

HSCC/AIIMS-Jhajjar/Audi-Fur/pkg-05/2018

Dated: 21.08.2018

AMENDMENT NO. -I

All Bidders.

Project Name: Tender for “Package-05 : Supply, installation, testing & commissioning of Furniture including Civil , Interior, Electrical, Fire fighting, HVAC, Audio Visual & Stage lighting Systems etc for Auditorium blocks and their maintenance during defect liability period at AIIMS, NCI Jhajjar (Haryana).”.

Tender No: HSCC/AIIMS-Jhajjar/Audi-Fur/pkg-05/2018 , **Dated:** 07.08.2018

This has reference to the subject works.

The following **AMENDMENT-I/Clarification-I** may be noted, which shall be treated as a part of tender to be submitted online duly signed & stamp along with tender:

1. Clarification of pre bid queries enclosed at Annexure-I
2. Audio and Visual work Specifications, Which has been uploaded at Annexure-II.
3. Approve Makes, Which has been uploaded at Annexure-III.

All other terms & conditions of tender shall remain unchanged.

Prospective bidders are advised to regularly scan through HSCC e-tender portal <http://www.tenderwizard.com/HSCC> and <http://www.hsccltd.co.in> and as corrigendum /amendments etc, if any, will be notified on this e- tender portal only and separate advertisement separate advertisement will not be made for this.

(-Sd-)
Sr. Manager (Civil)
HSCC (India) Limited

Annexure-I

S. No.	Pre bid queries	Clarification
1	Clearing and Cleaning of the proposed site area- Pre start of work for easy access and to maintain a dust free safe zone to proceed the next course of work without any hindrance scope of work includes appoint housekeeping personals and charting away unwanted materials debris far away as instructed by the engineers- in charge, regularly and periodically. Rate to include removing existing debris. Unit:- CUM	Clearing and Cleaning of the proposed site area- Pre start of work for easy access and to maintain a dust free safe zone to proceed the next course of work without any hindrance scope of work includes appoint housekeeping personals and charting away unwanted materials debris far away as instructed by the engineers- in charge, regularly and periodically. Rate to include removing existing debris. Unit:- Sqft
2	Wooden Skirting of ht-75mm, flushed with wall or vertical surface , with 6 mm groove between vertical surface and skirting. Unit:- Sq.ft.	Wooden Skirting of ht-75mm, flushed with wall or vertical surface , with 6 mm groove between vertical surface and skirting. Unit:- Rft.
3	PQ Vol-I, Clause 3.3 Agency must have their own manufacturing unit since 05 years with following facilities, own machineries including ownership proof along with affidavit and installed machinery photograph to be submitted and registrations	Stands Deleted

All other specification remain same.

Annexure-II

Auditorium Audio and Visual work Specifications			
Work Description	BoQ Item	Tender Existing Specification	Amendment
Auditorium Audio and Visual work	BoQ Item 1	Video Wall Display specifications not present	Diagonal Size : 55 Inch or better ultra narrow bezel videowall display Ultra Narrow Bezel 1.7MM or better Should have non glare panels or better Type : D-LED DID or better Resolution : 1920 X 1080(FHD) or better Pixel Pitch : 0.63mm(H) * 0.63mm(V) or better Brightness : 500 nit or better Contrast Ratio : 4000:1 or better Viewing Angle(H/V) : 178/178 or better Response Time(G-to-G) : 8ms or better Display Colors : 8 bit - 16.7M or better Color Gamut : 72% or better 24*7 Usage or better H-Scanning Frequency : 30kHz ~ 81kHz or better V-Scanning Frequency : 48Hz ~ 75Hz or better Maximum Pixel Frequency : 148.5MHz or better Input : Analog D-SUB, DVI-D, Display Port 1.2 , HDMI x 2 , Stereo mini Jack or better Output : DP1.2(Loop-out) or better External Control : RS232C(in/out), RJ45 or better HDCP 2.2 Compliant or better
	BoQ Item 2	Modular Landscape Wall Mount with Push to open and push to close system specifications not present	Landscape Wall Mount bracket for 55 Inch LED Videowall displays Should have Push to open and Push to close Feature for Easy Servicing of video wall displays 8 Point Tool Less Micro adjustments for seamless display alignment. To be quoted with all other relevant accessories as applicable
	BoQ Item 4	75 Inch Professional Ultra High Definition LED Display specifications not present	Diagonal Size : 75 inch or Better Type : 60 Hz E-LED BLU or better Resolution : 3,840 x 2,160 or better Aspect Ratio : 16:9 or better Active Display Area : 1650.24(H) x 928.26(V) or better Brightness : 500 nits or better Contrast Ratio : 4000: 1 or better Viewing Angle (H/V) : 178 / 178 or better Display Colors : 16.7M(True Display) , 1.07B(Ditherd 10bit) or better Color Gamut : 72 % or better Response Time (G to G) : 8ms (Typ.) or better Operation Time : 24x7 or better Built in speaker : (10 W + 10 W) or better H-Scanning Frequency : 30 ~ 81kHz or better V-Scanning Frequency : 48 ~ 75Hz or better Connectivity : Input : Should have minimum 1x D-Sub, 2 x DisplayPort 1.2 , HDMI 1.4 x 4 Stereo Mini Jack HDCP 1.4 Support or better Output : Audio out on Stereo Mini jack External control : RS-232C (in/out), RJ45 Should have the following Certifications : Safety : 60950-1 or better EMC : Class A or better
	BoQ Item 5	Heavy Duty Swivel Mount Kit with Twin Cantilever Arms specification not present	Ultra-Slim Flat Screen Wall Mount with Twin Cantilever Arms or better Should be support display sizes upto 75 Inches or better Ultra-slim design should allow for close to the wall installation when folded flat or better Should have Twin cantilever arm for extended reach or better Should have Easy tool-less tilt mechanism or better Should allow for Lateral adjustment of screen once mounted or better Integrated cable management or better Cover plates to hide wall fixings or better Should support Max Load: 45kg or better VESA® Compatibility: up to 600 x 400 or better Tilt: +/-15° or better Swivel: 130° or better
	BoQ Item 20	55 Inch Professional LED Display specification not present	Diagonal Size : 55 inch or Better Type : 60 Hz E-LED BLU or better Resolution : 3,840 x 2,160 or better Aspect Ratio : 16:9 or better Active Display Area : 1209.60(H) x 680.40(V) or better Brightness : 500 nits or better Contrast Ratio : 4000: 1 or better Viewing Angle (H/V) : 178 / 178 or better Display Colors : 16.7M(True Display) , 1.07B(Ditherd 10bit) or better Color Gamut : 72 % or better

		<p>Response Time (G to G) : 8ms (Typ.) or better</p> <p>Operation Time : 24x7 or better</p> <p>Built in speaker : (10 W + 10 W) or better</p> <p>H-Scanning Frequency : 30 ~ 81kHz or better</p> <p>V-Scanning Frequency : 48 ~ 75Hz or better</p> <p>Connectivity :</p> <p>Input : Should have minimum 1x D-Sub, 1 x DisplayPort 1.2 , HDMI 2.0 x 2</p> <p>Stereo Mini Jack</p> <p>HDCP 2.2 Support or better</p> <p>Output : Audio out on Stereo Mini jack</p> <p>External control : RS-232C (in/out), RJ45</p> <p>Should have the following Certifications :</p> <p>Safety : 60950-1 or better</p> <p>EMC : Class A or better</p>
BoQ Item 21	Wall Mount Bracket specification not present	<p>Professional LED Display Mount or better</p> <p>Should be compatible with Screen sizes upto 80 Inch or better</p> <p>Max Load Capacity : 70 kg or better</p> <p>VESA Compatibility : upto 600x400 or better</p> <p>Unique Tilt Mechanism which should allow for tilt adjustment of upto +/- 15 Degrees or better</p> <p>Should allow for Post installation screen alignment for perfect screen positioning or better</p> <p>Arms should have levelling screws to adjust screen height or better</p> <p>Should have Safety screws help prevent unauthorised removal of screens or better</p>
BoQ Item 16	49 Inch Full HD LED Display specification not present	<p>Professional LED Display , Should have 24/7 durable performance capability or better</p> <p>Diagonal Size : 49 Inch or more</p> <p>Resolution : 1920X1080 (16:9)</p> <p>Brightness(Typical) : 500 nit or better</p> <p>Contrast ratio : 4,000 : 1 or better</p> <p>Viewing angle (H/V) : 178 : 178 or better</p> <p>Response time (G-to-G) : Max 8 ms</p> <p>Color gamut : 72% or better</p> <p>Display Colours : 1.07 Billion or better</p> <p>H-Scanning frequency : 30 to 81 kHz</p> <p>V-Scanning frequency : 48 to 75 Hz</p> <p>Maximum pixel frequency : Minimum 148.5 MHz</p> <p>Input : DVI-I , Display Port 1.2 x 2 , HDMI x2, Stereo mini jack</p> <p>Output: Stereo mini jack , DP1.2 or better</p> <p>External control : RS-232C (in/out) thru stereo mini jack , RJ 45 or better</p>
BoQ Item 17	Preview Monitor Cart specification not present	<p>Professional Conference Monitor Trolley or better</p> <p>Should be compatible with Screen sizes upto 55 Inch or better</p> <p>Should allow for screen mounting in Landscape or Portrait or better</p> <p>Easy adjustment of tilt -90° with fixed positions of 0°, -22.5°, -45°, -67.5° and -90° or better</p> <p>Should have locking/braked castors or better</p> <p>Weight Capacity Max 70 Kg or better</p> <p>VESA Compatibility :</p> <p>75 x 75, 100 x 100, 200 x 100, 200 x 200, 300 x 200, 400 x 200, 200 x 300, 300 x 300, 400 x 400, 600 x 400 or better</p>
BoQ Item 13	43 Inch Full HD LED Preview Monitors specification not present	<p>Professional LED Display , Should have 24/7 durable performance capability or better</p> <p>Diagonal Size : 43 Inch or more</p> <p>Resolution : 1920X1080 (16:9)</p> <p>Brightness(Typical) : 500 nit or better</p> <p>Contrast ratio : 5,000 : 1 or better</p> <p>Viewing angle (H/V) : 178 : 178 or better</p> <p>Response time (G-to-G) : Max 8 ms</p> <p>Display Colours : 1.07 Billion or better</p> <p>Color gamut : 72% or better</p> <p>H-Scanning frequency : 30 to 81 kHz</p> <p>V-Scanning frequency : 48 to 75 Hz</p> <p>Built in Speaker , 10W + 10W or better</p> <p>Maximum pixel frequency : Minimum 148.5 MHz</p> <p>Input : DVI-I , Display Port 1.2 x 2 , HDMI x2, Stereo mini jack</p> <p>Output: Stereo mini jack , DP1.2 or better</p> <p>External control : RS-232C (in/out) thru stereo mini jack , RJ 45 or better</p>
BoQ Item 20	Wall Mount Kit specification not present	<p>Professional LED Display Mount or better</p> <p>Should be compatible with Screen sizes upto 55 Inch or better</p> <p>Max Load Capacity : 50 kg or better</p> <p>VESA Compatibility : upto 400x400 or better</p> <p>Unique Tilt Mechanism which should allow for tilt adjustment of upto +/- 15 Degrees or better</p> <p>Should allow for Post installation screen alignment for perfect screen positioning or better</p> <p>Arms should have levelling screws to adjust screen height or better</p> <p>Should have Safety screws help prevent unauthorised removal of screens or better</p>
BoQ Item 6	Blu Ray Player specification not present	<p>Blu Ray Player</p> <p>Precision CinemaHD upscale feature or better</p> <p>MPEG-1 , MPEG-2 , MPEG-4 , XVID , Motion JPEG Video Playback or better</p> <p>MP-3 , Dolby Digital , AAC Audio Playback or better</p> <p>JPEG , PNG , GIF Image playback or better</p> <p>Digital audio out or better</p>

