The firm should not have been blacklisted / debarred by any Government/ regulatory bodies in India. A self-declaration format given in **Annexure – 8**

2.2 The bidder should submit OEM authorization for all Make/brand of item for which they are submitting the bid (format is given in **Annexure-9**).

2.3 The bidder should have similar experience in the last 3 years (2019, 2020 and 2021) in Govt. Institutions/any of Central PSU's / any of central Government/ autonomous bodies/reputed firms in executing the following works (any one category).

i) Two (2) similar contracts each costing not less Rs. 30 Lakhs

(Or)

ii) One (1) similar contract costing not less than Rs. 50 Lakhs

Copies of the documents listed below should be submitted as a proof for the above work experience:

i) Purchase Order

ii) Work Completion Certificates

iii) User Performance Certificate from End User

2.4 The bidder shall have an annual financial turnover of not less than Rs. 2 Crores (Rupees two Crores only) during any two of the last three financial years i.e., 2019-20, 2020-21 and 2021-2022. (Financial statements / certificates issued by Chartered Accountant should be submitted as proof)

(B) SCOPE OF WORK

1. The tender is called for supply, installation and commissioning of Audio and Video conference system in IC&SR Conference Room, Hall 2

2. The bidder is required to commission the Audio and Video conference system as per our design (**Annexure 2 and 3**) and specification given below:

- Board room should have three displays one 98” and two 75”, one 98” in centre for presentation and other two 75” left and right for video display
- The speakers and the array microphones should be placed below in the false ceiling
- The 75” two side displays should operate for rear participant Viewing comfort
- Each array microphone should have eight separate lobes
- The Chairman chair should have the separate monitor for content viewing and should be able to enable / disable the lobes of the array microphones using iPAD
- The operator in the control room also should be able to enable / disable the lobes of the array microphones using iPad
- Conference room should be enabled with soft conferencing facility via dedicate PC with camera covering the participants
- Any participant in the board room should be able to connect wirelessly their electronic gadgets like laptops for the presentation.

3. Any change in the above design is not permitted

4. The bidder can be an OEM or an authorized dealer (format is given in **Annexure-9**)

5. The floor plan of the board room is given in **Annexure – 2**.

6. The AV Line Diagram is given in **Annexure -3**.

7. The desired brand of materials required to be used by the successful bidder with quantity in the proposed audio, video system is given in the list of Bill of Materials. The vendor should not alter the Quantity mentioned in the BOM.

8. The bidder should use the Quantity mentioned in the Bill of Material for designing and should choose any of one of the mentioned brands/make of items as per BOM.

9. Any other brand other than what mentioned in BOM will not be accepted.

10. The audio and video conferencing system should be commissioned with acoustics and the whole system should be fine-tuned for excellent output.

(C) BILL OF MATERIAL

Sr#	Description	Make	UoM	Qty
1	98" UHD display	SAMSUNG/LG/PANASONIC	Nos.	2
2	75" UHD display	SAMSUNG/LG/PANASONIC	Nos.	2
3	21.5" FHD Monitor	DELL/ HP/ ACER	No.	1
4	24 Port Layer 3 Managed Gigabit Switch	CISCO/EXTREME	No.	1
5	Full HD PTZ Camera	SONY/ LUMENS/ VADDIO	Nos.	3
6	8x6 Matrix Switcher	AMX/EXTRON/LIGHTWARE	No.	1
7	HDMI Catx Transmitter (Box Type)	AMX/EXTRON/LIGHTWARE	Nos.	6
8	HDMI Catx Transmitter (Box Type)	AMX/EXTRON/LIGHTWARE	Nos.	8
9	HDMI Wall plate	AMX/EXTRON	Nos.	2
10	4K HDMI Seamless Multiview Presentation Matrix Switcher cum Scaler with USB Capture card	HALL TECHNOLOGIES/CRESTRON/EXTRON	No.	1
11	Ceiling Microphone	SHURE/SENNHEISER/AUDIO TECHNICA	Nos.	6
12	Digital Signal Processor	QSC/BIAMP/BSS	Nos.	2
13	Ceiling Loudspeakers with Intelligent DC	MEYERSOUND/QUEST	Nos.	10
14	Pendant Kit for Ceiling Loudspeakers with Intelligent DC	MEYERSOUND/QUEST	Nos.	10
15	8 Port Intelligent DC Power Supply	MEYERSOUND/QUEST	No.	1
16	2 Port Intelligent DC Power Supply	MEYERSOUND/QUEST	No.	1
17	10.2" iPad 64 GB with Wi-Fi	APPLE	No.	1
18	iPad Base Station	HECKLER/ IPORT	No.	1
19	iPad Base Sleeve	HECKLER/ IPORT	No.	1
20	Dual Band Wi-Fi Access Point	CISCO/TP LINK	No.	1
21	DALI Lighting Controller with Keypad	CRESTRON/LUTRON	No.	1
22	Ethernet and RS232 Interface to integrate third Party Control System	CRESTRON/LUTRON	No.	1
23	Digital I/O Control Module	AMX/EXTRON	Nos.	3
24	Power Supply and Distribution Hub for I/O Control Module	AMX/EXTRON	No.	1
25	6 Feet HDMI Male to Male Cable	EXTRON/KRAMER	Nos.	19
26	HDBaseT Cable	EXTRON/KRAMER	Meters	600
27	Crimp Style RJ45 Connectors	EXTRON/KRAMER	Nos.	60
28	Twisted pair cable for Signal & Control (Cat - 6/7)	COMMSCOPE/KRAMER	Meters	100
29	Audio 2 Shielded Pair Cable	EXTRON/KRAMER	Meters	300
30	24 Port Patch Panel	COMMSCOPE/EQUIVALENT	No.	1
31	6 feet USB 2.0 A Male to B Male Cable	EXTRON/KRAMER	No.	1
32	6 feet USB 3.0 A Male to B Male Cable	EXTRON/KRAMER	Nos.	3

33	10 Feet Male to Female USB 3.0 Active Extender Cable	EXTRON/KRAMER	Nos.	2
34	50 Feet Male to Female USB 2.0 Active Extender Cable	EXTRON/KRAMER	No.	1
35	2 Conductor 18 AWG, 1 Pair 22 AWG	BELDEN/ SIEMON	Meters	240
36	3 Feet USB 3.1 USB-C Male to USB-A Male Cable	EXTRON/KRAMER	Nos.	2
37	6 Feet USB. 3.0 Type-A male to Type-A male cable	EXTRON/KRAMER	Nos.	2
38	Required AV Connectors and long run cables	NEUTRICK/AMPHENOL	Lot	1
39	17U AV Rack with 650mm Depth	VALRACK/VERO PRESIDENT	No.	1
	Power Distribution Unit Vertical		No.	1
	Rack Shelf		Nos.	3
	1U - Blank Spacer		Nos.	3
	Rack Equipment Cooling Fan		Set	2
	Castor Wheels with Lock		Set	2
40	Heavy Duty Wall Mount for 98" Display	B-TECH/CHIEF/EQUIVALENT	Nos.	2
41	Heavy Duty Wall Mount for 75" Display	B-TECH/CHIEF/EQUIVALENT	Nos.	2
42	Wall Mount Kit for Camera	INTEGRATOR/CUSTOM	Nos.	3
43	Table Tilt Mount Kit for 21" Monitor	INTEGRATOR/CUSTOM	No.	1
44	Under Desk Mount for Wireless Presenter	INTEGRATOR/CUSTOM	No.	1
45	Supply, Installation & Commissioning, Documentation & User Orientation Charges	INTEGRATOR/SERVICES	LS	1

(D) DETAILED TECHNICAL SPECIFICATIONS

98" & 75" UHD Display:-

Item Reference	1 & 2
Item Description	98" & 75" UHD display
Make/Brand	SAMSUNG/LG/PANASONIC
Minimum Performance Parameters	
Panel	
Diagonal Size	98" & 75"
Type	Direct LED BLU
OS	Tizen
Resolution	3840*2160 (4K UHD)
Pixel Pitch(mm)	0.562 x 0.562 (mm)
Active Display Area(mm)	2158.848(H) x 1214.352(V)
Brightness (Typ.)	500 nits
Contrast Ratio	1200:1
Viewing Angle(H/V)	178/178
Response Time(G-to-G)	8ms (Typ.)
Display Colors	16.7M
Color Gamut	72 Percent
Operation Hour	24/7
Display	

Dynamic C/R	Mega
H-Scanning Frequency	30 ~ 81kHz
V-Scanning Frequency	48 ~ 75Hz
Maximum Pixel Frequency	594MHz
Input Connectivity	
RGB	DVI-D, Display Port 1.2 (1)
Video	HDMI 2.0 (2)
HDCP	HDCP2.2
Audio	Stereo mini-Jack, DVI, HDMI
USB	USB 2.0 x 2
Output Connectivity	
RGB	HDMI 2.0 (Loop-out)
Audio	Stereo mini-Jack
External Control	RS232C(in/out) thru stereo jack, RJ45
External Sensor	IR
Power	
Power supply	AC 100 - 240 V, 50/60 Hz

21.5" FHD Monitor: -

Item Reference	3
Item Description	21.5" FHD Monitor
Make/Brand	DELL/ HP/ ACER
Minimum Performance Parameters	
Panel	
Diagonal Size	21.5"
Type	IPS
Aspect Ratio	16:09
Resolution Native	FHD (1920 x 1080)
Pixel Pitch(mm)	0.248 mm
Active Display Area(cm)	47.6(H) x 26.78(V)
Brightness (Typ.)	300 nits
Contrast Ratio	1000:1
Response Time(G-to-G)	5ms
Panel	Anti-Glare Panel
Display	
H-Scanning Frequency	30 ~ 86KHz
V-Scanning Frequency	48 ~ 75Hz
Input Connectivity	1 VGA; 1 HDMI 1.4 (with HDCP support)
Power	
Power supply	100-240 C 50/60 Hz

24 Port Layer 3 Managed Gigabit Switch with one year support:-

Item Reference	4
Item Description	24 Port Layer 3 Managed Gigabit Switch with one year support
Make/Brand	CISCO/EXTREME
Minimum Performance Parameters	
USB slot	
Spanning Tree Protocol	Standard 802.1d Spanning Tree support Fast convergence using 802.1w (Rapid Spanning Tree [RSTP]), enabled by default. Multiple Spanning Tree instances using 802.1s (MSTP); 8 instances are supported. Per-VLAN Spanning Tree Plus (PVST+) and Rapid PVST+ (RPVST+); 126 instances are supported
Port grouping	Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) <ul style="list-style-type: none"> ● Up to 8 groups ● Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation
Multicast TV VLAN	Multicast TV VLAN allows the single multicast VLAN to be shared in the network while subscribers remain in separate VLANs (also known as MVR)
Secure Shell (SSH) Protocol	SSH is a secure replacement for Telnet traffic. SCP also uses SSH. SSH v1 and v2 are supported
Web user interface	Built-in switch configuration utility for easy browser-based device configuration (HTTP/HTTPS). Supports configuration, system dashboard, system maintenance, and monitoring.
Power	195 Dedicated PoE Power

Full HD PTZ Camera: -

Item Reference	5
Item Description	Full HD PTZ Camera
Make/Brand	SONY/ LUMENS/ VADDIO
Minimum Performance Parameters	
Specifications	SITC of Full HD PTZ Camera supporting 1080p at 60 Frames per Second, minimum 12X Optical Zoom, with IP, HDMI, USB 3.0 & 3G-SDI Output, min 256 Pre-sets, RS232/422 and IP Controls, -170° ~ +170° Panning angle, -30° ~ +90° Tilting angle, Minimum FoV 72 deg, should support PoE & should be compatible with Virtual USB Driver. OEM should be BIS, CE, RoHS & FCC Certified

8 x6 Matrix Switcher with CONTROL SYSTEM: -

Item Reference	6
Item Description	8x6 Matrix Switcher
Make/Brand	AMX/EXTRON/LIGHTWARE
Minimum Performance Parameters	
Video Input	Minimum 6 or more HDMI inputs and 2 or more CATx Inputs over RJ-45 connector
Video Output	2 or more HDMI Output, 4 or more CATx Output
Signal Extension	100 Mtrs over shielded twisted pair cable