		HDMI Out or better USB Type A Input or better
BoQ Item 7	IR Probe specifications not present	IR Control probe for remotely controlling the devices on IR Should be designed to install directly on the IR control window of the controlled equipment Should contain a blinking IR emitter, an IR emitter shield, and mounting adhesive or better
BoQ Item 8-12	DIGITAL MODULAR MATRIX SWITCHER SYSTEM AND RELATED SUBSYSTEM specifications not present	<p>(a) DIGITAL MODULAR MATRIX SWITCHER, MODULAR DESIGN, 16 INPUT & 16 OUTPUT FRAME, FRAME DETECTOR AND INPUT SIGNAL ANALYSIS, ZERO FRAME DELAY, COMBINE NON-HDCP AND HDCP CAPABLE, 1 PREVIEW INPUT & OUTPUT PORT (VIDEO SIGNALS) WITH ALL REQUIRE ACCESSORIES ETC. ALL COMPLETE.</p> <p>TECHNICAL SPECIFICATION 16 INPUTS AND 16 OUTPUTS, COMBINE NON-HDCP AND HDCP CAPABLE I/O BOARDS, ADVANCED ERROR HANDLING, ADVANCED EDID MANAGEMENT, HYBRID MODULAR AND CROSS PLATFORM TECHNOLOGY, ZERO FRAME DELAY, HDMI 4K 3D AND DISPLAY PORT 1.1 VIDEO SIGNALS, ETHERNET & RS-232 FOR CONTROL, DVI/HDMI TEST INPUT, DVI/HDMI PREVIEW OUTPUT, ABILITY TO GENERATE LOG FOR TROUBLESHOOTING (b) INPUT CARD: COMBINE / COMBINATION OF 4 HD BASE T & 4 HDMI INPUT PORT, HDMI 1.4; DVI AND HDCP COMPLIANT, SUPPORT 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0), SUPPORTS ALL HDMI AUDIO FORMATS, POE ADD- ON OPTION WITH ALL REQUIRED ACCESSORIES ETC. ALL COMPLETE</p> <p>TECHNICAL SPECIFICATION FOUR HDMI AND FOUR HD BASE T HDMI EXTENSION SUPPORTING 3D AND 4K. ACCEPTS HDMI, ETHERNET, RS-232 OVER ONE CAT 6 CABLE MORE THAN 120M, HDMI 1.4; DVI AND HDCP COMPLIANT SUPPORTS 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) 48-BIT COLOUR DEPTH, SUPPORTS ALL HDMI AUDIO FORMATS, BI-DIRECTIONAL RS-232 AND ETHERNET TRANSMISSION, HDCP ENABLE/DISABLE MODE, ADVANCED EDID MANAGEMENT, COMPATIBLE WITH DEEP COLOUR, DOLBY TRUE HD AND DTS-HD AUDIO, REMOTE POWERING 48V, AUDIO EMBEDDING AND DE-EMBEDDING SUPPORTED</p> <p>(c) INPUT CARDS: COMBINATION OF 8 HDMI INPUT PORT, HDCP COMPLIANT, SUPPORT 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0), HDMI 1.4A; DVI AND HDCP COMPLIANT, CAN HANDLE HDMI EMBEDDED AUDIO</p> <p>TECHNICAL SPECIFICATION 1920X1080@60HZ/4:4:4, 4096X2048@30HZ/4:4:4 OR 60HZ/4:2:0, BUILT IN OSCILLOSCOPE, INPUT CABLE EQUALIZATION UP TO 30M AT 1080P 60HZ, HDCP ENABLE/DISABLE FUNCTION ON INPUT, ADVANCED EDID MANAGEMENT. SUPPORTS HDMI 3D SIGNAL FORMATS (FRAME PACKING, SIDE-BY-SIDE AND TOP- BOTTOM) NO SIGNAL LATENCY, ZERO FRAME DELAY, AUDIO EMBEDDING AND DE-EMBEDDING SUPPORTED (d) OUTPUT CARDS: COMBINATION OF 8 HD BASE T OUTPUT PORT, HDCP COMPLIANT, SUPPORT 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0), POE ADD- ON OPTION WITH ALL REQUIRED ACCESSORIES. REMOTE POWERING OPTION FOR THE TPS EXTENDERS WITH POE</p> <p>TECHNICAL SPECIFICATION EIGHT HD BASE T OUTPUT, 1920X1080@60HZ/4:4:4, 4096X2048@30HZ/4:4:4 OR 60HZ/4:2:0, CABLE UP TO 120M, 48-BIT COLOUR DEPTH, BUILT-IN POE INJECTOR* FOR REMOTE POWERING EXTENDERS, SUPPORTS DEEP COLOUR SIGNALS (24/30/36 BIT RGB/YCBCR 4:4:4), NO VIDEO COMPRESSION, NO SIGNAL LATENCY, ZERO FRAME DELAY, ADVANCED EDID MANAGEMENT, SUPPORTS ALL HDMI AUDIO FORMATS BI-DIRECTIONAL RS-232 AND ETHERNET .TRANSMISSION, HDCP ENABLE/DISABLE MODE, AUDIO EMBEDDING AND DE-EMBEDDING SUPPORT</p> <p>(e) OUTPUT CARDS: COMBINE / COMBINATION OF 4 HD BASE T & 4 HDMI OUTPUT PORT, HDMI 1.4; DVI AND HDCP COMPLIANT, SUPPORT 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0), SUPPORTS ALL HDMI AUDIO FORMATS, AUDIO DE- EMBEDDING OUTPUT, POE ADD- ON OPTION WITH ALL REQUIRED ACCESSORIES</p> <p>TECHNICAL SPECIFICATION</p>

		<p>FOUR HDMI AND FOUR HD BASE T, HDMI EXTENSION SUPPORTING 3D AND 4K ACCEPTS HDMI, ETHERNET, RS-232 OVER ONE CAT 6 CABLE MORE THAN 120M, HDMI 1.4; DVI AND HDCP COMPLIANT SUPPORTS 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) 48-BIT COLOUR DEPTH, SUPPORTS ALL HDMI AUDIO FORMATS BI-DIRECTIONAL RS-232 AND ETHERNET TRANSMISSION, HDCP ENABLE/DISABLE MODE, ADVANCED EDID MANAGEMENT COMPATIBLE WITH DEEP COLOUR, DOLBY TRUE HD AND DTS-HD AUDIO, REMOTE POWERING</p> <p>(f) DISTRIBUTION AMPLIFIER WITH ONE HDMI INPUT AND TWO HDMI OUTPUT, SHALL SUPPORT END TO END 4K. THE DISTRIBUTION AMPLIFIER SHOULD SUPPORT HDMI1.4 OR MORE, WITH BUILT IN CABLE LOSS MANAGEMENT AT THE INPUT AND EDID MANAGEMENT, HDCP COMPLIANCE ETC. ALL COMPLETE</p> <p>TECHNICAL SPECIFICATION</p> <p>1XHDMI INPUT PORT</p> <p>2XHDMI – OUTPUT PORT</p> <p>SUPPORT 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES. HDMI 1.4, HDCP 1.4 AND DVI COMPLIANT. HDCP ENABLE/DISABLE FUNCTION. ADVANCED EDID MANAGEMENT. NO VIDEO COMPRESSION.</p> <p>(g) ACTIVE WALL PLATE: VGA, HDMI, DISPLAY PORT AND AUDIO INPUT, 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) SUPPORT AND 3D CAPABILITIES, VGA, YPRPB, HDMI1.4 AND DP 1.1 SIGNAL SUPPORT, AUTO SELECT MODE, HDCP COMPLIANT, CEC, EDID TRANSPARENT, HD BASE T COMPATIBILITY, EXTENDS HDMI, DISPLAY PORT, VGA, AUDIO, ETHERNET, RS-232, IR OVER A SINGLE CATX CABLE UP TO 170 M DISTANCE</p> <p>TECHNICAL SPECIFICATION</p> <p>1 HDMI, 1 VGA AND 1 DISPLAY PORT INPUT PORTS, 1 BALANCED AUDIO INPUT PORTS, OUTPUT PORT 1 HD BASE T, SUPPORT 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR, 4:2:0) AND 3D CAPABILITIES, EXTENDS HDMI, VGA, DISPLAY PORT, AUDIO, ETHERNET, RS-232, IR OVER A SINGLE UP TO 170 M EVENT MANAGER, BI-DIRECTIONAL RS-232 AND IR BREAKAWAY AUDIO AND VIDEO SWITCHING, HDMI 1.4, HDCP 1.4 AND DVI 1.0 COMPLIANT HDCP ENABLE/DISABLE FUNCTION, HD BASE T COMPATIBLE ADVANCED EDID MANAGEMENT NO VIDEO COMPRESSION BI-DIRECTIONAL RS-232 AND IR EXTENSION</p> <p>(h) HDMI TRANSMITTER, 1 HDMI INPUT AND 1 HD BASE T OUTPUT, HDMI EXTENSION SUPPORTING 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES OVER ONE CATX CABLE UP TO 170 M DISTANCE, BI-DIRECTIONAL RS- 232 AND IR, HDCP 2.2 COMPLIANT, CEC, EDID TRANSPARENT</p> <p>TECHNICAL SPECIFICATION</p> <p>1 HDMI INPUT PORT</p> <p>1 HD BASE T OUTPUT PORT</p> <p>HDMI 1.4 AND DVI 1.0 COMPLIANT BI-DIRECTIONAL RS-232 EXTENSION SUPPORTING 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES EXTENDS DVI, HDMI, ETHERNET, RS-232, IR OVER CAT6 CABLE UP TO 120 M DISTANCE, HDCP 2.2 COMPLIANT, CEC, EDID TRANSPARENT, NO SIGNAL LATENCY, ZERO FRAME DELAY HDBASET COMPATIBLE, TRANSPARENT EDID PASS-THROUGH, CAN BE REMOTE POWERED THROUGH CATX CABLE</p> <p>(i) HDMI RECEIVER, 1 HD BASE T INPUT AND 1 HDMI OUTPUT, HDMI EXTENSION SUPPORTING 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES OVER ONE CATX CABLE UP TO 170 M DISTANCE, BI-DIRECTIONAL RS- 232 AND IR, HDCP 2.2 COMPLIANT, CEC, EDID TRANSPARENT</p> <p>TECHNICAL SPECIFICATION</p> <p>1 HD BASE T INPUT PORT</p> <p>1 HDMI OUTPUT PORT</p> <p>HDMI 1.4 DVI 1.0 COMPLIANT BI-DIRECTIONAL RS-232 EXTENSION SUPPORTING 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES EXTENDS DVI, HDMI, ETHERNET, RS-232, IR OVER CAT6 CABLE UP TO 120 M DISTANCE HDCP 2.2 COMPLIANT, CEC, EDID TRANSPARENT, NO SIGNAL LATENCY, ZERO FRAME DELAY HDBASET COMPATIBLE, TRANSPARENT EDID PASS-THROUGH CAN BE REMOTE POWERED THROUGH CATX CABLE</p>
BoQ Item 22	Full HD PTZ Cameras & Mounting	Full HD PTZ camera

		<p>Brackets specifications not present</p> <p>20X Optical Zoom or better 1/3" 2 MP CMOS Sensor or better Pan Range : +170 ~ -170° or better Tilt Range : +90 ~ -30° or better Camera Presets : Minimum 100 or better Video Outputs Interface (HD) : Ethernet, HDMI, 3G-SDI with all outputs working simultaneously without signal drop or better Camera Interface Protocol : RS-422 / RS232 / Ethernet or better Video Outputs : 1080p 60/50 fps, 1080i 60/50 fps, 1080p 30/25fps, 720p 60/50fps, 720p 30/25fps, NTSC/PAL or better Video S/N Ratio : > 50dB or better Shutter Speed : 1/1 ~ 1/10,000 sec or better Focal Length : f=5~94mm or better Horizontal Viewing Angle : Minimum 60 Degree or better Aperture : F1.6~3.5 or better Minimum Illumination : Min. 5lux or better Minimum Object Distance : 300(Wide)~1500(Tele) mm or better Gain Control : Auto, Manual or better White Balance : Auto, Indoor, Outdoor, One-Push, Manual or better Exposure Control : Auto, Manual or better Focus System : Auto, Manual or better Image Flip feature or better POE Support or better</p>
BoQ Item 23	<p>Multi Window Processor & H.264 Streaming</p> <p>Device specifications not present</p>	<p>Professional Recorder with Built In Streaming Solution or better Recording Options : Capture from Multiple Sources and able to record and Stream upto min four full motion HD Videos simultaneously in one frame upto 1080p resolution. Multiple encoding rates, Multiple frame rates, Auto Logo Insertion during recording or better Streaming Options : Webcast, Unicast and Multicast or better Audio Only Encoding Formats : AAC or better Video Inputs : HDMI/DVI/VGA/RJ-45 or better Input Channel : HDMI / DVI / VGA/ IP for Laptop, Visualizer and Cameras with 4 channel synchronized recording or better Audio Input : Line In, Mic and 3.5 mm Stereo or better Video Processing : At different frame rates upto 30 fps; Multiple Bit Rate from 64kps to 24Mbps in Full HD Resolution of 1080p or better Output Channel : HDMI/VGA or better Storage : In-built Storage of min 1 TB or to supplied with External USB Hard Drive Stored File Format : AVI / MPEG4 or better Remote Storage : Yes FTP protocol or better Streaming Formats : RTP and RTMP or better Display Outputs : Full Screen, Picture in Picture, Multi-channel split screen or better Editing : Through Web-based back stage and Post Recording Index Editing Operation Control : Through Remote Control and web based control interface or better External Control : RS-232 port or better</p>
BoQ Item 24- 25	<p>Visca Cable Extender specifications not present</p>	<p>VISCA Cable Extnrnder ovefr CAT5/6 Cable</p> <p>Should allow for control signal extension upto 300 Feet (100 meters) on CAT5/6 cable or better</p> <p>Should also support daisy chaining upto Minimum 3 Cameras and Maximum 7 Cameras or better</p>
BoQ Item 18	<p>2 Output HDMI Distribution Amplifier specifications not present</p>	<p>6 Output , 4K HDMI Distribution Amplifier or better Should support computer and video resolutions up to 4K or better HDMI specification features include data rates up to 10.2 Gbps, Deep Color up to 12-bit, 3D, and HD lossless audio formats or better Should automatically manage EDID Communication between connected devices or better Should be HDCP Compliant or better Selectable output muting via RS-232 or better User-selectable HDCP authorization or better HDCP Visual Confirmation i.e When HDCP-encrypted content is transmitted to a non-HDCP compliant display, a full-screen signal should be sent to the display for immediate visual confirmation that protected content cannot be viewed on that display or better Automatic color bit depth management or better HDMI to DVI Interface Format Correction or better HDCP authentication and signal presence LED indicators or better</p>
BoQ Item 37	<p>Professional Wireless Handheld Microphone Set specifications not present</p>	<p>Handheld Transmitter : UHF Handheld Microphone or better Ergonomic design and programmable power lock or better Infrared interface to transmit settings from the receiver to the transmitter or better Dynamic Capsule with Cardioid Polar Pattern or better LC display or better 2-stage gain switch or better Programmable mute button or better Battery power LED or better Operating time: approx. 10 hours with 2 x 1.5 V AA batteries or better Transmission power can be switched between 10 mW and 50 mW or better Transmission range up to 120 m or better Synchronisation of receiver and transmitter in less than one second or better Audio frequency response : 45 – 15 kHz or better</p>

		<p>Audio dynamic range : 106 dB (A-weighted) or better</p> <p>Reciever : UHF Single Diversity Receiver or better Intuitive, user-friendly menu structure or better Up to 40 MHz switching bandwidth or better Infrared interface for transmitting settings from the receiver to the transmitter or better Backlit LC display or better Status display (battery, frequency, name) or better Scan function or better XLR and jack output (balanced) or better Detachable BNC antennas or better Pilot tone function or better Transmission range : up to 120 m (line of sight) Number of the simultaneously active channels : 16 per frequency band or better Audio frequency response : 45 – 15 kHz or better Audio dynamic range : 106 dB (A-weighted) or better Frequency Response : 45 to 15 kHz or better</p>
BoQ Item 38	Professional Wireless Lavelleier Microphone Set specifications not present	<p>Body Pack Transmitter : UHF Beltpack Transmitter or better Ergonomic design and programmable power lock or better Infrared interface to transmit settings from the receiver to the transmitter or better LC display or better 3-stage gain switch or better Programmable mute button or better Battery power LED or better Operating time: approx. 10 hours with 2 x 1.5 V AA batteries or better Transmission power can be switched between 10 mW and 50 mW or better Transmission range up to 120 m or better Synchronisation of receiver and transmitter in less than one second or better Removable belt clips for horizontal & vertical mounting or better Pilot tone function or better</p> <p>Lapel Microphone : Polar Pattern : Omnidirectional or Better Transducer Type : Electret Condenser or better Modulation : FM</p> <p>Reciever : UHF Single Diversity Receiver or better Intuitive, user-friendly menu structure or better Up to 40 MHz switching bandwidth or better Infrared interface for transmitting settings from the receiver to the transmitter or better Backlit LC display or better Status display (battery, frequency, name) or better Scan function or better XLR and jack output (balanced) or better Detachable BNC antennas or better Pilot tone function or better Transmission range : up to 120 m (line of sight) Number of the simultaneously active channels : 16 per frequency band or better Audio frequency response : 45 – 15 kHz or better Audio dynamic range : 106 dB (A-weighted) or better Frequency Response : 45 to 15 kHz or better</p>
BoQ Item 39	Antenna Splitter specifications not present	<p>4 Way or better Antenna Splitter Range if 400 to 900 Mhz or better Should be of the Same make as that of the proposed wireless microphones Should be compatible with the proposed wireless microphones or better Should have minimum 4 RF outputs for micropphone antennas or better Should have status LED's or better</p>
BoQ Item 41	Wideband Antenna Amplifier specifications not present	<p>RF amplifier Should compensate for signal losses in the antenna cable or better Should operate in the UHF range of 470 to 1000 Mhz or better BNC Sockets Input / Output Adjustable amplifications (5 , 10 15 dB) or better</p>
BoQ Item 42	Omnidirectional Antenna specifications not present	<p>Passive Omnidirectional Wideband Antenna Should operate in the UHF range of 470 to 1000 Mhz or better</p>
BoQ Item 44	Boundary Layer Microphone specifications not present	<p>Condenser Boundary Layer Microphone or Better Semi-Cardioid Polar pattern or better ON/OFF Button High Quality Non Glare Design or better LED Indicator or better High Gain before feedback or better Operating Principle : Pressure gradient or better Frequency Response : 45 - 20,000 Hz or better Nominal Impedance : < 200 Ω or better</p>