Resolution Support	640x480 to 4096x2160, 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, 2K, 3840x2160 (up to 60 Hz) to 4096x2160 (up to 60 Hz), Data rate of 10.2 Gbps or higher
Data Rate	Supports 10.2 Gbps or Higher
Scaling	Minimum Four or more output with independent scaling resolution up to 4K/UHD, 10 Bit Color Processing at RGB Domain and Custom Resolutions (Built in scaling within the matrix switcher or externally)
Switching Effect	Support Seamless Transition Effects. Can be achieved using external Seamless Switcher too.
EDID	Should automatically manage EDID communication between connected device
HDCP	Minimum HDCP 1.4 or better
HDMI I/O Sensitivity	Automatic input cable equalization & HDMI output relocking to preserve the reliable HDMI signal extension
Audio input	4 mono, mic/line, balanced/unbalanced (with phantom power); 6 stereo, analog line level inputs, balanced or unbalanced
Audio Output	4 stereo balanced/unbalanced analog (variable)
Audio	Shall provide built in audio de-embedding and embedding & Audio Breakaway
Logo Insertion	Outputs should have feature to place logo graphics at any position at its output to add watermarking to the content projected on the displays to protect it. (Or External device can be used to achieve this)
Control Processor	Built-In control processor with three or more RS 232 port, two or more IR ports, four or more Relays to control Motorised Screen Four or more digital I/O port and 1 or more Gigabit Ethernet port with unlimited Ethernet control of devices when configured with appropriate Software. Control Processor should support BMS Protocols (BACnet, KNX, and DALI minimum). Shall support 3rd Party iOS/Android Tablets as User Interface. Control Processor can be inbuilt/external device can be used to meet the specifications.
Security	The Control Processor module to have network switch ports of the AV LAN to control local AV devices and safeguard them from outside intrusion or interference and different VLAN to integrate it to IIT-M Network if required
RS-232/IR over Twisted Pair cable	Should support RS-232 and IR pass-through connections to TP endpoints, Should support RS-232 to be inserted from the Ethernet connection
Remote power	All the CATx Inputs & Output should be capable of powering endpoint devices connected over twisted pair
Cooling	Fans
Temperature/humidity	Operating Temp: +32 to +120 °F (0 to +49 °C) or better Operating Humidity: 10% to 90%, noncondensing or Better
Chassis Type	Fixed or Modular to support the number of Inputs & Outputs
Control port	Ethernet/RS 232
Compliance	CE, c-UL, UL

HDMI Catx Transmitter (Box Type) :-

Item Reference	7
Item Description	HDMI Catx Transmitter (Box Type)
Make/Brand	AMX/EXTRON/LIGHTWARE
Minimum Performance Parameters	
Video Input	Minimum 1 HDMI (HDMI 1.4)
Output	Twisted pair on RJ 45 port
Resolution Support	4K@30Hz, 8-bit 4:4:4 or better
Data Rate	10.2 Gbps or better
Format Supported	RGB and YCbCr digital video
Color Bit Depth	up to 12-bit or better
Video Standards	HDMI 1.4
Transmission distance	50 Mtr or more over CATx Cable
Embedded Audio Support	HD lossless audio format
Audio Output	Transmits analog stereo input over the TP cable to the receiver
EDID	Should support EDID pass-through
Additional Signals	Should extend RS-232 & IR bidirectionally
HDCP	Min HDCP 2.3 or better
Power	Transmitter should support both included power supply and remote powering from Matrix when connected directly to it.
Installation	Box Type and UL2043 Plenum rated
Cooling	Convection Cooled and No Vents
Temperature/humidity	Operating Temp: +32 to +120 °F (0 to +49 °C) or better Operating Humidity: 10% to 90%, noncondensing or better
CEC	Should support CEC pass-through
Compliance	CE, c-UL UL, C-tick, FCC Class A**, ICES, VCCI

HDMI Catx Receiver (Box Type): -

Item Reference	8
Item Description	HDMI Catx Receiver (Box Type)
Make/Brand	AMX/EXTRON/LIGHTWARE
Minimum Performance Parameters	
Video Input	Twisted pair on RJ 45 port
Output	Minimum 1 HDMI (HDMI 1.4)
Resolution Support	4K@30Hz, 8-bit 4:4:4 or better
Data Rate	10.2 Gbps or better
Format Supported	RGB and YCbCr digital video
Color Bit Depth	up to 12-bit or better
Video Standards	HDMI 1.4

Transmission distance	40 Mtr or more over CATx Cable
Embedded Audio Support	HD lossless audio format
Audio Output	Transmits analog stereo input over the TP cable to the receiver
EDID	Should support EDID pass-through
Additional Signals	Should extend RS-232 & IR bidirectionally
HDCP	Min HDCP 2.3 or better
Power	Receiver should support both local power supply and remote powering from Matrix
Installation	Box Type and UL2043 Plenum rated
Cooling	Convection Cooled and No Vents
Temperature/humidity	Operating Temp: +32 to +120 °F (0 to +49 °C) or better Operating Humidity: 10% to 90%, noncondensing or better
CEC	Should support CEC pass-through
Compliance	CE, c-UL UL, C-tick, FCC Class A**, ICES, VCCI

HDMI Wall plate: -

Item Reference	9
Item Description	HDMI Wall plate
Make/Brand	AMX/EXTRON
Minimum Performance Parameters	
Connector Type	1 female HDMI to 1 female HDMI 1x USB Type A female to Type A female 1x RJ-45 Female to Female
Resolution	Up to 4K @ 30 Hz (4096x2160) or UHD @ 30 Hz (3840x2160) with 4:4:4 Color sampling or more
Data rate	10.2 Gbps
RJ-45 Standard	Cat 5e
Regulatory compliance	RoHS, WEEE

4K HDMI Seamless Multiview Presentation Matrix Switcher cum Scaler with USB Capture card: -

Item Reference	10
Item Description	4K HDMI Seamless Multiview Presentation Matrix Switcher cum Scaler with USB Capture card
Make/Brand	CRESTRON/EXTRON/HALL TECHNOLOGIES
Minimum Performance Parameters	
HDMI Video Inputs	Minimum of 4 x HDMI Video Inputs
HDMI Video Input Resolution	Minimum up to uncompressed 4K60 4:4:4 (18 Gbps bandwidth, HDMI 2.0 & HDCP 1.4, 2.2)

HDMI Video Outputs	Minimum of 2 x HDMI Video Outputs
HDMI Video Output Resolutions	Minimum up to uncompressed 4K60 4:4:4 (18 Gbps bandwidth, HDMI 2.0 & HDCP 1.4, 2.2)
HDMI Matrix	Minimum of 4x2 Matrix Switching
Seamless Switching	Seamless Switching with zero blanking frame on both HDMI Outputs
MultiWindow Layouts	Picture-in-Picture (PIP) on Both HDMI Outputs
MultiWindow Layouts	Picture-over-Picture (POP) on Both HDMI Outputs
Customizable Window Layouts	Should support combination of PIP & POP up to minimum of 4 Windows
MultiWindow Layouts	Selection of Pre-sets from Front Panel, Web GUI & 3rd party Control Systems
MultiWindow Layouts	Selection Video Inputs of Layout from Front Panel, Web GUI & 3rd party Control Systems
MultiWindow Layouts	MultiWindow Layout Output directly onto USB 3.0 interface (Capture card)
USB3.0 Capture Card	Connected to PC to stream in 4K (to stream live without need for any additional hardware)
USB3.0 Capture Card	Minimum Supported Resolutions up to 4K2K@30 4:4:4
USB3.0 Capture Card	Compatible with Windows 8 or above, Mac OS X and Linux
USB3.0 Capture Card	Plug & Play for without any need to install any Drivers & no need of major Setup
MultiWindow Layouts	MultiWindow Layout Output directly onto USB 3.0 interface (Capture card)
Recording	Should support Record and Save to USB2.0 port connected with external storage device
Audio Input	Balanced / Un-Balanced Audio Input usable for Microphone / Content
Microphone Input	Balanced Mic Input with 48V Phantom and line level audio support
Audio Output	Un-Balanced / Balanced stereo 5-pin Phoenix connector

Audio Mixer Capability	Mixer Output directly into a single USB 3.0 interface & also Audio Output Connectors
Audio Mixer Capability	HDMI Content / Microphone Mixing capability & provided mixing on to Video Output on USB / HDMI.
Audio Mixer Capability	Both Audio Embedding & De-Embedding on HDMI, Balanced & Un-Balanced Connectors
Control Interface Protocols	1) IR 2) RS-232 3) Telenet / TCP-IP LAN 4) Web GUI
Button functionality	Front / Top Keypad for Multiview Layout Selection
Button functionality	Front / Top Keypad for Audio Controls (Mic & Program)

Ceiling Microphone: -

Item Reference	11
Item Description	Ceiling Microphone
Make/Brand	SHURE/ SENNHEISER /AUDIO TECHNICA
Minimum Performance Parameters	
Specification	Should support steerable coverage technology; Should support Auto Focus technology; Should support automatic mixing, AEC, noise reduction, automatic gain control, delay, compressor and channel equalization; Should support AES67 or Dante Digital Output
Lobe Width	35 degrees,45 degrees and 55 degrees
Connector Type	RJ45
Power Consumption	9W
Dust Protection	IEC 60529 IP5X Dust Protected
Frequency Response	180 to 17,000 Hz
Channel Count	10 or more
Sampling Rate	48 kHz
Bit Depth	24
Acoustic Echo Cancellation Tail Length	Up to 250 ms

Digital Signal Processor: -

Item Reference	12
Item Description	Digital Signal Processor
Make/Brand	QSC/BIAMP/BSS
Minimum Performance Parameters	
Input Frequency Response	20Hz to 20kHz @ +21dBu (+0.05% / -0.5%)
Input Impedance (balanced)	5K ohms nominal

Sampling Rate	48kHz
A/D – D/A Converters	24-bit
Output Frequency Response	20Hz to 20kHz @ all settings (+0.2 / -0.5 dB)
Output THD	0.003%, +10 dBu max output level
Output Crosstalk @1kHz	> 100dB typical, 90dB max
Output Dynamic Range	> 108dB
Output Impedance (balanced)	220 ohms
Output Level Range: (1dB Steps)	-39 dBu min to +21 dBu max
USB Inputs & Outputs Bit Depth:	16-bit
Number of Channels:	up to 16x16
Sample Rate:	48kHz
BTU/Heat load:	205 BTU/Hour
Features:	<ul style="list-style-type: none"> • 128 x 128 channels of network audio in single channel streams • Up to 24 configurable analog audio I/O • 8 mic/line level analog audio inputs • 8 line level analog audio outputs • 8 Flex Channel mic/line level analog audio inputs or outputs • Up to 16 assignable and routable AEC processor instances • Dual Gigabit Ethernet ports with assignable application resources offering any combination of VoIP, Control or network redundancy • Up to 16x16 channels of digital audio in and out via software definable USB instances advertised to the host operating system • 16 General Purpose Inputs (GPI) x 16 General Purpose Outputs (GPO) • Internal Universal Power Supply plus 12 Volt DC External Power Supply input for redundancy or non-mains power supply sources • POTS telephone interface via a standard RJ-11 connector • Should support up to 4 VoIP Softphone instances in addition to the onboard POTS telephone interface • Fully integrated audio, video and control solution

Ceiling Loudspeakers with Intelligent DC: -

Item Reference	13
Item Description	Ceiling Loudspeakers with Intelligent DC
Make/Brand	MEYERSOUND/QUEST
Minimum Performance Parameters	
Specification	Should support dual-driver concentric configuration; Should support Intelligent DC technology which receives balanced audio and DC power from a single composite cable and connector
Operating Frequency Range	100 Hz – 18 kHz
Frequency Response	110 Hz – 16 kHz ± 4 dB
Linear Peak SPL	104.5 dB (Pink Noise)
COVERAGE	100° conical
TRANSDUCERS	One 5-inch cone driver ; One 0.75-in tweeter
Connectors	Two 5-pin male Phoenix