		<p>Max. SPL at 1 kHz : 114.2 dB or better</p> <p>Dynamic Range : 84 dB or better</p> <p>Signal to Noise Ratio : 63.8 dB dBA, RMS or better</p>
BoQ Item 45	Wired Microphones with ON / OFF Switch , Cardiod specifications not present	<p>Polar Pattern: Cardiod or better</p> <p>Should have rugged construction</p> <p>On/Off Switch</p> <p>Transducer Type : Dynamic</p> <p>Frequency Response : 30 - 18,000 Hz or better</p>
BoQ Item 46	Gooseneck Microphone , Cardiod with Mute Switch specifications not present	<p>RFI proof Gooseneck Microphone</p> <p>High Sensitivity</p> <p>High Gain before feedback</p> <p>ON/OFF Switch</p> <p>500mm stem length or better</p> <p>Transducer Type : Electret Condenser</p> <p>Operating Principle : Pressure Gradient</p> <p>Polar Pattern : Cardiod or better</p> <p>Frequency response : 50 - 19,000 Hz or better</p> <p>Open circuit voltage : 17 mV/Pa or better</p> <p>Nominal impedance : < 200 Ω or better</p> <p>Load Impedance : \geq 1 kΩ or better</p> <p>Signal to Noise Ratio : 69 dB or better</p> <p>Max. SPL : 107 dB or better</p> <p>Microphone to be quoted with appropriate Shock mount base or better</p>
BoQ Item 47	Shock Mount Base specifications not present	<p>Flexible Shock Mount Fixture</p> <p>Should be compatible with the proposed Gooseneck Microphone</p> <p>Should provide for optimum isolation from physical vibration</p> <p>Rugged Design</p> <p>Should allow for fast and easy setup</p>
BoQ Item 49	Two Way Line Array Speaker specifications not present	<p>2 Way Full Range Self Powered Line Array Speaker</p> <p>Frequency Range (-10 dB) - 44 Hz to 20 kHz or better</p> <p>Maximum Peak SPL at 1m 131 dB SPL or better</p> <p>Nominal Coverage 90 Degree (H) x 18 Degree (V) or better</p> <p>12" LF Driver or better</p> <p>1.75" HF Diaphragm Compression Driver or better</p> <p>500 Watts Class D Power Amplifier for HF or better</p> <p>500 Watts Class D Power Amplifier for LF or better</p> <p>Power, Signal, Standby, Limit Indicators or better</p> <p>Balanced XLR Line Level Input Connector, Balanced XLR Full Range Line Level Output Connector, Remote Attenuation Control Connector, Locking PowerCon AC Power In & Out Connector or better</p> <p>On Demand 50 mm Variable Speed Fan Cooling or better</p> <p>Amplifier Protection : Thermal Limiting, Output Overcurrent & Overtemperature Muting or better</p> <p>Transducer Protection : Thermal Limiting & Excursion Limiting or better</p> <p>Impact Resistant ABS Enclosure or better</p> <p>Rugged Powder Coated Steel Grill or better</p>
BoQ Item 50	Mounting Array Frame specifications not present	Mounting Array Frame for the line array Speakers
BoQ Item 51	18 Inch Active Subwoofer specifications not present	<p>18 Inch Self Powered Subwoofer or better</p> <p>Frequency Range (-10 dB) 37 Hz to 129 kHz or better</p> <p>Maximum Peak SPL at 1m 135 dB SPL or better</p> <p>1000 Watts Continuous Power Class D Amplifier</p> <p>2000 Watts Peak Power or better</p> <p>18" Cone LF Transducer</p> <p>Power, Signal, Standby, Limit or better</p> <p>On demand, 50 mm variable speed fan cooling or better</p> <p>Thermal limiting, excursion limiting transducer protection or better</p> <p>Should have rugged power coated steel grille or better</p>
BoQ Item 52	Front Fill Speakers specifications not present	<p>Frequency Range (-10 dB) 55 Hz to 20 kHz or better</p> <p>Maximum Peak SPL at 1m 128 dB SPL or better</p> <p>Maximum Continuous SPL at 1m 122 dB SPL or better</p> <p>Nominal Coverage Angle 105 Degree Conical or better</p> <p>2000 Watts Peak Power Class D Amplifier or better</p> <p>8" LF Driver</p> <p>1.4" Titanium Diaphragm Compression Driver</p> <p>Built-in DSP with recallable Presets, Parametric EQ, Delay, Save & Recall of User Presets</p> <p>Monochrome LCD Display or better</p> <p>M10 Threaded Inserts and Pull Back or better</p>
BoQ Item 54	Delay Fill 2 Way Active Multi-Purpose Loudspeaker specifications not present	<p>Frequency Range (-10 dB) - 55 Hz to 20 kHz or better</p> <p>Maximum Peak SPL at 1m 130 dB SPL or better</p> <p>Maximum Continuous SPL at 1m 124 dB SPL or better</p> <p>Nominal Coverage Angle 90 Degree Conical or better</p> <p>2000 Watts Peak Power Class D Amplifier or better</p> <p>10" LF Driver or better</p> <p>1.4" HF Titanium Diaphragm Compression Driver or better</p> <p>Input A Switchable between Mic & Line, Input B Switchable between High-Z & Line</p>

		<p>Built-in DSP with recallable Presets, Parametric EQ, Delay, Save & Recall of User Presets</p> <p>Monochrome LCD Display</p> <p>M10 Threaded Inserts and Pull Back or better</p>
BoQ Item 57	Stage Monitor 2 Way Active Multi-Purpose Loudspeaker specifications not present	<p>Frequency Range (-10 dB) - 45 Hz to 20 kHz or better</p> <p>Maximum Peak SPL at 1m 132 dB SPL or better</p> <p>Maximum Continuous SPL at 1m 126 dB SPL</p> <p>Nominal Coverage Angle 75 Degree Conical</p> <p>2000 Watts Peak Power Class D Amplifier</p> <p>12" LF Driver</p> <p>1.4" HF Titanium Diaphragm Compression Driver</p> <p>Input A Switchable between Mic & Line, Input B Switchable between High-Z & Line</p> <p>Built-in DSP with recallable Presets, Parametric EQ, Delay, Save & Recall of User Presets</p> <p>Monochrome LCD Display</p> <p>M10 Threaded Inserts and Pull Back or better</p>
BoQ Item 60	Wallmount Loud Speaker specifications not present	<p>2-Way Full Range Passive Wall Mount Speaker</p> <p>6.5" Weather Resistant Paper Cone Woofer, 1.5" Voice Coil or better</p> <p>1" Silk Dome Tweeter, 1" Voice Coil, Horn Loaded or better</p> <p>Rated Noise Power 150 Watts or better</p> <p>Rated Impedance 8 Ohms or better</p> <p>Sensitivity at 1 mtr 89 dB SPL or better</p> <p>Maximum Peak Output 116 dB SPL or better</p> <p>Coverage Angle 105 Degree Conical or better</p> <p>Transformer Taps at 60, 30 & 15 Watts at 70/100 V & 8 Ohm Bypass or better</p> <p>Painted ABS Polymer Enclosure or better</p> <p>IP-54 Rated or better</p>
BoQ Item 61	Audio Power Amplifier specifications not present	<p>Audio Power Amplifier 2 Channels or better</p> <p>200 Watts per channel into 4 and 8 Ohms loads or better</p> <p>Energy Star Qualified Amplifier or better</p> <p>Bridgeable outputs for higher power or better</p> <p>Auto-Ramp provides quiet startup and power-down or better</p> <p>Output Power :</p> <p>8Ω dynamic, all channels driven : 200 Watts or better</p> <p>4Ω dynamic,all channels driven : 200 Watts or better</p> <p>Bridged Mode :-</p> <p>8Ω & 4Ω Per Channel : 400 Watts or better</p> <p>70v , 100v or better : 350 Watts or better</p> <p>Signal to Noise Ratio : (A weighted, 20 Hz-20 kHz) : >100 dB or better</p> <p>Input Sensitivity : 1.23 Vrms (+4 dBu) or better</p> <p>Maximum Voltage Gain : 25.0 dB or better</p> <p>Output Circuitry : Class D or better</p> <p>Frequency Response : 20 Hz - 20 kHz or better</p> <p>Highpass Filter : Switchable 80 Hz when Bridged in 70V & 100V or better</p> <p>Agency Approvals : UL, CE, ENERGY STAR, RoHS/WEEE compliant, FCC Class B (Conducted and Radiated emissions) or better</p>
BoQ Item 62	Multichannel Audio DSP specifications not present	<p>8 Analog Balanced Mic/Line Input with Phantom Power</p> <p>8 Analog Balanced Line Output</p> <p>8 Analog Balanced Flex I/O individually switchable as Mic/Line Input or Line Output</p> <p>16 Channels of Routable AEC Processing or better</p> <p>1 x POTS Telephone Line on Standard RJ11 Connector or better</p> <p>4 Instances of VoIP or better</p> <p>128 x 128 Networked Audio Channels or better</p> <p>16 x 16 GPIO Logic Ports or better</p> <p>16 x 16 USB Audio Channels or better</p> <p>Dual Gigabit LAN Port for Networked Audio, Control, VoIP or Network Redundancy or better</p> <p>Sampling Rate 48 kHz or better</p> <p>A to D & D to A Converters 24 Bit or better</p> <p>USB Audio 16 Bit 48 kHz or better</p> <p>Freely Assignable Audio & Logic Processing Objects including but not limited to Gain Sharing & Gated Automixer, Matrix Mixer & Router, Multi Band Crossover, Gain, Delay, Compressor, Limiter, Multi Octave Graphic Equalizer, Multi Band Parametric Equalizer, Notch Feedback Controller or better</p> <p>Software Based Configuration & Monitoring, Event Scheduling, Managing Audio Files & Playlist, User Control Interface Configurable by Software for OEM Manufactured Controllers, iOS Devices or PC/Laptops (with optional license) or better</p> <p>Front Panel Display Displays Information about Design, Network etc. or better</p>
BoQ Item 64	Digital Mixing Console specifications not present	<p>10" Diagonal Color TFT Screen, Capacitive Multi-Touch Sensing or better</p> <p>24 Mic/Line Inputs (20 XLR, 4 XLR/Jack Combo) or better</p> <p>6 Stereo Line Inputs (balanced, 1/4" TRS + 3.5 mm stereo) or better</p> <p>Stereo USB / MP3 Playback or better</p> <p>1 x Talkback Input with XLR Connector or better</p> <p>4 Band Parametric EQ with Lo & Hi Shelving Options, Variable 24 dB/Octave HPF & LPF, Gate & Compressor and Delay (100 msec max) in Input Processing or better</p> <p>Balanced Main LR Output on 2 x XLR (Line Level) or better</p> <p>14 x Balanced Aux Outputs on XLR (Line Level) or better</p> <p>1 x Stereo TRS Headphone Output or better</p> <p>1 x Stereo XLR Monitor L/R Output or better</p>