Wiring	Pin 1: DC Power (-) Pin 2: DC Power (+) Pin 3: Audio Shield, Chassis/earth Pin 4: Audio (-) Pin 5: Audio (+)
Amplifier Type	High-efficiency, Class D
Total Output Power	440 W peak
Mounting Options	pendant mount should be quoted separately

Pendant Kit for Ceiling Loudspeakers with Intelligent DC: -

Item Reference	14
Item Description	Pendant Kit for Ceiling Loudspeakers with Intelligent DC
Make/Brand	MEYERSOUND/QUEST
Minimum Performance Parameters	
Specification	Should allow Ceiling Loudspeakers with Intelligent DC to hang from ceilings where a flush-mount is not practical; Should hold the Ceiling Loudspeakers inside without requiring extra hardware using the same grille as a ceiling mounted Ashby to maintain a consistent appearance; Should include a top cover to hide the back of the loudspeaker and wiring connectors.
Pendant Body	8.00 in [203.2 mm]
Grille	0.43 in [11.0 mm]
Weight	2.04 kg

Intelligent DC Power Supply: -

Item Reference	15
Item Description	8 Port Intelligent DC Power Supply
Make/Brand	MEYERSOUND/QUEST
Minimum Performance Parameters	
Specification	Should Power up to eight loudspeakers; Should receive eight channels of balanced audio from its XLR female input connectors and routes the audio, along with DC power, to its eight output connectors; Should have seven Link switches for routing audio from inputs to outputs.
LEDs	Eight LEDs to indicate output voltage Eight LEDs to indicate load current
Channel Outputs	eight Phoenix 5-pin male connectors
Output Voltage	48 V DC per channel
AC Connector	PowerCON 20
Safety Rated Voltage Range	100–240 V AC; 50–60 Hz
Physical Dimensions	1-space rackmount 19.00 inches W x 1.73 inches H x 13.57 inches D (483 mm x 44 mm x 345 mm)

Weight	15.5 lbs (6.6 kg)
Operating Temperature	0° C to +45° C

Intelligent DC Power Supply: -

Item Reference	16
Item Description	2 Port Intelligent DC Power Supply
Make/Brand	MEYERSOUND/QUEST
Minimum Performance Parameters	
Specification	Should Power up to two loudspeakers; Should receive receives two channels of balanced audio from its two XLR 3-pin female input connectors and routes the audio, along with DC power, to its two Phoenix 5-pin male output connectors; Should have one Link switches for routing audio from inputs to outputs.
LEDs	Two blue LEDs to indicate presence of output voltage Two green LEDs to indicate load current status Two red LEDs to indicate blown or open fuse
Channel Outputs	Two Phoenix 5-pin male connectors
Output Voltage	48 V DC per channel (supports NEC class 2 wiring)
AC Connector	PowerCON 20
Safety Rated Voltage Range	100–240 V AC; 50–60 Hz
Physical Dimensions	1RU in height x 1/2 width rack mount W: 8.50 in (216 mm) x H: 1.85 in (47 mm) x D: 8.62 in (219 mm) Note: Height includes rubber feet. Height without feet is 1.66 in (42 mm).
Weight	4.4 lbs (2 kg)
Operating Temperature	0° C to +45° C

10.2" iPad 64 GB with Wi-Fi: -

Item Reference	17
Item Description	10.2" iPad 64 GB with Wi-Fi
Make/Brand	APPLE
Minimum Performance Parameters	
Display	Min 10.2-inch (diagonal) LED-backlit Multi-Touch display with IPS Technology
Resolution	2160x1620-pixel resolution at 264 pixels per inch (ppi)
Processor Chip	A13 Bionic chip with 64-bit architecture Neural Engine
Memory	Min 64 GB
Brightness	500 nits

iPad Base Station: -

Item Reference	18
Item Description	iPad Base Station
Make/Brand	HECKLER/ IPORT
Minimum Performance Parameters	

Installation Application	Table
Mounting Enclosure	Enclosure & stand for I Pad
Mount & Charger	Magnetic table mount and inductive charger
Power Handling	IN: 9-30VDC 2.0A, OUT: 5.3V 3.0A
Color	White
Power Supply	Yes

iPad Base Sleeve: -

Item Reference	19
Item Description	iPad Base Sleeve
Make/Brand	HECKLER/ IPORT
Minimum Performance Parameters	
Compatible Tablets	iPad (9th gen) 10.2-inch, iPad (8th gen) 10.2-inch, iPad (7th gen) 10.2-inch
Installation Application	Table
Color	White
Power Supply	NO

Wi-Fi Access Point: -

Item Reference	20
Item Description	Wi-Fi Access Point
Make/Brand	CISCO/TP LINK
Minimum Performance Parameters	
HARDWARE FEATURES	
Interface	4 × 10/100Mbps LAN Ports 1 × 10/100Mbps WAN Port
Button	WPS/Reset Button Wireless On/Off Switch Power On/Off Button
External Power Supply	12VDC/1A
Antenna	3 × 2.4GHz Antennas 2 × 5GHz Antennas
WIRELESS FEATURES	
Wireless Standards	IEEE 802.11ac/n/a 5GHz IEEE 802.11b/g/n 2.4GHz
Wireless Speeds	450Mbps(2.4GHz) 867Mbps(5GHz)
Frequency	2.4-2.5GHz 5.15-5.25GHz
Transmit Power	≤20dBm (2.4GHz) ≤23dBm (5GHz)

Wireless Modes	Wireless Router WDS (Four Address) WDS(AP+APC)
Wireless Security	WEP WPA\WPA2 WPA-PSK\WPA2-PSK

DALI Lighting Controller with Keypad: -

Item Reference	21
Item Description	DALI Lighting Controller with Keypad
Make/Brand	CRESTRON/LUTRON
Minimum Performance Parameters	
Input Power	220–240 V; 50/60 Hz
Lighting Sources/Load Types	<ul style="list-style-type: none"> • Up to 64 DALI®-compliant output devices can be addressed and grouped into zones. • Before system is addressed, Zone 4 will transmit broadcast commands to all DALI®
Infrared	<ul style="list-style-type: none"> • Infrared (IR) receiver allows infrared transmitters to select 8 scenes, raise/lower lighting zones, or raise/lower shades. • Transmitter buttons imitate buttons on faceplate. • 15 m line of sight range. • Terminal block infrared input for direct contact with external IR connection. • IR can be disabled via programming.
Features	<ul style="list-style-type: none"> • Pushbutton recall of four pre-set lighting scenes, plus Off. • Sixteen (16) total available scenes, plus Off scene
Unit Dissipation	Not more than 35 BTUs / hour

Integration access point interface: -

Item Reference	22
Item Description	Ethernet and RS232 Interface to integrate third Party Control System
Make/Brand	CRESTRON/LUTRON
Minimum Performance Parameters	
Power	Operating voltage: 24–36 V- 65 mA
RS232 Connection	<ul style="list-style-type: none"> • Standard 9-pin female serial connector on interface. • 50 ft (15 m) maximum serial cable length. • Dip switches are set at factory, all Off. • Dip switches are used to set RS232 baud rate
Ethernet Connection	<ul style="list-style-type: none"> • Standard CAT5 (or better) cable, 328 ft (100 m) maximum, connects the Qinterface to a PC or other Ethernet source. • Supports MDI/MDIX auto-crossover (no crossover cable needed). • Auto-negotiation of 10 or 100 Mbps speed and full- or half-duplex operation.
Unit Dissipation	Maximum 8 BTU/hr

Digital I/O Control Module: -

Item Reference	23
Item Description	Digital I/O Control Module
Make/Brand	AMX/EXTRON
Minimum Performance Parameters	
I/O Ports	24 no's (Either from Single Box/ Cascading multiple boxes)
Special Feature	Push Buttons integrated should be trigger events/controls in the AV setup and compatible to Control Processor used is appreciated. Programmable Pull Up is required
Power Output	1x24V, 100mA
Digital Input Voltage Range	0 to 24 VDC
Digital outputs	Min 250 mA sink from 24 VDC
Regulatory compliance	CE, UL, VCCI class A, WEEE, c-UL
Accessories	Sufficient PSU to be added or Powered from Control system

Power Supply and Distribution Hub: -

Item Reference	24
Item Description	Power Supply and Distribution Hub
Make/Brand	AMX/EXTRON
Minimum Performance Parameters	
Power output	12 VDC, 2 A, 24 watts; shared between all six outputs
Power input	100-240 VAC, 50-60 Hz
No load	0.3 watts
Full power	28.5 watts, 0.6 A maximum
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Mounting	Should mount in Rack, Furniture & Pole
Enclosure type	High impact, high temperature plastic
Vibration	Operating: 10-250 Hz, 0.25 Gp-p, 3 axes, 15 min. sweep

6 Feet HDMI Male to Male Cable: -

Item Reference	25
Item Description	6 Feet HDMI Male to Male Cable
Make/Brand	EXTRON/KRAMER
Minimum Performance Parameters	
VIDEO	Max Resolution 4K@60Hz (4:4:4) Max Data Rate 18 Gbps Supported Color Spaces: RGB, YCbCr, xvYCC, Adobe sRGB, sYCC601, BT.2020 HDMI Compliance: HDR, HDCP 2.2, EDID and CEC"
AUDIO	Supported Audio Formats: Dolby Digital Plus™, Dolby TrueHD™, DTS–HD Master Audio™, DVD Audio, SA–CD

PHYSICAL	HDMI Source: On a male HDMI type A, 24K gold-plated K-Lock connector HDMI Display: On a male HDMI type A, 24K gold-plated K-Lock connector
CONDUCTORS	Material: Tinned Copper/Bare Copper 28AWG (7/0.127)
SCREENING	Type: Triple shielding
JACKET	Material: PVC Diameter 6.50 ± 0.15mm
MECHANICAL	Cable Bending Radius 60mm
ELECTRICAL	Temperature Rating: 80°C Voltage Rating: 30V Conductor Resistance – 28AWG: 237.25Ω/km
STANDARDS COMPLIANCE	Safety: Flammability Rating — CL3/FT4 Environmental: RoHS 2011/65/ EU

HDBaseT Cable: -

Item Reference	26
Item Description	HDBaseT Cable
Make/Brand	EXTRON/KRAMER
Minimum Performance Parameters	
CONDUCTORS	Size: 4x2x23AWG Material: Annealed copper Diameter: 0.56mm ±0.01mm
INSULATION	Material: Skin/Foam/Skin HDPE Diameter: 1.33mm ±0.10mm Color Code: White/Blue, White/Orange, White/Green, White/Brown
SCREENING	Material: Alu/PET per pair (Alu side out)
DRAIN WIRE	Material: Tinned copper Diameter: 0.4mm ±0.01mm
JACKET	Material: LSHF Color: Blue RAL 5012 Thickness: ≥0.5mm Diameter: 7.2mm ±0.2mm Page 25 of 59
ELECTRICAL	Impedance: 1–100MHz: 100Ω ±15Ω, 100–250MHz: 100Ω ±20Ω, 250–500MHz: 100Ω ±25Ω Propagation Velocity (NVP): 76% Voltage Rating: 60V Delay Skew: <45ns Mutual Pair Capacitance: ≤42pF/m Capacitance Unbalance Pair/ground: ≤1500pF/km Conductor DC Resistance: <79.8Ω/km Pair Resistance Unbalance DC: <1.5% Dielectric Strength: 2.5kV DC (2s) Insulation Resistance (500V): >5000MΩ/km
USAGE AND ENVIRONMENTAL	Storage / Transport / Installation Temperature: 0°C to +50°C Operation Temperature: 0°C to +60°C

MECHANICAL	Maximum Pulling Tension: 100N Bending Radius - Installed: 50mm Bending Radius - During Installation: 60mm
STANDARDS COMPLIANCE - EC VERIFIED	Electrical: EIA/TIA 568A, ISO/IEC 11801 Fire Performance: IEC 60332-1 Smoke Density: IEC 61034 Halogen Free: IEC 60754 RoHS: 2011/65/EU
STANDARDS COMPLIANCE	Reaction to Fire Classification: Dca-s2, d1, a1

Crimp Style RJ45 Connectors: -

Item Reference	27
Item Description	Crimp Style RJ45 Connectors
Make/Brand	EXTRON/KRAMER
Minimum Performance Parameters	
Electrical Specifications	
Maximum current / Voltage:	1.5A
Contact resistance:	<20mΩ
Insulation resistance:	>500MΩ
Mechanical Specifications	
Mechanical dimensions compliance:	IEC 60606-7/FCC 68.500 22.5*11.68*8.0+0.00-0.15
Cable-to-plug tensile strength:	20LBs(89N) min.
Durability:	2000 mating cycles
Physical Characteristics	
Housing material:	UL 94V-2
Shield material:	Brass, Ni-plated
Contact material:	Phosphor bronze
Contact plating:	50u, gold plated
Cable OD (min/max):	φ7.0-φ8.5
Insulation OD (min/max):	φ1.40-φ1.50
Conductor structure:	Stranded/Solid
Conductor AWG:	AWG26-AWG22
Weight:	2.812g

Twisted pair cable for Signal & Control (Cat - 6/7) : -

Item Reference	28
Item Description	Twisted pair cable for Signal & Control (Cat - 6/7)
Make/Brand	COMMSCOPE/KRAMER
Minimum Performance Parameters	
Required Cat6/7 Cable for Control Connections	

Audio Shielded Pair Cable: -

Item Reference	29
Item Description	Audio Shielded Pair Cable
Make/Brand	EXTRON/KRAMER
Minimum Performance Parameters	
CONDUCTORS	Material: Tinned Copper; Size: 4x20AWG; Diameter: 0.916mm
INSULATION	Material: PP; Diameter: 1.8±0.09 mm; Average Thickness: 0.442mm
DRAIN WIRE	Size: 20AWG; Material: Tinned Copper
SCREENING	Material: AL-foil/mylar; Overlap: 25% min
JACKET	Material: PVC; Diameter: 6.2 ± 0.19mm
ELECTRICAL	Temperature rating: 75°C Insulation resistance: DC - 500V, 100MΩ/km Conductor resistance: 20AWG - 34.6Ω/km Impedance: 40~100Ω
STANDARDS COMPLIANCE	UL: CM; RoHS: 2011/65/ EU

24 Port Patch Panel: -

Item Reference	30
Item Description	24 Port Patch Panel
Make/Brand	COMMSCOPE/EQUIVALENT
Minimum Performance Parameters	
Cable Type	Unshielded
Intelligence Type	Passive
Rack Type	EIA 19 in
Rack Units	1
Total Ports, quantity	24

6 Feet USB 2.0 A(M) to B(M) Cable: -

Item Reference	31
Item Description	6 Feet USB 2.0 A Male to B Male Cable
Make/Brand	EXTRON/KRAMER
Minimum Performance Parameters	
Conductor Gauge	28 AWG
Connector Plating	Nickle
Outer Sheath Color	Gray
Standards	2011/65/EU

6 Feet USB 3.0 A(M) to B(M) Cable: -

Item Reference	32
Item Description	6 Feet USB 3.0 A Male to B Male Cable
Make/Brand	EXTRON/KRAMER

Minimum Performance Parameters	
CONNECTOR PLATING	Nickel
CONDUCTORS	28/24AWG
CABLE SHIELD TYPE	Aluminium–Mylar Foil with Braid
OVERALL SHEATH DIAMETER	5.5mm
OUTER SHEATH COLOR	Blue

10 Feet Male to Female USB 3.0 Active Extender Cable: -

Item Reference	33
Item Description	10 Feet Male to Female USB 3.0 Active Extender Cable
Make/Brand	EXTRON/KRAMER
Minimum Performance Parameters	
MECHANICAL	Cable Bending Radius: 70mm
CONDUCTORS	Cable Composition: 2 pair 24AWG + 1 pair 26AWG + 2 wires 22AWG +drain wires 24AWG
JACKET	Material: PVC O.D.: 7mm Color: Black

50 Feet Male to Female USB 2.0 Active Extender Cable: -

Item Reference	34
Item Description	50 Feet Male to Female USB Active Extender Cable
Make/Brand	EXTRON/KRAMER
Minimum Performance Parameters	
Construction	1 pair 24AWG + 2 pair 22AWG + drain wire 24AWG, tinned copper braid
No External Power	Pulls power from source
Data Transfer Only	Not for charging

Media Control, 2 Cond. 18 AWG, 1 Pair 22 AWG TC: -

Item Reference	35
Item Description	Media Control, 2 Cond. 18 AWG, 1 Pair 22 AWG TC
Make/Brand	BELDEN/SIEMON
Minimum Performance Parameters	
Environmental Suitability:	Indoor - Riser, Indoor
Flammability / Reaction to Fire:	UL1666 Vertical Shaft, IEEE 1202 FT4, IEC 60332-1-2
CPR Compliance:	CPR Euroclass: Eca
NEC / UL Compliance:	Article 800, CMR
CEC / C(UL) Compliance:	CMG
European Directive Compliance:	EU CE Mark, EU Directive 2011/65/EU (RoHS 2), EU Directive 2012/19/EU (WEEE)
APAC Compliance:	China RoHS II (GB/T 26572-2011)

3 Feet USB 3.1 USB–C (M) to USB–A (M) Cable: -

Item Reference	36
Item Description	3 Feet USB 3.1 USB–C Male to USB–A Male Cable
Make/Brand	EXTRON/KRAMER
Minimum Performance Parameters	
Connector Plating	Nickel
Conductors	24/32AWG
Cable Shield Type	Aluminium–Mylar foil with braid
Overall Sheath Diameter	4.5mm
Outer Sheath Color	White

SuperSpeed USB. 3.0 Type–A male to Type–A male cable: -

Item Reference	37
Item Description	6 Feet USB. 3.0 Type–A male to Type–A male cable
Make/Brand	EXTRON/KRAMER
Minimum Performance Parameters	
Transfer Rate	Up to 4.8 Gbps
RoHS Compliant	Yes
Backward Compatibility	Yes
Outer Sheath Color	Blue

AV Connectors: -

Item Reference	38
Item Description	AV Connectors
Make/Brand	NEUTRICK/AMPHENOL
Minimum Performance Parameters	
Required AV Connectors	

AV Rack: -

Item Reference	39
Item Description	AV Rack
Make/Brand	VALRACK/VERO PRESIDENT
Minimum Performance Parameters	
17U AV Rack with 650mm Depth	
Power Distribution Unit Vertical	
3 Rack Shelf	
3 1U - Blank Spacer	
2 Set Rack Equipment Cooling Fan	
2 Set Castor Wheels with Lock	

Heavy Duty Wall Mount for 98" & 75" Display: -

Item Reference	40 & 41
Item Description	Heavy Duty Wall Mount for 98" & 75" Display
Make/Brand	B-TECH/CHIEF/EQUIVALENT
Minimum Performance Parameters	
Product Category:	Fixed & Tilt TV Wall Mount
Surface Finish:	Powder Coating
Color:	Fine Texture Black
VESA Compatible:	200x200,400x200,300x300,400x400,600x400,800x400,800x600,900x600
Weight Capacity:	100kg (220lbs)
Installation:	Solid Wall, Double Stud(406mm/450mm/600mm)

Wall Mount Kit for Camera: -

Item Reference	42
Item Description	Wall Mount Kit for Camera
Make/Brand	INTEGRATOR/CUSTOM
Minimum Performance Parameters	
Wall Mount Kit for Camera	

Table Tilt Mount Kit for 21" Monitor: -

Item Reference	43
Item Description	Table Tilt Mount Kit for 21" Monitor as per site requirement and should be approved by client
Make/Brand	INTEGRATOR/CUSTOM
Minimum Performance Parameters	
Table Tilt Mount Kit for 21" Monitor	

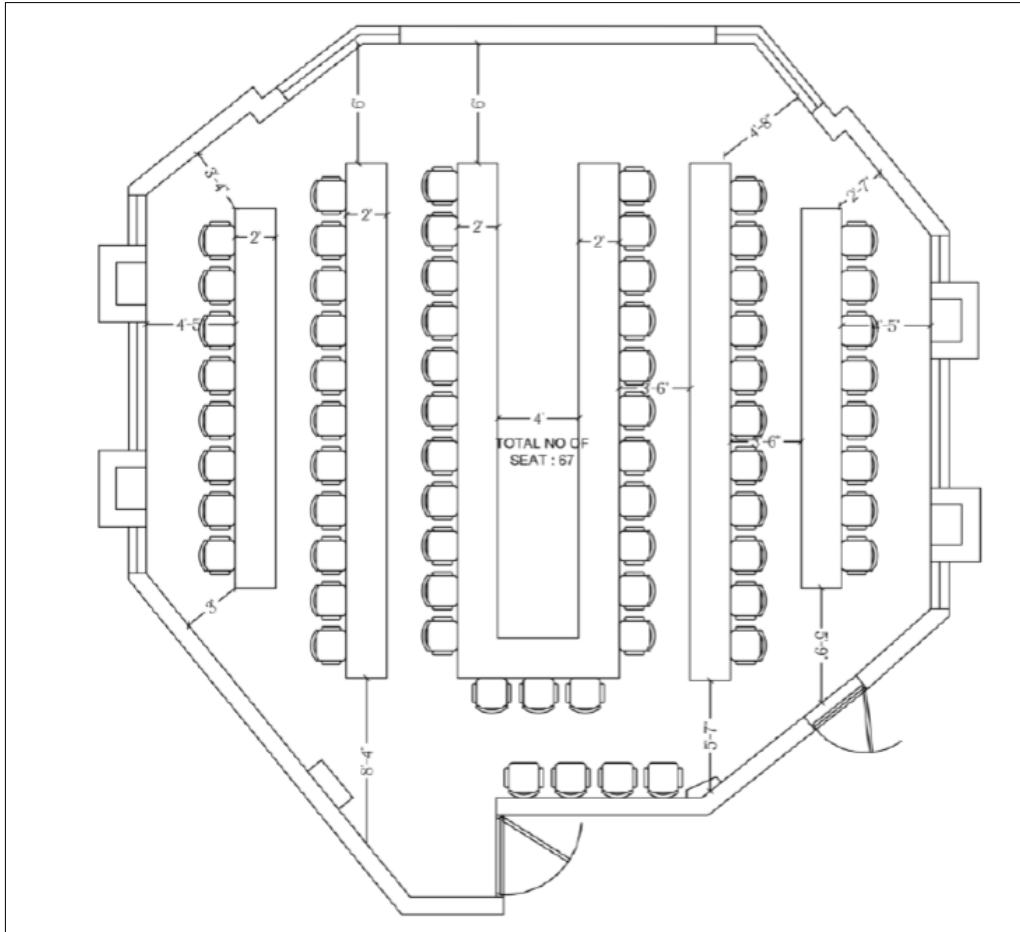
Under Desk Mount for Wireless Presenter: -

Item Reference	44
Item Description	Under Desk Mount for Wireless Presenter
Make/Brand	INTEGRATOR/CUSTOM
Minimum Performance Parameters	
Under Desk Mount for Wireless Presenter	