		<p>1/3 Octave Graphic EQ, 6 Band Parametric EQ, Variable High & Low Pass filters, 8-Band Anti-Feedback Filters, Limiter, Delay Output Processing or better</p> <p>Stereo mp3 & 32 x 32 Multitrack Recording & Playback direct to hard drive or better</p> <p>32 x 32 track USB Computer recording interface with Mac / Windows Computers on/from DAW or better</p> <p>8 DCA Groups with Mute, 8 Mute Groups or better</p> <p>8 Sub Groups (with 6-band Parametric EQ with High & Low Pass Filters & Limiters) or better</p> <p>6 Simultaneous Effects Processing including Reverb, Echo, Delay, Chorus, Pitch Shift etc. or better</p> <p>12-band Anti-Feedback Filters or better</p> <p>1/3 Octave RTA assignable to channels or user selectable source or better</p> <p>2 Rear Time Analyzer (1/3 octave, assignable to channels or user selectable source) or better</p> <p>2 USB A connectors, 1 USB B Connector & 1 RJ-45 connection for Wi-Fi router or better</p> <p>99 User Scenes, 120 Factory Presets, 99 User Presets or better</p> <p>External Control using wifi enabled iOS or Android devices or better</p> <p>Selectable 44.1 kHz or 48 kHz Sampling Frequency or better</p> <p>32 Bit Floating Point Internal Processing or better</p> <p>THD <0.005% at +4 dBu, 20 Hz to 20 kHz, Unity Gain, any input to any output or better</p> <p>Dynamic Range 105 dB or better</p> <p>Equivalent Input Noise -126 dBu or better</p> <p>Residual Output Noise -86 dBu or better</p> <p>Crosstalk -80 dB or better</p> <p>S/N Ratio -94 dB or better</p> <p>Mic Input Gain - 75 dB (60 dB Analog, 15 dB Digital) or better</p> <p>Maximum Input Level +16 dBu on XLR Mic/Line Inputs, +26 dBu on TRS Mic/Line Inputs, +22 dBu on Stereo Inputs or better</p> <p>Maximum Output Level +22 dBu on all line level outputs or better</p> <p>48V Phantom Power Individually Switchable on all Mic Inputs or better</p>
BoQ Item 66	Control Processor specifications not present	<p>Hardware Based Control processor</p> <p>Should Support secure industry standard communications protocols including HTTP (insecure), HTTPS, SSH, SFTP, SMTP, NTP, Discovery Service, DHCP, DNS, ICMP, and IPv4 or better</p> <p>Six bidirectional RS-232 serial ports with software handshaking or better</p> <p>Two bidirectional RS-232/RS-422/RS-485 serial ports with hardware and software handshaking or better</p> <p>Eight IR/Serial ports for one-way control of external devices or better</p> <p>Four Flex I/O ports or better</p> <p>Eight Relay ports or better</p> <p>Four independently switched 12 VDC outputs or better</p> <p>Ethernet monitoring and control</p> <p>Should Support popular BMS – Building Management System protocols, such as BACnet, KNX, and DALI or better</p> <p>Should Support 10/100/1000Base-T or better</p> <p>Integrated IR Learning capability or better</p> <p>Automatic clock synchronization allows touchpanel to display the accurate time and date or better</p> <p>Front panel port status indicators or better</p> <p>Should support Multi-level password protection i.e should Allow for security to be set based on user roles</p>
BoQ Item 67	Touch Panel specifications not present	<p>Retina Display or better</p> <p>9.7-inch (diagonal) LED-backlit Multi-Touch display with IPS technology or better</p> <p>2048x1536 resolution at 264 pixels per inch (ppi) or better</p> <p>Fingerprint-resistant oleophobic coating or better</p> <p>Wi-Fi (802.11a/b/g/n); dual channel (2.4GHz and 5GHz) and MIMO or better</p> <p>Bluetooth 4.2 technology or better</p> <p>Operating temperature: 0° to 35° C (32° to 95° F) or better</p> <p>Non-operating temperature: -20° to 45° C (-4° to 113° F) or better</p> <p>Relative humidity: 5% to 95% non-condensing or better</p>
BoQ Item 71	Wireless Access Point specifications not present	<p>Advanced Dual-Band N Router</p> <p>Switch Port Speed : 10/100 Mbps (Fast Ethernet) or better</p> <p>Radio Frequency : 2.4 and 5 GHz or better</p> <p>Security features : WEP, WPA, WPA2 or better</p> <p>Security key bits : Up to 128-bit encryption or better</p> <p>Storage File System Support : FAT, and NTFS, and HFS+ (V3 only) or better</p> <p>Power : 12V, 1A</p> <p>Certifications : FCC, IC, CE, Wi-Fi (IEEE 802.11a/b/g/n) or better</p> <p>Operating Temp : 0 to 40°C (32 to 104°F) or better</p>
BoQ Item 69	Docking Station specifications not present	<p>Ergonomically designed</p> <p>Universal Mounting Pattern</p> <p>Should be compatible with the proposed Apple IPAD</p>
BoQ Item 80	42U Equipment Rack specifications not present	<p>42U AV Equipment Rack</p> <p>Multi Hollow Extruded Aluminum Frames Structure across the X, Y & Z axis to give an Unistrut bolting mechanism (UL) and Further reinforced with 8 Nos. of corner bracket which ensure better stability and strength</p> <p>Configured to hold 19-inch equipment with the help of two pairs of mounting angle provided with square slots to accommodate M6 Cage nuts at universal pitch Pattern as per DIN 41494</p>

		<p>Top cover ventilated on all sides along the width and depth thereby enhancing exhaust of hot air</p> <p>Cable entry provision is both at the top and bottom covers with 35mm round cable entry point, the cable entry provision comprising of a gland plate with cable entry points in round cut outs edge protected with rubber grommets</p> <p>Monitor Tray – Ventilation – Tray Specially designed with multiple bend and additional stiffeners for better load carrying capacity</p> <p>Metal Steel Ventilation Panel – Blank Ventilation Panels to help to fill the open space in the rack along with ventilation to facilitate air circulations</p> <p>Castor – 4 Nos. of heavy duty castors to take care of heavy load bearing capacities are provided, 2 Nos. in the front with Break & 2 Nos. on the rear without break.</p> <p>Rack mount channels with Hardware sets</p> <p>Earthing Strip – Copper strip to take care of the grounding</p> <p>Colour Finishing – RAL - 7035 & RAL - 7037 Fine Texture with 60 – 80 microns, for better finish and aesthetic look</p>
BoQ Item 81	9U Equipment Rack specifications not present	<p>9U , AV Equipment Rack</p> <p>Multi Hollow Extruded Aluminum Frames Structure across the X, Y & Z axis to give an Uninstruct bolting mechanism (UL) and Further reinforced with 8 Nos. of corner bracket which ensure better stability and strength or better</p> <p>Configured to hold 19-inch equipment with the help of two pairs of mounting angle provided with square slots to accommodate M6 Cage nuts at universal pitch Pattern as per DIN 41494 or better</p> <p>Top cover ventilated on all sides along the width and depth thereby enhancing exhaust of hot air or better</p> <p>Cable entry provision is both at the top and bottom covers with 35mm round cable entry point, the cable entry provision comprising of a gland plate with cable entry points in round cut outs edge protected with rubber grommets or better</p> <p>Monitor Tray – Ventilation – Tray Specially designed with multiple bend and additional stiffeners for better load carrying capacity or better</p> <p>Metal Steel Ventilation Panel – Blank Ventilation Panels to help to fill the open space in the rack along with ventilation to facilitate air circulations or better</p> <p>Castor – 4 Nos. of heavy duty castors to take care of heavy load bearing capacities are provided, 2 Nos. in the front with Break & 2 Nos. on the rear without break.or better</p> <p>Rack mount channels with Hardware sets or better</p> <p>Earthing Strip – Copper strip to take care of the grounding or better</p> <p>Colour Finishing – RAL - 7035 & RAL - 7037 Fine Texture with 60 – 80 microns, for better finish and aesthetic look or better</p>
BoQ Item 72	Stereo Audio / Control Cable specifications not present	<p>22 AWG stranded (7x30) Stereo Audio / Control cable or better</p> <p>High-conductivity tinned copper conductors or better</p> <p>Polypropylene insulation or better</p> <p>Should have PVC jacket</p> <p>Operating Temperature Range: -20°C To +75°C or better</p> <p>EU Directive 2011/65/EU (ROHS II) compliant or better</p> <p>Non Plenum</p>
BoQ Item 78	Microphone Cable specifications not present	<p>24 AWG stranded (27x38) Microphone cable or better</p> <p>High-conductivity bare copper conductors or better</p> <p>Should have PVC insulation</p> <p>Bare copper spiral shield (90% coverage) or btter</p> <p>Should have PVC jacket</p> <p>Operating Temperature Range: -30°C To +60°C or better</p> <p>Non Plenum</p>
BoQ Item 77	Speaker Cable specifications not present	<p>Multi-Conductor - High-Conductivity Copper Speaker Cable</p> <p>Twisted Jacketed Connector</p> <p>14 AWG stranded (42x30) tinned copper conductors</p> <p>PVC insulation</p> <p>PVC jacket.</p> <p>Operating Temperature Range : -20°C To +90°C or better</p> <p>NEC/(UL) Specification: CL3 or better</p> <p>AWM Specification : UL Style 2587 (600 V 90°C) or better</p> <p>CSA Specification : FAS90 or better</p> <p>EU Directive 2011/65/EU (ROHS II) compliant or better</p> <p>EU RoHS Compliance or better</p>
BoQ Item 76	RG58 Cable specifications not present	<p>RG58 Coaxial cable or better</p> <p>.033" bare copper conductor or better</p> <p>Polyethykene insulation or better</p> <p>bare copper braid shield (80 % coverage or better)</p> <p>PVC jacket or better</p> <p>20 AWG Solid standing or better</p> <p>PVC insulation or better</p> <p>Operating temprature range : -40°C To +80°C or better</p> <p>EU Directive 2011/65/EU (ROHS II) complaint or better</p> <p>EU CE Mark or better</p> <p>EU Directive 2002/95/EC (RoHS) compliant or better</p> <p>EU Directive 2002/96/EC (WEEE) compliant or better</p> <p>EU Directive 2003/11/EC (BFR) compliant or better</p> <p>Non Plenum or better</p>
BoQ Item 70	Gigabit Managed Switch	24 Auto Sensing Gigabit Managed Switch or better

	specifications not present	<p>Bandwidth : 56 Gbps or better</p> <p>Acoustic Noise : 31.8 dBA or better</p> <p>Mean Time Between Failures (MTBF) : 345,901 hours or better</p> <p>IEEE Network Protocols :</p> <p>IEEE 802.3 Ethernet</p> <p>IEEE 802.3u 100BASE-T</p> <p>IEEE 802.1Q VLAN Tagging</p> <p>IEEE 802.3z Gigabit Ethernet 100BASESX/LX</p> <p>IEEE 802.1D Spanning Tree (STP)</p> <p>IEEE 802.1s Multiple Spanning Tree (MSTP) or better</p> <p>Forwarding Modes : Store and Forward or better</p> <p>Priority Queuing : Weighted Round Robin (WRR) or better</p> <p>Addressing 48-bit MAC address or better</p> <p>1K Multicast Groups or better</p> <p>32 Static Routes or better</p> <p>15 Routed VLANs or better</p> <p>1024 ARP Cache entries or better</p> <p>8K DHCP snooping bindings or better</p> <p>1024 DHCP static entries or better</p>
BoQ Item 19	HDMI Pro Cable specifications not present	<p>High Speed moulded HDMI patch cables , 35 Feet or better</p> <p>22 AWG copper wire construction</p> <p>Should support data rates upto 10.20Gbps or better</p> <p>Should have Gold plated contacts or better</p> <p>Should be NEC CM rated or better</p>
BoQ Item 15	HDMI Pro Cable specifications not present	<p>High Speed moulded HDMI patch cables , 25 Feet or better</p> <p>22 AWG copper wire construction</p> <p>Should support data rates upto 10.20Gbps or better</p> <p>Should have Gold plated contacts or better</p> <p>Should be NEC CM rated or better</p>
BoQ Item 3	Flexible HDMI Patch Cable specifications not present	<p>Ultra Flexible molded HDMI Patch Cable , 6 Feet or better</p> <p>Should be 4K and 1080p/60 verified</p> <p>Should Conform to HDMI cable specifications</p> <p>Should support 4K @ 30 Hz (4096 x 2160), UHD @ 30 Hz (3840 x 2160), and 1080p @ 60 Hz signals or better</p> <p>Should support 4K @ 60 Hz in 4:2:0 color space</p> <p>Should support data rates upto 10.2 Gbps or better</p> <p>Should support Color depth up to 48 bits - 16 bits per color</p> <p>30 AWG copper wire construction or better</p> <p>Should have Gold-plated contacts or better</p>
BoQ Item 33	HDMI Wall Plate specifications not present	<p>Wallplate for HDMI Connectivity</p> <p>Should have HDMI Female Connectivity or better</p> <p>1 Gang or better</p>
BoQ Item 48	Microphone Stands specifications not present	<p>Boom Type Stand or better</p> <p>Should Employ sturdy mechanism to ensure trouble free movement and positioning of Microphone</p> <p>Should be Chrome Plated or Power coated to avoid rusting</p> <p>Adjustable Height : Minimum 1000mm to Maximum 1700mm or better</p>
BoQ Item 35	Flexible VGA + Audio patch Cable specifications not present	<p>Thin, molded , flexible cable with low profile VGA connectors 6 Feet or better</p> <p>Pin 9 is passed through from end to end or better</p> <p>Should be designed for transmission of computer video, ID bit signals, and audio or better</p> <p>Terminated with high quality molded VGA connectors and 3.5 mm connectors for audio or better</p> <p>VGA shell should be grounded for ESD electrostatic discharge protection or better or better</p> <p>Injection mold with overall foil shield for improved EMI electromagnetic interference isolation or better or better</p> <p>AWM 20276 rated or better</p>
BoQ Item 79	Power Conditioner specifications not present	<p>Premium Surge and Spike Protection Unit or better</p> <p>Should allow for Noise Filtration or better</p> <p>Should allow for AC power filtering</p> <p>Voltage Protection or better</p> <p>Should have intelligent built in circuitry to detect dangerous voltage irregularities and safely power down itself and connected equipment in unsafe conditions</p> <p>Should have diagnostic lights or better</p> <p>LED status indicators or better</p> <p>Should have to minimize inter-component interference and noise contamination.</p> <p>10 AMP rating or better</p> <p>10 Amp rating featuring a high inrush magnetic circuit breaker for added protection or better</p> <p>Should have minimum 11 Outlets or better</p> <p>Rear panel BNC connector should power any standard gooseneck lamp for rear rack illumination or better</p>
BoQ Item 74	Shielded CAT6 for HDMI Extenders specifications not present	<p>Shielded Twisted Pair Cable</p> <p>Non-Plenum</p> <p>Should Provide added protection from outside interference and ensures high quality signal transmission</p>

			<p>Certified to 475 MHz bandwidth at distances up to 330 feet (100 m) or better</p> <p>Engineered and tested to exceed HDMI error rate specifications of less than one pixel per billion at 100 meters or better</p> <p>SF/UTP design with four unshielded twisted pairs inside an overall braid and foil shield</p> <p>24 AWG solid copper construction or better</p>
	BoQ Item 75	RJ-45 Crimp Connectors specifications not present	<p>Shielded RJ-45 Plug Kit</p> <p>Should have Metal strain relief and ground bonding</p> <p>Should be Ideal for high EMI/RFI environments</p> <p>Should have good Conductor alignment guide to reduce crosstalk and signal interference</p> <p>Gold plated contacts or better</p>

Audio & Visual (Conference room)			
Work Description	BOQ Item	Tender Existing Specifications	Amendment
Audio & Visual (Conference room)	BOQ Item 1	55 Inch Professional LED Display Specification not present	<p>Professional LED Display , Should have 24/7 durable performance capability or better</p> <p>Diagonal Size : 55 Inch or more</p> <p>Resolution : 1920X1080 (16:9)</p> <p>Brightness(Typical) : 500 nit or better</p> <p>Contrast ratio : 5,000 : 1 or better</p> <p>Viewing angle (H/V) : 178 : 178 or better</p> <p>Response time (G-to-G) : Max 8 ms</p> <p>Color gamut : 72% or better</p> <p>Display Colours : 1.07 Billion or better</p> <p>H-Scanning frequency : 30 to 81 kHz</p> <p>V-Scanning frequency : 48 to 75 Hz</p> <p>Built in Speaker , 10W+ 10W or better</p> <p>Maximum pixel frequency : Minimum 148.5 MHz</p> <p>Input : DVI-I , Display Port 1.2 x 2 , HDMI x2, Stereo mini jack</p> <p>Output: Stereo mini jack , DP1.2 or better</p> <p>External control : RS-232C (in/out) thru stereo mini jack , RJ 45 or better</p>
	BOQ Item 2	Display Wall Mount Kit Specification not present	<p>Professional LED Display Mount or better</p> <p>Should be compatible with Screen sizes upto 55 Inch or better</p> <p>Max Load Capacity : 50 kg or better</p> <p>VESA Compatibility : upto 400x400 or better</p> <p>Unique Tilt Mechanism which should allow for tilt adjustment of upto +/- 15 Degrees or better</p> <p>Should allow for Post installation screen alignment for perfect screen positioning or better</p> <p>Arms should have levelling screws to adjust screen height or better</p> <p>Should have Safety screws help prevent unauthorised removal of screens or better</p>
	BOQ Item 3	43 Inch Professional LED Display Specification not present	<p>Professional LED Display , Should have 24/7 durable performance capability or better</p> <p>Diagonal Size : 43 Inch or more</p> <p>Resolution : 1920X1080 (16:9)</p> <p>Brightness(Typical) : 500 nit or better</p> <p>Contrast ratio : 5,000 : 1 or better</p> <p>Viewing angle (H/V) : 178 : 178 or better</p> <p>Response time (G-to-G) : Max 8 ms</p> <p>Display Colours : 1.07 Billion or better</p> <p>Color gamut : 72% or better</p> <p>H-Scanning frequency : 30 to 81 kHz</p> <p>V-Scanning frequency : 48 to 75 Hz</p> <p>Built in Speaker , 10W + 10W or better</p> <p>Maximum pixel frequency : Minimum 148.5 MHz</p> <p>Input : DVI-I , Display Port 1.2 x 2 , HDMI x2, Stereo mini jack</p> <p>Output: Stereo mini jack , DP1.2 or better</p> <p>External control : RS-232C (in/out) thru stereo mini jack , RJ 45 or better</p>
	BOQ Item 4	Preview Monitor Cart with VC Shelf Specification not present	<p>Professional Confience Monitor Trolley or better</p> <p>Should be compatible with Screen sizes upto 55 Inch or better</p> <p>Should allow for screen mounting in Landscape or Potrait or better</p> <p>Easy adjustment of tilt -90° with fixed positions of 0°, -22.5°, -45°, -67.5° and -90° or better</p> <p>Should have locking/braked castors or better</p> <p>Weight Capacity Max 70 Kg or better</p> <p>VESA Compatibility : 75 x 75, 100 x 100, 200 x 100, 200 x 200, 300 x 200, 400 x 200, 200 x 300, 300 x 300, 400 x 400, 600 x 400 or better</p>
	BOQ Item 5	85 Inch Ultra High Definition , Professional LED Display Specification not present	<p>Diagonal Size : 85 inch or Better</p> <p>Type : 120 Hz Slim Direct LED BLU or better</p> <p>Resolution : 3,840 x 2,160 or better</p> <p>Aspect Ratio : 16:9 or better</p> <p>Active Display Area : 1872.0 (H) x 1053.0 (V) or better</p> <p>Brightness : 500 nits or better</p> <p>Contrast Ratio : 5000: 1 or better</p> <p>Dynamic Contrast Ratio : 50,000 :1 or better</p> <p>Viewing Angle (H/V) : 178 / 178 or better</p> <p>Display Colors : 1.07 Billion or better</p>