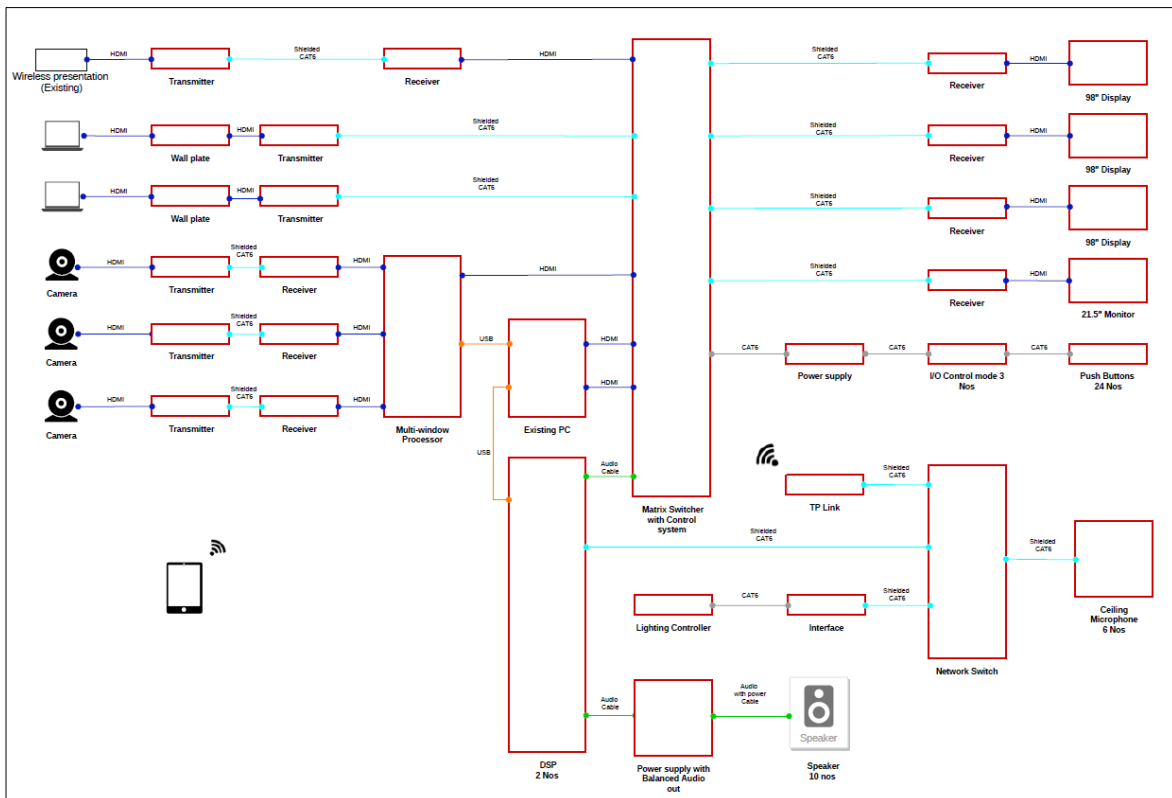
Conceptualization, Design Engineering, Supply, Installation & Commissioning, Documentation & One Time User Orientation Charges: -

Item Reference	45
Item Description	Conceptualization, Design Engineering, Supply, Installation & Commissioning, Documentation & One Time User Orientation Charges
Make/Brand	INTEGRATOR/SERVICES
Minimum Performance Parameters	
Conceptualization, Design Engineering, Supply, Installation & Commissioning, Documentation & One Time User Orientation Charges	

**ANNEXURE –2
CONFERENCE ROOM DRAWING**



**ANNEXURE –3
AV LINE DRAWING FOR CONFERENCE ROOM**



ANNEXURE - 4

SUPPLY, INSTALLATION AND COMMISSIONING OF AUDIO AND VIDEO CONFERENCING SYSTEM IN IC&SR CONFERENCE ROOM OF IIT MADRAS

**TECHNICAL BID COMPLIANCE STATEMENT
Tender No. IT/ICSR/23/2022/HALL2PRO**

(A) PRE-QUALIFICATION CRITERIA

Sl.No.	Description	Compliance (Yes/ No)	Proof with Page No.
I	Bidder Eligibility Criteria I:		
1	Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P-45021/2/2017-PP (BE II) dated 16 th September 2020 and other subsequent orders issued therein, shall be eligible to bid in this tender. Declaration for Class-I and Class-II local suppliers should be submitted in the prescribed proforma format as per Annexure-6		
2	Bidder should confirm their acceptance that they comply with the provisions with report to “Guidelines for eligibility of a bidder from a country which shares a land border with India as detailed at Annexure-7 . Bidder should also submit the required certificates as mentioned.		
II	Bidder Eligibility Criteria II:		
1	The firm should not have been blacklisted / debarred by any Government/ regulatory bodies in India. A self-declaration format given in Annexure – 8		
2	The bidder should submit OEM authorization for all Make/brand of item for which they are submitting the bid (format is given in Annexure-9).		
3	The bidder should have similar experience in the last 3 years in Govt. Institutions/ any of Central PSU’s / any of central Government/ autonomous bodies/reputed firms in executing the following works (any one category). i) Two (2) similar contracts each costing not less than Rs. 20 Lakhs (Or) ii) One (1) similar contract costing not less than Rs. 40 Lakhs Copies of the documents listed below should be submitted as a proof for the above work experience: a) Purchase Order b) Work Completion Certificates c) User Performance Certificate from End		
5	The bidder shall have an annual financial turnover of not less than Rs.2 Crores (Rupees Two Crores only) during the last three financial years i.e., 2018-19, 2019-20 and 2020-2021 (Financial statements / certificates issued by Chartered Accountant should be submitted as proof).		

(B) TECHNICAL SPECIFICATION SHEET FOR AUDIO AND VIDEO CONFERENCING SYSTEM

98" & 75" UHD display		Item Reference: 1 & 2	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Panel			

Diagonal Size	98" & 75"		
Type	Direct LED BLU		
OS	Tizen		
Resolution	3840*2160 (4K UHD)		
Pixel Pitch(mm)	0.562 x 0.562 (mm)		
Active Display Area(mm)	2158.848(H) x 1214.352(V)		
Brightness(Typ.)	350 nits		
Contrast Ratio	1200:1		
Viewing Angle(H/V)	178/178		
Response Time(G-to-G)	8ms (Typ.)		
Display Colors	16.7M		
Color Gamut	72 Percent		
Operation Hour	24/7		
Display			
Dynamic C/R	Mega		
H-Scanning Frequency	30 ~ 81kHz		
V-Scanning Frequency	48 ~ 75Hz		
Maximum Pixel Frequency	594MHz		
Input Connectivity			
RGB	DVI-D, Display Port 1.2 (1)		
Video	HDMI 2.0 (2)		
HDCP	HDCP2.2		
Audio	Stereo mini-Jack, DVI, HDMI		
USB	USB 2.0 x 2		
Output Connectivity			
RGB	HDMI 2.0 (Loop-out)		
Audio	Stereo mini-Jack		
External Control	RS232C(in/out) thru stereo jack, RJ45		
External Sensor	IR		
Power			
Power supply	AC 100 - 240 V, 50/60 Hz		

21.5" FHD Monitor		Item Reference: 3	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Panel			
Diagonal Size	21.5"		
Type	IPS		

Aspect Ratio	16:09		
Resolution Native	FHD (1920 x 1080)		
Pixel Pitch(mm)	0.248 mm		
Active Display Area(cm)	47.6(H) x 26.78(V)		
Brightness (Typ.)	300 nits		
Contrast Ratio	1000:1		
Response Time(G-to-G)	5ms		
Panel	Anti-Glare Panel		
Display			
H-Scanning Frequency	30 ~ 86KHz		
V-Scanning Frequency	48 ~ 75Hz		
Input Connectivity	1 VGA; 1 HDMI 1.4 (with HDCP support)		
Power			
Power supply	100-240 C 50/60 Hz		

24 Port Layer 3 Managed Gigabit Switch with one year support Item		Reference: 4	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
USB slot			
Spanning Tree Protocol	Standard 802.1d Spanning Tree support Fast convergence using 802.1w (Rapid Spanning Tree [RSTP]), enabled by default Multiple Spanning Tree instances using 802.1s (MSTP); 8 instances are supported Per-VLAN Spanning Tree Plus (PVST+) and Rapid PVST+ (RPVST+); 126 instances are supported		
Port grouping	Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) <ul style="list-style-type: none"> Up to 8 groups Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad link aggregation 		
Multicast TV VLAN	Multicast TV VLAN allows the single multicast VLAN to be shared in the network while subscribers remain in separate VLANs (also known as MVR)		
Secure Shell (SSH) Protocol	SSH is a secure replacement for Telnet traffic. SCP also uses SSH. SSH v1 and v2 are supported		

Web user interface	Built-in switch configuration utility for easy browser-based device configuration (HTTP/HTTPS). Supports configuration, system dashboard, system maintenance, and monitoring.		
Power	195 W Dedicated PoE Power		

Full HD PTZ Camera		Item Reference: 5	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Specifications	SITC of Full HD PTZ Camera supporting 1080p at 60 Frames per Second, minimum 12X Optical Zoom, with IP, HDMI, USB 3.0 & 3G-SDI Output, min 256 Pre-sets, RS232/422 and IP Controls, -170° ~ +170° Panning angle, -30° ~ +90° Tilting angle, Minimum FoV 72 deg, should support PoE & should be compatible with Virtual USB Driver. OEM should be BIS, CE, RoHS & FCC Certified		

8x6 Matrix Switcher		Item Reference: 6	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Video Input	Minimum 6 or more HDMI inputs and 2 or more CATx Inputs over RJ-45 connector		
Video Output	2 or more HDMI Output, 4 or more CATx Output		
Signal Extension	100 Mtrs over shielded twisted pair cable		
Resolution Support	640x480 to 4096x2160, 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, 2K, 3840x2160 (up to 60 Hz) to 4096x2160 (up to 60 Hz), Data rate of 10.2 Gbps or higher		
Data Rate	Supports 10.2 Gbps or Higher		
Scaling	Minimum Four or more output with independent scaling resolution up to 4K/UHD, 10 Bit Color Processing at RGB Domain and Custom Resolutions (Built in scaling within the matrix switcher or externally)		
Switching Effect	Support Seamless Transition Effects. Can be achieved using external Seamless Switcher too.		
EDID	Should automatically manage EDID communication between connected device		
HDCP	Minimum HDCP 1.4 or better		
HDMI I/O Sensitivity	Automatic input cable equalization & HDMI output reclocking to preserve the reliable HDMI signal extension		

Audio input	4 mono, mic/line, balanced/unbalanced (with phantom power); 6 stereo, analog line level inputs, balanced or unbalanced		
Audio Output	4 stereo balanced/unbalanced analog (variable)		
Audio	Shall provide built in audio de-embedding and embedding & Audio Breakaway		
Logo Insertion	Outputs should have feature to place logo graphics at any position at its output to add watermarking to the content projected on the displays to protect it. (Or External device can be used to achieve this)		
Control Processor	Built-In control processor with three or more RS 232 port, two or more IR ports, four or more Relays to control Motorised Screen Four or more digital I/O port and 1 or more Gigabit Ethernet port with unlimited Ethernet control of devices when configured with appropriate Software. Control Processor should support BMS Protocols (BACnet, KNX, and DALI minimum). Shall support 3rd Party iOS/Android Tablets as User Interface. Control Processor can be inbuilt/external device can be used to meet the specifications.		
Security	The Control Processor module to have network switch ports of the AV LAN to control local AV devices and safeguard them from outside intrusion or interference and different VLAN to integrate it to IIT-M Network if required		
RS-232/IR over Twisted Pair cable	Should support RS-232 and IR pass-through connections to TP endpoints, Should support RS-232 to be inserted from the Ethernet connection		
Remote power	All the CATx Inputs & Output should be capable of powering endpoint devices connected over twisted pair		
Cooling	Fans		
Temperature/humidity	Operating Temp: +32 to +120 °F (0 to +49 °C) or better Operating Humidity: 10% to 90%, noncondensing or Better		
Chassis Type	Fixed or Modular to support the number of Inputs & Outputs		
Control port	Ethernet/RS 232		
Compliance	CE, c-UL, UL		

HDMI Catx Transmitter (Box Type)		Item Reference: 7	
Name of the Make/Brand and Model No			
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with	

		Page No in the tender document
Minimum Performance Parameters		
Video Input	Minimum 1 HDMI (HDMI 1.4)	
Output	Twisted pair on RJ 45 port	
Resolution Support	4K@30Hz, 8-bit 4:4:4 or better	
Data Rate	10.2 Gbps or better	
Format Supported	RGB and YCbCr digital video	
Color Bit Depth	up to 12-bit or better	
Video Standards	HDMI 1.4	
Transmission distance	50 Mtr or more over CATx Cable	
Embedded Audio Support	HD lossless audio format	
Audio Output	Transmits analog stereo input over the TP cable to the receiver	
EDID	Should support EDID pass-through	
Additional Signals	Should extend RS-232 & IR bidirectionally	
HDCP	Min HDCP 2.3 or better	
Power	Transmitter should support both included power supply and remote powering from Matrix when connected directly to it.	
Installation	Box Type and UL2043 Plenum rated	
Cooling	Convection Cooled and No Vents	
Temperature/humidity	Operating Temp: +32 to +120 °F (0 to +49 °C) or better Operating Humidity: 10% to 90%, noncondensing or better	
CEC	Should support CEC pass-through	
Compliance	CE, c-UL UL, C-tick, FCC Class A**, ICES, VCCI	