		<p>Response Time (G to G) : 6ms (Typ.) or better Built in speaker : (15 W + 15 W) or better</p> <p>Connectivity : Input : should have minimum 1x D-Sub, 1xDVI-D, 2 x DisplayPort 1.2 , 1x DisplayPort 1.1 3x HDMI , Stereo Mini Jack x1 HDCP 1.4 Support or better Output : Audio out on Stereo Mini jack External control : RS-232C (in/out), RJ45 Should have the following Certifications : Safety : 60950-1 or better EMC : Class A or better</p>
BOQ Item 6	Professional Wall Mount Kit specification not present	<p>Heavy Duty Universal Flat Screen Mounts Fits screens with VESA and non-VESA® mounting patterns up to H:1100mm (43.3") x V: 730mm (28.7") or better Weight Capacity Max. 200 Kg or better Should have low profile design for efficient mounting Should have Adjustment screws to allow for screen to be levelled once mounted Suitable for concrete / brick or up to 32" stud walls or better</p>
BOQ Item 7	Cable cubby with VGA + Audio , HDMI , Display Port and Dual Universal Power Outlets specification not present	<p>Should have Easy access to cables Should have Pass through Connectivity for minimum 4 AV cables or better Should have Compact Size with square bezel or better Should have Minimum 2 Unswitched AC power outlets or better Black or Brushed Aluminium finish or better Should be CE Compliant</p>
BOQ Item 8-15	8X8 Modular Matrix Chassis and related subsystem Specification not present	<p>(a) DIGITAL MODULAR MATRIX SWITCHER, MODULAR DESIGN, 8 INPUT & 8 OUTPUT FRAME, FRAME DETECTOR AND INPUT SIGNAL ANALYSIS, ZERO FRAME DELAY, COMBINE NON-HDCP AND HDCP CAPABLE, 1 PREVIEW INPUT & OUTPUT PORT (VIDEO SIGNALS) WITH ALL REQUIRE ACCESSORIES ETC. ALL COMPLETE.</p> <p>TECHNICAL SPECIFICATION 8 INPUTS AND 8 OUTPUTS COMBINE NON-HDCP AND HDCP CAPABLE I/O BOARDS ADVANCED ERROR HANDLING ADVANCED EDID MANAGEMENT HYBRID MODULAR AND CROSS PLATFORM TECHNOLOGY ZERO FRAME DELAY HDMI 4K 3D AND DISPLAY PORT 1.1 VIDEO SIGNALS ETHERNET & RS-232 FOR CONTROL DVI/HDMI TEST INPUT DVI/HDMI PREVIEW OUTPUT ABILITY TO GENERATE LOG FOR TROUBLESHOOTING</p> <p>(b) INPUT CARD: COMBINE / COMBINATION OF 4 HD BASE T & 4 HDMI INPUT PORT, HDMI 1.4; DVI AND HDCP COMPLIANT, SUPPORT 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0), SUPPORTS ALL HDMI AUDIO FORMATS, POE ADD- ON OPTION WITH ALL REQUIRED ACCESSORIES ETC. ALL COMPLETE</p> <p>TECHNICAL SPECIFICATION FOUR HDMI AND FOUR HD BASE T HDMI EXTENSION SUPPORTING 3D AND 4K. ACCEPTS HDMI, ETHERNET, RS-232 OVER ONE CAT 6 CABLE MORE THAN 120M, HDMI 1.4; DVI AND HDCP COMPLIANT SUPPORTS 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) 48-BIT COLOUR DEPTH, SUPPORTS ALL HDMI AUDIO FORMATS, BI-DIRECTIONAL RS-232 AND ETHERNET TRANSMISSION, HDCP ENABLE/DISABLE MODE, ADVANCED EDID MANAGEMENT, COMPATIBLE WITH DEEP COLOUR, DOLBY TRUE HD AND DTS-HD AUDIO, REMOTE POWERING 48V</p> <p>(c) OUTPUT CARDS: COMBINE / COMBINATION OF 4 HD BASE T & 4 HDMI OUTPUT PORT, HDMI 1.4; DVI AND HDCP COMPLIANT, SUPPORT 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0), SUPPORTS ALL HDMI AUDIO FORMATS, AUDIO DE- EMBEDDING OUTPUT, POE ADD- ON OPTION WITH ALL REQUIRED ACCESSORIES</p> <p>TECHNICAL SPECIFICATION FOUR HDMI AND FOUR HD BASE T HDMI EXTENSION SUPPORTING 3D AND 4K ACCEPTS HDMI, ETHERNET, RS-232 OVER ONE CAT 6 CABLE MORE THAN 120M, HDMI 1.4; DVI AND HDCP COMPLIANT SUPPORTS 4K, UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) 48-BIT COLOUR DEPTH, SUPPORTS ALL HDMI AUDIO FORMATS BI-DIRECTIONAL RS-232 AND ETHERNET TRANSMISSION, HDCP ENABLE/DISABLE MODE, ADVANCED EDID MANAGEMENT, COMPATIBLE WITH DEEP COLOUR, DOLBY TRUE HD AND DTS-HD AUDIO, REMOTE POWERING 48V,</p>

		<p>(d) MULTIFORMAT TRANSMITTER EXTENDS DVI, HDMI, VGA & DISPLAYPORT + ETHERNET + RS- 232 + IR + GPIO OVER A SINGLE CAT5E...CAT7E CABLE UP TO 120 M OR MORE DISTANCE, 4K AND UHD VIDEO, EMBEDDED 7.1 HBR AUDIO SUPPORT, AUTO SELECT MODE: VIDEO AND AUDIO PRIORITY MODES, BI-DIRECTIONAL RS-232 AND IR, IR AND RS-232 CONNECTION SUPPORTS COMMAND INJECTION, HDCP COMPLIANT, CEC, EDID TRANSPARENT, 8-POLE PHOENIX GPIO CONTROL PORT, HD BASE T COMPATIBILITY, INPUT TERMINALS: HDMI, VGA, DVI-I, DISPLAYPORT, 3.5 MM STEREO JACK, 5-POLE PHOENIX ETC. ALL COMPLETE</p> <p>TECHNICAL SPECIFICATION 1XHDMI, 1XVGA, 1XDVI-I, 1XDISPLAYPORT, 1X3.5 MM STEREO JACK, 1X5-POLE PHOENIX INPUT PORT, OUTPUT PORT - 1 HD BASE T, SUPPORT 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES, EXTENDS HDMI, ETHERNET, RS-232, IR OVER A SINGLE CAT CABLE UP TO 120M, BUILT IN CONTROL SYSTEM, BI-DIRECTIONAL RS-232 AND IR EXTENSION, HDMI 1.4, HDCP 1.4 AND DVI COMPLIANT, HDCP ENABLE/DISABLE FUNCTION, ADVANCED EDID MANAGEMENT, NO VIDEO COMPRESSION.</p> <p>(e) UNDER DESK MOUNTING KIT (f) ACTIVE WALL PLATE: VGA, HDMI, DISPLAY PORT AND AUDIO INPUT, 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) SUPPORT AND 3D CAPABILITIES, VGA, YPRPB, HDMI1.4 AND DP 1.1 SIGNAL SUPPORT, AUTO SELECT MODE, HDCP COMPLIANT, CEC, EDID TRANSPARENT, HD BASE T COMPATIBILITY, EXTENDS HDMI, DISPLAY PORT, VGA, AUDIO, ETHERNET, RS-232, IR OVER A SINGLE CATX CABLE UP TO 170 M DISTANCE</p> <p>TECHNICAL SPECIFICATION 1 HDMI, 1 VGA AND 1 DISPLAY PORT INPUT PORTS , 1 BALANCED AUDIO INPUT PORTS, OUTPUT PORT 1 HD BASE T, SUPPORT 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR (4:2:0) AND 3D CAPABILITIES, EXTENDS HDMI, VGA, DISPLAY PORT, AUDIO, ETHERNET, RS-232, IR OVER A SINGLE UP TO 170 M, EVENT MANAGER, BI-DIRECTIONAL RS-232 AND IR BREAKAWAY AUDIO AND VIDEO SWITCHING, HDMI 1.4, HDCP 1.4 AND DVI 1.0 COMPLIANT HDCP ENABLE/DISABLE FUNCTION, HD BASE T COMPATIBLE</p> <p>ADVANCED EDID MANAGEMENT NO VIDEO COMPRESSION BI-DIRECTIONAL RS-232 AND IR EXTENSION</p> <p>(f) HDMI TRANSMITTER, 1 HDMI INPUT AND 1 HD BASE T OUTPUT, HDMI EXTENSION SUPPORTING 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES OVER ONE CATX CABLE UP TO 170 M DISTANCE, BI-DIRECTIONAL RS- 232 AND IR, HDCP 2.2 COMPLIANT, CEC, EDID TRANSPARENT</p> <p>TECHNICAL SPECIFICATION 1 HDMI INPUT PORT 1 HD BASE T OUTPUT PORT HDMI 1.4 AND DVI 1.0 COMPLIANT BI-DIRECTIONAL RS-232 EXTENSION SUPPORTING 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES, EXTENDS DVI, HDMI, ETHERNET, RS-232, IR OVER CAT6 CABLE UP TO 120 M DISTANCE, HDCP 2.2 COMPLIANT, CEC, EDID TRANSPARENT, NO SIGNAL LATENCY, ZERO FRAME DELAY, HDBASET COMPATIBLE, TRANSPARENT EDID PASS-THROUGH, CAN BE REMOTE POWERED THROUGH CATX CABLE</p> <p>HDMI RECEIVER, 1 HD BASE T INPUT AND 1 HDMI OUTPUT, HDMI EXTENSION SUPPORTING 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES OVER ONE CATX CABLE UP TO 170 M DISTANCE, BI-DIRECTIONAL RS- 232 AND IR, HDCP 2.2 COMPLIANT, CEC, EDID TRANSPARENT,</p> <p>TECHNICAL SPECIFICATION 1 HD BASE T INPUT PORT, 1 HDMI OUTPUT PORT, HDMI 1.4 DVI 1.0 COMPLIANT BI-DIRECTIONAL RS-232 EXTENSION, SUPPORTING 4K/UHD (30HZ RGB 4:4:4, 60HZ YCBCR 4:2:0) AND 3D CAPABILITIES, EXTENDS DVI, HDMI, ETHERNET, RS-232, IR OVER CAT6 CABLE UP TO 120 M DISTANCE, HDCP 2.2 COMPLIANT, CEC, EDID TRANSPARENT, NO SIGNAL LATENCY, ZERO FRAME DELAY HDBASET COMPATIBLE TRANSPARENT EDID PASS-THROUGH CAN BE REMOTE POWERED THROUGH CATX CABLE</p>
BOQ Item 16	4 Output Distribution Amplifier Specification not present	<p>4 Output , 4K HDMI Distribution Amplifier or better</p> <p>Should support computer and video resolutions up to 4K or better</p> <p>HDMI specification features include data rates up to 10.2 Gbps, Deep Color up to 12-bit, 3D, and HD lossless audio formats or better</p> <p>Should automatically manage EDID Communication between connected devices or better</p> <p>Should be HDCP Compliant or better</p> <p>Selectable output muting via RS-232 or better</p>