HDMI Catx Receiver (Box Type)		Item Reference: 8	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Video Input	Twisted pair on RJ 45 port		
Output	Minimum 1 HDMI (HDMI 1.4)		
Resolution Support	4K@30Hz, 8-bit 4:4:4 or better		
Data Rate	10.2 Gbps or better		
Format Supported	RGB and YCbCr digital video		
Color Bit Depth	up to 12-bit or better		

Video Standards	HDMI 1.4		
Transmission distance	40 Mtr or more over CATx Cable		
Embedded Audio Support	HD lossless audio format		
Audio Output	Transmits analog stereo input over the TP cable to the receiver		
EDID	Should support EDID pass-through		
Additional Signals	Should extend RS-232 & IR bidirectionally		
HDCP	Min HDCP 2.3 or better		
Power	Receiver should support both local power supply and remote powering from Matrix		

Installation	Box Type and UL2043 Plenum rated		
Cooling	Convection Cooled and No Vents		
Temperature/humidity	Operating Temp: +32 to +120 °F (0 to +49 °C) or better Operating Humidity: 10% to 90%, noncondensing or better		
CEC	Should support CEC pass-through		
Compliance	CE, c-UL UL, C-tick, FCC Class A**, ICES, VCCI		

HDMI Wallplate		Item Reference: 9	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Connector Type	1 female HDMI to 1 female HDMI 1x USB Type A female to Type A female 1x RJ-45 Female to Female		
Resolution	Up to 4K @ 30 Hz (4096x2160) or UHD @ 30 Hz (3840x2160) with 4:4:4 Color sampling or more		
Data rate	10.2 Gbps		
RJ-45 Standard	Cat 5e		
Regulatory compliance	RoHS, WEEE		

4K HDMI Seamless Multiview Presentation Matrix Switcher cum Scaler with USB Capture card		Item Reference: 10	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document

Minimum Performance Parameters			
HDMI Video Inputs	Minimum of 4 x HDMI Video Inputs		
HDMI Video Input Resolution	Minimum up to uncompressed 4K60 4:4:4 (18 Gbps bandwidth, HDMI 2.0 & HDCP 1.4, 2.2)		
HDMI Video Outputs	Minimum of 2 x HDMI Video Outputs		
HDMI Video Output Resolutions	Minimum up to uncompressed 4K60 4:4:4 (18 Gbps bandwidth, HDMI 2.0 & HDCP 1.4, 2.2)		
HDMI Matrix	Minimum of 4x2 Matrix Switching		
Seamless Switching	Seamless Switching with zero blanking frame on both HDMI Outputs		
MultiWindow Layouts	Picture-in-Picture (PIP) on Both HDMI Outputs		
MultiWindow Layouts	Picture-over-Picture (POP) on Both HDMI Outputs		
Customizable Window Layouts	Should support combination of PIP & POP up to minimum of 4 Windows		
MultiWindow Layouts	Selection of Pre-sets from Front Panel, Web GUI & 3rd party Control Systems		
MultiWindow Layouts	Selection Video Inputs of Layout from Front Panel, Web GUI & 3rd party Control Systems		
MultiWindow Layouts	MultiWindow Layout Output directly onto USB 3.0 interface (Capture card)		
USB3.0 Capture Card	Connected to PC to stream in 4K (to stream live without need for any additional hardware)		
USB3.0 Capture Card	Minimum Supported Resolutions up to 4K2K@30 4:4:4		
USB3.0 Capture Card	Compatible with Windows 8 or above, Mac OS X and Linux		
USB3.0 Capture Card	Plug & Play for without any need to install any Drivers & no need of major Setup		
MultiWindow Layouts	MultiWindow Layout Output directly onto USB 3.0 interface (Capture card)		
Recording	Should support Record and Save to USB2.0 port connected with external storage device		
Audio Input	Balanced / Un-Balanced Audio Input usable for Microphone / Content		

Microphone Input	Balanced Mic Input with 48V Phantom and line level audio support		
Audio Output	Un-Balanced / Balanced stereo 5-pin Phoenix connector		
Audio Mixer Capability	Mixer Output directly into a single USB 3.0 interface & also Audio Output Connectors		
Audio Mixer Capability	HDMI Content / Microphone Mixing capability & provided mixing on to Video Output on USB / HDMI.		
Audio Mixer Capability	Both Audio Embedding & De-Embedding on HDMI, Balanced & Un-Balanced Connectors		
Control Interface Protocols	1) IR 2) RS-232 3) Telenet / TCP-IP LAN 4) Web GUI		
Button functionality	Front / Top Keypad for Multiview Layout Selection		
Button functionality	Front / Top Keypad for Audio Controls (Mic & Program)		

Ceiling Microphone		Item Reference: 11	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Specification	Should support steerable coverage technology; Should support Auto Focus technology; Should support automatic mixing, AEC, noise reduction, automatic gain control, delay, compressor, and channel equalization; Should support AES67 or Dante Digital Output		
Lobe Width	35 degrees,45 degrees and 55 degrees		
Connector Type	RJ45		
Power Consumption	9W		
Dust Protection	IEC 60529 IP5X Dust Protected		
Frequency Response	180 to 17,000 Hz		
Channel Count	10		
Sampling Rate	48 kHz		
Bit Depth	24		
Acoustic Echo Cancellation Tail Length	Up to 250 ms		

Digital Signal Processor		Item Reference: 12	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Input Frequency Response	20Hz to 20kHz @ +21dBu (+0.05% / -0.5%)		
Input Impedance (balanced)	5K ohms nominal		
Sampling Rate	48kHz		
A/D – D/A Converters	24-bit		
Output Frequency Response	20Hz to 20kHz @ all settings (+0.2 / -0.5 dB)		
Output THD	0.003%, +10 dBu max output level		
Output Crosstalk @1kHz	> 100dB typical, 90dB max		
Output Dynamic Range	> 108dB		
Output Impedance (balanced)	220 ohms		
Output Level Range: (1dB Steps)	-39 dBu min to +21 dBu max		
USB Inputs & Outputs Bit Depth:	16-bit		
Number of Channels:	up to 16x16		
Sample Rate:	48kHz		
BTU/Heat load:	205 BTU/Hour		
Features:	<ul style="list-style-type: none"> • 128 x 128 channels of network audio in single channel streams • Up to 24 configurable analog audio I/O • 8 mic/line level analog audio inputs • 8 line level analog audio outputs • 8 Flex Channel mic/line level analog audio inputs or outputs • Up to 16 assignable and routable AEC processor instances • Dual Gigabit Ethernet ports with assignable application resources offering any combination of VoIP, Control or network redundancy • Up to 16x16 channels of digital audio in and out via software definable USB instances advertised to the host operating system • 16 General Purpose Inputs (GPI) x 16 General Purpose Outputs (GPO) • Internal Universal Power Supply plus 12 Volt DC External Power Supply input for redundancy or non-mains power supply sources • POTS telephone interface via a standard RJ-11 connector • Should support up to 4 VoIP Softphone instances in addition to the onboard POTS telephone interface 		

	<ul style="list-style-type: none"> Fully integrated audio, video and control solution 		
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Ceiling Loudspeakers with Intelligent DC		Item Reference: 13	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Specification	Should support dual-driver concentric configuration; Should support Intelligent DC technology which receives balanced audio and DC power from a single composite cable and connector		
Operating Frequency Range	100 Hz – 18 kHz		
Frequency Response	110 Hz – 16 kHz ± 4 dB		
Linear Peak SPL	104.5 dB (Pink Noise)		
COVERAGE	100° conical		
TRANSDUCERS	One 5-inch cone driver; One 0.75-in tweeter		
Connectors	Two 5-pin male Phoenix		
Wiring	Pin 1: DC Power (-) Pin 2: DC Power (+) Pin 3: Audio Shield, Chassis/earth Pin 4: Audio (-) Pin 5: Audio (+)		
Amplifier Type	High-efficiency, Class D		
Total Output Power	440 W peak		
Mounting Options	pendant mount should be quoted separately		

Pendant Kit for Ceiling Loudspeakers with Intelligent DC		Item Reference: 14	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			

Specification	Should allow Ceiling Loudspeakers with Intelligent DC to hang from ceilings where a flush-mount is not practical; Should hold the Ceiling Loudspeakers inside without requiring extra hardware using the same grille as a ceiling mounted Ashby to maintain a consistent appearance; Should include a top cover to hide the back of the loudspeaker and wiring connectors.		
Pendant Body	8.00 in [203.2 mm]		
Grille	0.43 in [11.0 mm]		
Weight	2.04 kg		

Intelligent DC Power Supply		Item Reference: 15	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Specification	Should Power up to eight loudspeakers; Should receive eight channels of balanced audio from its XLR female input connectors and routes the audio, along with DC power, to its eight output connectors; Should have even Link switches for routing audio from inputs to outputs.		
LEDs	Eight LEDs to indicate output voltage Eight LEDs to indicate load current		
Channel Outputs	eight Phoenix 5-pin male connectors		
Output Voltage	48 V DC per channel		
AC Connector	powerCON 20		
Safety Rated Voltage Range	100–240 V AC; 50–60 Hz		
Physical Dimensions	1-space rackmount 19.00 inches W x 1.73 inches H x 13.57 inches D (483 mm x 44 mm x 345 mm)		
Weight	15.5 lbs (6.6 kg)		
Operating Temperature	0° C to +45° C		

Intelligent DC Power Supply		Item Reference: 16	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			

Specification	Should Power up to two loudspeakers; Should receive receives two channels of balanced audio from its two XLR 3-pin female input connectors and routes the audio, along with DC power, to its two Phoenix 5-pin male output connectors; Should have one Link switch for routing audio from inputs to outputs.		
LEDs	Two blue LEDs to indicate presence of output voltage Two green LEDs to indicate load current status Two red LEDs to indicate blown or open fuse		
Channel Outputs	Two Phoenix 5-pin male connectors		
Output Voltage	48 V DC per channel (supports NEC class 2 wiring)		
AC Connector	powerCON 20		
Safety Rated Voltage Range	100–240 V AC; 50–60 Hz		
Physical Dimensions	1RU in height x 1/2 width rack mount W: 8.50 in (216 mm) x H: 1.85 in (47 mm) x D: 8.62 in (219 mm) Note: Height includes rubber feet. Height without feet is 1.66 in (42 mm).		
Weight	4.4 lbs (2 kg)		
Operating Temperature	0° C to +45° C		

10.2" iPad 64 GB with Wi-Fi

Item Reference: 17

Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Display	Min 10.2-inch (diagonal) LED-backlit Multi-Touch display with IPS Technology		
Resolution	2160x1620-pixel resolution at 264 pixels per inch (ppi)		
Processor Chip	A13 Bionic chip with 64-bit architecture Neural Engine		
Memory	Min 64 GB		
Brightness	500 nits		

iPad Base Station

Item Reference: 18

Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Installation Application	Table		

Mounting Enclosure	Enclosure & stand for I Pad		
Mount & Charger	Magnetic table mount and inductive charger		
Power Handling	IN: 9-30VDC 2.0A, OUT: 5.3V 3.0A		
Color	White		
Power Supply	Yes		

iPad Base Sleeve		Item Reference: 19	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Compatible Tablets	iPad (9th gen) 10.2-inch, iPad (8th gen) 10.2-inch, iPad (7th gen) 10.2-inch		
Installation Application	Table		
Color	White		
Power Supply	NO		

Wi-Fi Access Point		Item Reference: 20	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
HARDWARE FEATURES			
Interface	4 × 10/100Mbps LAN Ports 1 × 10/100Mbps WAN Port		
Button	WPS/Reset Button Wireless On/Off Switch Power On/Off Button		
External Power Supply	12VDC/1A		
Antenna	3 × 2.4GHz Antennas 2 × 5GHz Antennas		
WIRELESS FEATURES			
Wireless Standards	IEEE 802.11ac/n/a 5GHz IEEE 802.11b/g/n 2.4GHz		
Wireless Speeds	450Mbps(2.4GHz) 867Mbps(5GHz)		

Frequency	2.4-2.5GHz 5.15-5.25GHz		
Transmit Power	≤20dBm (2.4GHz) ≤23dBm (5GHz)		
Wireless Modes	Wireless Router WDS (Four Address) WDS(AP+APC)		
Wireless Security	WEP WPA\WPA2 WPA-PSK\WPA2-PSK		

DALI Lighting Controller with Keypad		Item Reference: 21	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Input Power	220–240 V; 50/60 Hz		
Lighting Sources/Load Types	<ul style="list-style-type: none"> Up to 64 DALI®-compliant output devices can be addressed and grouped into zones. Before system is addressed, Zone 4 will transmit broadcast commands to all DALI® 		
Infrared	<ul style="list-style-type: none"> Infrared (IR) receiver allows infrared transmitters to select 8 scenes, raise/lower lighting zones, or raise/lower shades. Transmitter buttons imitate buttons on faceplate. 15 m line of sight range. Terminal block infrared input for direct contact with external IR connection. IR can be disabled via programming. 		
Features	<ul style="list-style-type: none"> Pushbutton recall of four pre-set lighting scenes, plus Off. Sixteen (16) total available scenes, plus Off scene 		
Unit Dissipation	Not more than 35 BTUs / hour		

Integration access point interface		Item Reference: 22	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Power	Operating voltage: 24–36 V- 65 mA		

RS232 Connection	<ul style="list-style-type: none"> • Standard 9-pin female serial connector on interface. • 50 ft (15 m) maximum serial cable length. • Dip switches are set at factory, all Off. • Dip switches are used to set RS232 baud rate 		
Ethernet Connection	<ul style="list-style-type: none"> • Standard CAT5 (or better) cable, 328 ft (100 m) maximum, connects the Qinterface to a PC or other Ethernet source. • Supports MDI/MDIX auto-crossover (no crossover cable needed). • Auto-negotiation of 10 or 100 Mbps speed and full- or half-duplex operation. 		
Unit Dissipation	Maximum 8 BTU/hr		

Digital I/O Control Module		Item Reference: 23	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
I/O Ports	24 no's (Either from Single Box/ Cascading multiple boxes)		
Special Feature	Push Buttons integrated should be trigger events/controls in the AV setup and compatible to Control Processor used is appreciated. Programmable Pull Up is required		
Power Output	1x24V, 100Ma		
Digital Input Voltage Range	0 to 24 VDC		
Digital outputs	Min 250 mA sink from 24 VDC		
Regulatory compliance	CE, UL, VCCI class A, WEEE, c-UL		
Accessories	Sufficient PSU to be added or Powered from Control system		

Power Supply and Distribution Hub		Item Reference: 24	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Power output	12 VDC, 2 A, 24 watts; shared between all six outputs		
Power input	100-240 VAC, 50-60 Hz		
No load	0.3 watts		
Full power	28.5 watts, 0.6 A maximum		
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing		
Cooling	Convection, no vents		
Mounting	Should mount in Rack, Furniture & Pole		

Enclosure type	High impact, high temperature plastic		
Vibration	Operating: 10-250 Hz, 0.25 Gp-p, 3 axes, 15 min. sweep		

6 Feet HDMI Male to Male Cable		Item Reference: 25	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
VIDEO	Max Resolution 4K@60Hz (4:4:4) Max Data Rate 18 Gbps Supported Color Spaces: RGB, YCbCr, xvYCC, Adobe sRGB, sYCC601, BT.2020 HDMI Compliance: HDR, HDCP 2.2, EDID and CEC"		
AUDIO	Supported Audio Formats: Dolby Digital Plus™, Dolby TrueHD™, DTS–HD Master Audio™, DVD Audio, SA–CD		
PHYSICAL	HDMI Source: On a male HDMI type A, 24K gold–plated K–Lock connector HDMI Display: On a male HDMI type A, 24K gold–plated K–Lock connector		
CONDUCTORS	Material: Tinned Copper/Bare Copper 28AWG (7/0.127)		
SCREENING	Type: Triple shielding		
JACKET	Material: PVC Diameter 6.50 ± 0.15mm		
MECHANICAL	Cable Bending Radius 60mm		
ELECTRICAL	Temperature Rating: 80°C Voltage Rating: 30V Conductor Resistance – 28AWG: 237.25Ω/km		
STANDARDS COMPLIANCE	Safety: Flammability Rating — CL3/FT4 Environmental: RoHS 2011/65/ EU		

HDBaseT Cable		Item Reference: 26	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
CONDUCTORS	Size: 4x2x23AWG Material: Annealed copper Diameter: 0.56mm ±0.01mm		
INSULATION	Material: Skin/Foam/Skin HDPE Diameter: 1.33mm ±0.10mm Color Code: White/Blue, White/Orange, White/Green, White/Brown		

SCREENING	Material: Alu/PET per pair (Alu side out)		
DRAIN WIRE	Material: Tinned copper Diameter: 0.4mm ±0.01mm		
JACKET	Material: LSHF Color: Blue RAL 5012 Thickness: ≥0.5mm Diameter: 7.2mm ±0.2mm Page 25 of 59		
ELECTRICAL	Impedance: 1–100MHz: 100Ω ±15Ω, 100–250MHz: 100Ω ±20Ω, 250– 500MHz: 100Ω ±25Ω Propagation Velocity (NVP): 76% Voltage Rating: 60V Delay Skew: <45ns Mutual Pair Capacitance: ≤42pF/m Capacitance Unbalance Pair/ground: ≤1500pF/km Conductor DC Resistance: <79.8Ω/km Pair Resistance Unbalance DC: <1.5% Dielectric Strength: 2.5kV DC (2s) Insulation Resistance (500V): >5000MΩ/km		
USAGE AND ENVIRONMENTAL	Storage / Transport / Installation Temperature: 0°C to +50°C Operation Temperature: 0°C to +60°C		
MECHANICAL	Maximum Pulling Tension: 100N Bending Radius - Installed: 50mm Bending Radius - During Installation: 60mm		
STANDARDS COMPLIANCE - EC VERIFIED	Electrical: EIA/TIA 568A, ISO/IEC 11801 Fire Performance: IEC 60332-1 Smoke Density: IEC 61034 Halogen Free: IEC 60754 RoHS: 2011/65/EU		
STANDARDS COMPLIANCE	Reaction to Fire Classification: Dca-s2, d1, a1		

Crimp Style RJ45 Connectors		Item Reference: 27	
Name of the Make/Brand and Model No			
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document	
Minimum Performance Parameters			
Electrical Specifications			
Maximum current / Voltage:	1.5A		
Contact resistance:	<20mΩ		
Insulation resistance:	>500MΩ		

Mechanical Specifications			
Mechanical dimensions compliance:	IEC 60606-7/FCC 68.500 22.5*11.68*8.0+0.00-0.15		
Cable-to-plug tensile strength:	20LBs(89N) min.		
Durability:	2000 mating cycles		
Physical Characteristics			
Housing material:	UL 94V-2		
Shield material:	Brass, Ni-plated		
Contact material:	Phosphor bronze		
Contact plating:	50u, gold plated		
Cable OD (min/max):	φ7.0-φ8.5		
Insulation OD (min/max):	φ1.40-φ1.50		
Conductor structure:	Stranded/Solid		
Conductor AWG:	AWG26-AWG22		
Weight:	2.812g		

Twisted pair cable for Signal & Control (Cat - 6/7)		Item Reference: 28	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Required Cat6/7 Cable for Control Connections			

28. Audio Shielded Pair Cable			
Audio Shielded Pair Cable			
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
CONDUCTORS	Material: Tinned Copper; Size: 4x20AWG; Diameter: 0.916mm		
INSULATION	Material: PP; Diameter: 1.8±0.09mm; Average Thickness: 0.442mm		
DRAIN WIRE	Size: 20AWG; Material: Tinned Copper		
SCREENING	Material: AL-foil/mylar; Overlap: 25% min		
JACKET	Material: PVC; Diameter: 6.2 ± 0.19mm		
ELECTRICAL	Temperature rating: 75°C Insulation resistance: DC - 500V, 100MΩ/km Conductor resistance: 20AWG - 34.6Ω/km Impedance: 40~100Ω		

STANDARDS COMPLIANCE	UL: CM; RoHS: 2011/65/ EU		
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24 Port Patch Panel		Item Reference: 29	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Cable Type	Unshielded		
Intelligence Type	Passive		
Rack Type	EIA 19 in		
Rack Units	1		
Total Ports, quantity	24		

6 Feet USB 2.0 A(M) to B(M) Cable		Item Reference: 30	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Conductor Gauge	28 AWG		
Connector Plating	Nickle		
Outer Sheath Color	Gray		
Standards	2011/65/EU		

6 Feet USB 3.0 A(M) to B(M) Cable		Item Reference: 31	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
CONNECTOR PLATING	Nickel		
CONDUCTORS	28/24AWG		
CABLE SHIELD TYPE	Aluminium–Mylar Foil with Braid		
OVERALL SHEATH DIAMETER	5.5mm		
OUTER SHEATH COLOR	Blue		

10 Feet Male to Female USB 3.0 Active Extender Cable		Item Reference: 32	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document

Minimum Performance Parameters			
MECHANICAL	Cable Bending Radius: 70mm		
CONDUCTORS	Cable Composition: 2 pair 24AWG + 1 pair 26AWG + 2 wires 22AWG +drain wires 24AWG		
JACKET	Material: PVC O.D.: 7mm Color: Black		

50 Feet Male to Female USB 2.0 Active Extender Cable		Item Reference: 33	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Construction	1 pair 24AWG + 2 pair 22AWG + drain wire 24AWG, tinned copper braid		
No External Power	Pulls power from source		
Data Transfer Only	Not for charging		

Media Control, 2 Cond. 18 AWG, 1 Pair 22 AWG TC		Item Reference: 34	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Environmental Suitability:	Indoor - Riser, Indoor		
Flammability / Reaction to Fire:	UL1666 Vertical Shaft, IEEE 1202 FT4, IEC 60332-1-2		
CPR Compliance:	CPR Euroclass: Eca		
NEC / UL Compliance:	Article 800, CMR		
CEC / C(UL) Compliance:	CMG		
European Directive Compliance:	EU CE Mark, EU Directive 2011/65/EU (RoHS 2), EU Directive 2012/19/EU (WEEE)		
APAC Compliance:	China RoHS II (GB/T 26572-2011)		

3 Feet USB 3.1 USB-C (M) to USB-A (M) Cable		Item Reference: 35	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Connector Plating	Nickel		
Conductors	24/32AWG		

Cable Shield Type	Aluminium–Mylar foil with braid		
Overall Sheath Diameter	4.5mm		
Outer Sheath Color	White		

SuperSpeed USB. 3.0 Type–A male to Type–A male cable		Item Reference: 36	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Transfer Rate	Upto 4.8 Gbps		
RoHS Compliant	Yes		
Backward Compatibility	Yes		
Outer Sheath Color	Blue		

AV Connectors		Item Reference: 37	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Required AV Connectors			

AV Rack		Item Reference: 38	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
17U AV Rack with 650mm Depth			
Power Distribution Unit Vertical			
3 Rack Shelf			
3 1U - Blank Spacer			
2 Set Rack Equipment Cooling Fan			
2 Set Castor Wheels with Lock			

Heavy Duty Wall Mount for 98" & 75" Display		Item Reference: 39 & 40	
Name of the Make/Brand and Model No			
Description		Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document
Minimum Performance Parameters			
Product Category:	Fixed & Tilt TV Wall Mount		

Surface Finish:	Powder Coating		
Color:	Fine Texture Black		
VESA Compatible:	200x200,400x200,300x300,400x400,600x400,800x400,800x600,900x600		
Weight Capacity:	100kg (220lbs)		
Installation:	Solid Wall, Double Stud(406mm/450mm/600mm)		

Wall Mount Kit for Camera		Item Reference: 41	
Name of the Make/Brand and Model No			
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document	
Minimum Performance Parameters			
Wall Mount Kit for Camera			

Table Tilt Mount Kit for 21" Monitor		Item Reference: 42	
Name of the Make/Brand and Model No			
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document	
Minimum Performance Parameters			
Table Tilt Mount Kit for 21" Monitor			

Under Desk Mount for Wireless Presenter		Item Reference: 43	
Name of the Make/Brand and Model No			
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document	
Minimum Performance Parameters			
Under Desk Mount for Wireless Presenter			

Single Gang Push Button for Camera Preset		Item Reference: 44	
Name of the Make/Brand and Model No			
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document	
Minimum Performance Parameters			
Single Gang Push Button for Camera Pre-set			

44. Conceptualization, Design Engineering, Supply, Installation & Commissioning, Documentation & One Time User Orientation Charges

Conceptualization, Design Engineering, Supply, Installation & Commissioning, Documentation & One Time User Orientation Charges			Item Reference: 45
Name of the Make/Brand and Model No			
Description	Compliance (Yes/No)	Details of Catalogue/ Data Sheet Proof with Page No in the tender document	
Minimum Performance Parameters			
Conceptualization, Design Engineering, Supply, Installation & Commissioning, Documentation & One Time User Orientation Charges			

ANNEXURE - 5

SUPPLY, INSTALLATION AND COMMISSIONING OF AUDIO AND VIDEO CONFERENCING SYSTEM IN IC&SR CONFERENCE ROOM OF IIT MADRAS

PROFORMA FORMAT FOR FINANCIAL BID (BOQ) FORMAT

Tender No: IT/ICSR/23/2022/HALL2PRO

***All values should be in INR

Sr#	Description	UoM	Qty	Rate Per Unit	Total Cost without Tax	GST	Total Cost with Tax
1	98" UHD display	Nos.	2				
2	75" UHD display	Nos.	2				
3	21.5" FHD Monitor	No.	1				
4	24 Port Layer 3 Managed Gigabit Switch	No.	1				
5	Full HD PTZ Camera	Nos.	3				
6	8x6 Matrix Switcher	No.	1				
7	HDMI Catx Transmitter (Box Type)	Nos.	6				
8	HDMI Catx Transmitter (Box Type)	Nos.	8				
9	HDMI Wallplate	Nos.	2				
10	4K HDMI Seamless Multiview Presentation Matrix Switcher cum Scaler with USB Capture card	No.	1				
11	Ceiling Microphone	Nos.	6				
12	Digital Signal Processor	Nos.	2				
13	Ceiling Loudspeakers with Intelligent DC	Nos.	10				
14	Pendant Kit for Ceiling Loudspeakers with Intelligent DC	Nos.	10				
15	8 Port Intelligent DC Power Supply	No.	1				
16	2 Port Intelligent DC Power Supply	No.	1				
17	10.2" iPad 64 GB with Wi-Fi	No.	1				
18	iPad Base Station	No.	1				
19	iPad Base Sleeve	No.	1				
20	Dual Band Wi-Fi Access Point	No.	1				
21	DALI Lighting Controller with Keypad	No.	1				
22	Ethernet and RS232 Interface to integrate third Party Control System	No.	1				

23	Digital I/O Control Module	Nos.	3				
24	Power Supply and Distribution Hub for I/O Control Module	No.	1				
25	6 Feet HDMI Male to Male Cable	Nos.	19				
26	HDBaseT Cable	Meters	600				
27	Crimp Style RJ45 Connectors	Nos.	60				
28	Twisted pair cable for Signal & Control (Cat - 6/7)	Meters	100				
29	Audio 2 Shielded Pair Cable	Meters	300				
30	24 Port Patch Panel	No.	1				
31	6 feet USB 2.0 A Male to B Male Cable	No.	1				
32	6 feet USB 3.0 A Male to B Male Cable	Nos.	3				
33	10 Feet Male to Female USB 3.0 Active Extender Cable	Nos.	2				
34	50 Feet Male to Female USB 2.0 Active Extender Cable	No.	1				
35	2 Conductor 18 AWG, 1 Pair 22 AWG	Meters	240				
36	3 Feet USB 3.1 USB-C Male to USB-A Male Cable	Nos.	2				
37	6 Feet USB. 3.0 Type-A male to Type-A male cable	Nos.	2				
38	Required AV Connectors and long run cables	Lot	1				
39	17U AV Rack with 650mm Depth	No.	1				
40	Power Distribution Unit Vertical	No.	1				
41	Rack Shelf	Nos.	3				
42	1U - Blank Spacer	Nos.	3				
43	Rack Equipment Cooling Fan	Set	2				
44	Castor Wheels with Lock	Set	2				
45	Heavy Duty Wall Mount for 98" Display	Nos.	2				
46	Heavy Duty Wall Mount for 75" Display	Nos.	2				
47	Wall Mount Kit for Camera	Nos.	3				
48	Table Tilt Mount Kit for 21" Monitor	No.	1				
49	Under Desk Mount for Wireless Presenter	No.	1				
50	Supply, Installation & Commissioning, Documentation & User Orientation Charges	LS	1				

*** Optional Items

Sr#	Description	UoM	Qty	Rate Per Unit	Total Cost without Tax	GST	Total Cost with Tax
51	Comprehensive AMC for active components 4 th Year	LS	1				
52	Comprehensive AMC for active components 5 th Year	LS	1				

FORMAT FOR AFFIDAVIT OF SELF-CERTIFICATION UNDER PREFERENCE TO MAKE IN INDIA – PER ITEM

Tender Reference Number:

Name of the item / Service:

Date: _____

I/We _____ S/o, D/o, W/o, _____

Resident of

Hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the Public Procurement (Preference to Make in India) Policy vide GoI Order no. P-45021/2/2017-PP (B.E.-II) dated 15.06.2017 (subsequently revised vide orders dated 28.05.2018, 29.05.2019 and 04.06.2020) MOCI order No. 45021/2/2017-PP (BE II) Dt.16th September 2020 & P-45021/102/2019-BE-II-Part (1) (E-50310) Dt.4th March 2021 and any subsequent modifications/Amendments, if any and

That the local content for all inputs which constitute the said item/service/work has been verified by me and I am responsible for the correctness of the claims made therein.

Tick (✓) and Fill the Appropriate Category	
<input type="checkbox"/>	I/We _____ [name of the supplier] hereby confirm in respect of quoted items that Local Content is equal to or more than 50% and come under “Class-I Local Supplier” category.
<input type="checkbox"/>	I/We _____ [name of the supplier] hereby confirm in respect of quoted items that Local Content is equal to 20% but less than 50% and come under “Class-II Local Supplier” category.

- The details of the location (s) at which the local value addition is made and the proportionate value of local content in percentage

Address _____ Percentage of Local content: _____%

For and on behalf of.....(Name of firm/entity)

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contact No.>

[Note: In case of procurement for a value in excess of Rs. 10 Crores, the bidders shall provide this certificate from statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.]

This letter should be on the letterhead of the quoting firm and should be signed by a competent authority. Non-submission of this will lead to Disqualification of bids.

ANNEXEUR: 7

CERTIFICATE

(To be given on the letter head of the bidder)

No:

Dated:

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that I am not from such a country.

OR (whichever is applicable)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that I from _____(Name of Country) and has been registered with the Competent Authority. I also certify that I fulfil all the requirements in this regard and is eligible to be considered.

(Copy/ evidence of valid registration by the Competent Authority is to be attached)

Place:

Signature of the Tenderer

Date:

Name & Address of the

Tenderer with Office Stamp

ANNEXEUR: 8

Self-Declaration that the Service Provider has not been blacklisted

(To be given on the letter head of the bidder)

I S/o

R/o police station District Director

/ partner/ sole proprietor (Strike out whichever is not applicable) of

..... (Firm or Company) do hereby declare and solemnly affirm:

- I. That the Firm has not been Blacklisted or declared insolvent by any of the Union or State Government / Organization.
- II. That none of the individual / firm / Company Blacklisted or any partners or shareholder thereof has any connection directly or indirectly with or has any subsistence interest in the deponent business / firm company.
- III. That neither the Firm nor any of its partner has been involved / convicted in any criminal case / economic offence nor any criminal case / economic offence is pending against firm or any partner of the Firm before any Court of Law / Police.

Place:

Date:

Signature of the Tenderer

Name & Address of the

Tenderer with Office Stamp

ANNEXEUR: 9
OEM CERTIFICATION FORM
(In Original Letter Head of OEM)

TenderNo:..... Dated:.....

We are Original Equipment Manufacturers (OEM) of..... (Name of the company)
Ms..... (Name of the vendor) is one of our Distributors/Dealers/Resellers/Partners
(tick one) for the and is participating in the above-mentioned tender
by offering our product model.....(Name of the product with model number).

..... is authorized to bid, sell and provide service support warranty for our product
as mentioned above.

Name and Signature of the authorized
signatory of OEM along with
seal of the company with Date



CENTRE FOR INDUSTRIAL CONSULTANCY & SPONSORED RESEARCH (IC&SR)
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI 600 036



ELECTRONIC CLEARING SERVICE (Credit Clearing)/ REAL TIME GROSS SETTLEMENT (RTGS) FACILITY FOR RECEIVING PAYMENTS

A. Details of Account Holder

Name of the Institution	Indian Institute of Technology - Madras
Complete Contact Address	Industrial Consultancy and Sponsored Research Indian Institute of Technology-Madras, IIT- Madras Campus Post Office, Sardar Patel Road, Guindy, CHENNAI - 600 036
Telephone No./ Fax No.	Tel - 044-2257 8356
E- mail ID of the FO/AO/REG/DIR	dricsr@iitm.ac.in

B. Bank Account Details:

Institution Account Name (As per Bank Record)	The Registrar, Indian Institute of Technology - Madras
Account No.	2722101003872
Account Print Name	IIT F A/C , The Registrar IIT Madras
IFSC CODE	CNRB0002722
Bank Name (in full)	Canara Bank
Branch Name	IIT-Madras Branch
Complete Branch Address	Canara Bank, IIT-Madras Branch, IIT- Madras Campus Post Office, Sardar Patel Road, Guindy, CHENNAI - 600 036
MICR No.	600015085
Account Type	Savings Account

Certified that the Institute's account is in an RTGS enabled branch.

I hereby declare that the particulars given above are correct and complete.

Date:

Signature of the Competent Authority
of the Institution with seal.

SCHEDULE OF TENDER

Tender No. IT/ICSR/23/2022/HALL2PRO

SUPPLY, INSTALLATION AND COMMISSIONING OF AUDIO AND VIDEO CONFERENCING SYSTEM IN IC&SR CONFERENCE ROOM OF IIT MADRAS

Name of Organization	IC&SR, IIT Madras
Tender Type (Open/Limited/EOI/Auction/Single)	OPEN
Tender Category (Services/Goods/Works)	Goods
Type/Form of Contract (Work/Supply/Auction/ Service/ Buy/ Empanelment/ Sell)	Supply, Installation and Commissioning
Product Category (Civil Works/Electrical Works/Fleet Management/ Computer Systems)	Supply, Installation and Commissioning of Audio and Video Conferencing System in IC&SR Conference Room of IIT Madras as per Design
Source of Fund (Institute/Project)	IC&SR, IIT Madras
Is Multi Currency Allowed	No
Date of Issue/Publishing	15.06.2022
Document Download Start Date	15.06.2022
Document Download End Date	05.07.2022@ 03:00 PM
Bid Submission Start Date	16.06.2022@ 9.00 AM
Last Date and Time for Uploading of Bids	05.07.2022@ 03:00 PM
Pre-Bid Meeting	24.06.2022 @ 3 PM, Hall 2 IC & SR
Date and Time of Tender Opening	06.07.2022@ 3:00 PM
No. of Covers (1/2/3/4)	2 (1 – Technical and 2 – Financial)
Bid Validity days (180/120/90/60/30)	120 Days
Address for Communication	Dean – IC&SR, IIT Madras Purchase Section IIT Madras Chennai – 600 036
Contact No.	For Technical Queries: 044 2257 9794 For General Queries: 044- 2257 9763 / 9723
Email Address	tender@imail.iitm.ac.in