		User-selectable HDCP authorization or better HDCP Visual Confirmation i.e When HDCP-encrypted content is transmitted to a non-HDCP compliant display, a full-screen signal should be sent to the display for immediate visual confirmation that protected content cannot be viewed on that display or better Automatic color bit depth management or better HDMI to DVI Interface Format Correction or better HDCP authentication and signal presence LED indicators or better
BOQ Item 17	Full HD PTZ Camera , 20x Optical Zoom Specification not present	Full HD PTZ camera 20X Optical Zoom or better 1/3" 2 MP CMOS Sensor or better Pan Range : +170 ~ -170° or better Tilt Range : +90 ~ -30° or better Camera Presets : Minimum 100 or better Video Outputs Interface (HD) : Ethernet, HDMI, 3G-SDI with all outputs working simultaneously without signal drop or better Camera Interface Protocol : RS-422 / RS232 / Ethernet or better Video Outputs : 1080p 60/50 fps, 1080i 60/50 fps, 1080p 30/25fps, 720p 60/50fps, 720p 30/25fps, NTSC/PAL or better Video S/N Ratio : > 50dB or better Shutter Speed : 1/1 ~ 1/10,000 sec or better Focal Length : f=5~94mm or better Horizontal Viewing Angle : Minimum 60 Degree or better Aperture : F1.6~3.5 or better Minimum Illumination : Min. 5lux or better Minimum Object Distance : 300(Wide)~1500(Tele) mm or better Gain Control : Auto, Manual or better White Balance : Auto, Indoor, Outdoor, One-Push, Manual or better Exposure Control : Auto, Manual or better Focus System : Auto, Manual or better Image Flip feature or better POE Support or better
BOQ Item 19	Full HD PTZ Camera , 10x Optical Zoom Specification not present	Full HD PTZ camera 10X Optical Zoom or better 1/3" 2 MP CMOS Sensor or better Pan Range : +170 ~ -170° or better Tilt Range : +90 ~ -30° or better Camera Presets : Minimum 100 or better Video Outputs Interface (HD) : Ethernet, DVI or better Camera Interface Protocol : RS-422 / RS232 / Ethernet or better Video Outputs : 1080p 60/50 fps, 1080i 60/50 fps, 1080p 30/25fps, 720p 60/50fps, 720p 30/25fps, NTSC/PAL or better Video S/N Ratio : > 50dB or better Shutter Speed : 1/1 ~ 1/10,000 sec or better Focal Length : f=5~94mm or better Horizontal Viewing Angle : Minimum 60 Degree or better Aperture : F1.6~3.5 or better Minimum Illumination : Min. 5lux or better Minimum Object Distance : 300(Wide)~1500(Tele) mm or better Gain Control : Auto, Manual or better White Balance : Auto, Indoor, Outdoor, One-Push, Manual or better Exposure Control : Auto, Manual or better Focus System : Auto, Manual or better Image Flip feature or better
BOQ Item 20	VISCA Cable Extender Specification not present	VISCA Cable Extnrnder ovefr CAT5/6 Cable Should allow for control signal extension upto 300 Feet (100 meters) on CAT5/6 cable or better Should also support daisy chaining upto Minimum 3 Cameras and Maximum 7 Cameras or better
BOQ Item 22	H.264 Streaming Media Processor & Recorder Specification not present	Professional Recorder with Built In Streaming Solution or better Recording Options : Capture from Multiple Sources and able to record and Stream upto min four full motion HD Videos simultaneously in one frame upto 1080p resolution. Multiple encoding rates, Multiple frame rates, Auto Logo Insertion during recording or better Streaming Options : Webcast, Unicast and Multicast or better Audio Only Encoding Formats : AAC or better Video Inputs : HDMI/DVI/VGA/RJ-45 or better Input Channel : HDMI / DVI / VGA/ IP for Laptop, Visualizer and Cameras with 4 channel synchronized recording or better Audio Input : Line In, Mic and 3.5 mm Stereo or better Video Processing : At different frame rates upto 30 fps; Multiple Bit Rate from 64kps to 24Mbps in Full HD Resolution of 1080p or better Output Channel : HDMI/VGA or better Storage : In-built Storage of min 1 TB or to supplied with External USB Hard Drive Stored File Format : AVI / MPEG4 or better Remote Storage : Yes FTP protocol or better Streaming Formats : RTP and RTMP or better Display Outputs : Full Screen, Picture in Picture, Multi-channel split screen or better

		Editing : Through Web-based back stage and Post Recording Index Editing Operation Control : Through Remote Control and web based control interface or better External Control : RS-232 port or better
BOQ Item 27	Central Control Unit Specification not present	Central Control Unit Should allow for connection of microphone units in two lines or a ring. Should allow for minimum 50 Microphone units in a ring or better Should allow for minimum 100 Microphones (50 Units per line) or better High-quality housing made of brushed aluminium or better Glass panel for operation and to display individual menus and a status line or better Rotary encoder to select and set menus or better Illuminated corona to display standby or operating mode or better Should Have built-in Recording facility Should allow for Control and configuration of the microphone units or better RS232 interface for control and configuration of the system or better NOM function – max. Number of open Microphones, up to 8 microphone units can be allocated simultaneously or better Automatic audio channel allocation of the microphone units or better Fixed audio channel per chairman unit (max. 8) or better Operating modes : Normal – each participant can turn the microphone on or off or better Voice activation or better FiFo or better
BOQ Item 28	Chairman Unit Specification not present	Digital Wired Chairman Unit or better Built in Loudspeaker or better Clear button for deactivating all the delegates microphone units Should have Headphone Connector and Headphone Volume Control or better GSM Immunity LED Ring Microphone ON/OFF button or better RJ 45 or D9 or 6 Pole connector connectors for separate loop through cabling or better Microphone length should not be less than 450 mm or better
BOQ Item 29	Delegate Unit Specification not present	Digital Wired delegate Unit or better Built in Loudspeaker or better Should have Headphone Connector and Headphone Volume Control or better GSM Immunity LED Ring Microphone ON/OFF button or better RJ 45 or D9 or 6 Pole connector connectors for separate loop through cabling or better Microphone length should not be less than 450 mm or better
BOQ Item 30	Gooseneck Microphone Specification not present	Should be compatible with the proposed Chairman and Delegate Units Condenser Gooseneck Microphone or better LED Ring Stem Length : 450 mm or better Polar Pattern : Cardioid or better Frequency range :- 30Hz to 20Khz or better Max SPL : 112 dB [SPL @ 1% THD] or better Signal to Noise Ratio : 62 dB [A, rms] or better Equivalent SPL : 32 dB [A, rms] or better
BOQ Item 31-32	System cable CAT5 with RJ45 Connector Interconnecting Cable	Interconnecting Patch Cable for Microphone Units CATx cable with RJ45 Conenctors or better
BOQ Item 33	16" Gooseneck Microphone Specification not present	RFI proof Gooseneck Microphone High Sensitivity High Gain before feedback ON/OFF Switch Non Glare Surface or better 16 Inch stem length or better Transducer Type : Electret Condenser Operating Principle : Pressure Gradient Polar Pattern : Cardioid or better Frequency response : 50 - 19,000 Hz or better Open circuit voltage : 17 mV/Pa or better Nominal impedance : < 200 Ω or better Load Impedance : \geq 1 k Ω or better Signal to Noise Ratio : 69 dB or better Max. SPL : 107 dB or better Microphone to be quoted with appropriate Shock mount base or better
BOQ Item 34	Shock Mount Base Specification not present	Flexible Shock Mount Fixture Should be compatible with the proposed Gooseneck Microphone Should provide for optimum isolation from physical vibration Rugged Design Should allow for fast and easy setup
BOQ Item 35	Multichannel Audio DSP Specification not present	8 Analog Balanced Mic/Line Input with Phantom Power 8 Analog Balanced Line Output 8 Analog Balanced Flex I/O individually switchable as Mic/Line Input or Line Output 16 Channels of Routable AEC Processing or better 1 x POTS Telephone Line on Standard RJ11 Connector or better

		<p>4 Instances of VoIP or better</p> <p>128 x 128 Networked Audio Channels or better</p> <p>16 x 16 GPIO Logic Ports or better</p> <p>16 x 16 USB Audio Channels or better</p> <p>Dual Gigabit LAN Port for Networked Audio, Control, VoIP or Network Redundancy or better</p> <p>Sampling Rate 48 kHz or better</p> <p>A to D & D to A Converters 24 Bit or better</p> <p>USB Audio 16 Bit 48 kHz or better</p> <p>Freely Assignable Audio & Logic Processing Objects including but not limited to Gain Sharing & Gated Automixer, Matrix Mixer & Router, Multi Band Crossover, Gain, Delay, Compressor, Limiter, Multi Octave Graphic Equalizer, Multi Band Parametric Equalizer, Notch Feedback Controller or better</p> <p>Software Based Configuration & Monitoring, Event Scheduling, Managing Audio Files & Playlist, User Control Interface Configurable by Software for OEM Manufactured Controllers, iOS Devices or PC/Laptops (with optional license) or better</p> <p>Front Panel Display Displays Information about Design, Network etc. or better</p>
BOQ Item 36	Compact Ceiling Speaker Specification not present	<p>4.5 Inch , 2 Way Ceiling Speaker or better</p> <p>The speaker waveguide should ensure smooth and Uniform Frequency response over the coverage area or better</p> <p>Snap-fit Magnetic grille or better</p> <p>Effective frequency range : 60 Hz – 20 kHz or better</p> <p>Rated Power : 30 watts or better</p> <p>Sensitivity : 87.5 dB or better</p> <p>Coverage Angle : 150° Conical or better</p> <p>Directivity Factor (Q) : 4.5 or better</p> <p>Directivity Index (DI) : 6.5 or better</p> <p>Max Continuous SPL : 102 dB or better</p> <p>Maximum peak SPL : 108 dB or better</p> <p>Nominal Impedance : 16 Ohms or better</p> <p>Transformer Taps :</p> <p>3.75W (70V); 7.5W (100V)</p> <p>7.5W (70V); 15W (100V)</p> <p>15W (70V); 30W (100V)</p> <p>30W (70V); N/A (100V)</p> <p>Ingress Protection : IP-34 or better</p>
BOQ Item 37	Audio Power Amplifier Specification not present	<p>Multichannel Audio Power Amplifier 4 Channels or better</p> <p>60 Watts per channel into 4 and 8 Ohms loads or better</p> <p>Energy Star Qualified Amplifier or better</p> <p>Bridgeable outputs for higher power or better</p> <p>Auto-Ramp provides quiet startup and power-down or better</p> <p>Output Power :</p> <p>8Ω dynamic, all channels driven : 60 Watts or better</p> <p>4Ω dynamic,all channels driven : 60 Watts or better</p> <p>Bridged Mode :-</p> <p>8Ω & 4Ω Per Channel : 200 Watts or better</p> <p>70v , 100v or better : 250 Watts or better</p> <p>Signal to Noise Ratio : (A weighted, 20 Hz-20 kHz) : >100 dB or better</p> <p>Input Sensitivity : 1.23 Vrms (+4 dBu) or better</p> <p>Maximum Voltage Gain : 25.0 dB or better</p> <p>Output Circuitry : Class D or better</p> <p>Frequency Response : 20 Hz - 20 kHz or better</p> <p>Highpass Filter : Switchable 80 Hz when Bridged in 70V & 100V or better</p> <p>Agency Approvals : UL, CE, ENERGY STAR, RoHS/WEEE compliant, FCC Class B (Conducted and Radiated emissions) or better</p>
BOQ Item 36	Compact Ceiling Speaker Specification not present	<p>2-Way Full Range Passive Wall Mount Speaker</p> <p>6.5" Weather Resistant Paper Cone Woofer, 1.5" Voice Coil or better</p> <p>1" Silk Dome Tweeter, 1" Voice Coil, Horn Loaded or better</p> <p>Rated Noise Power 150 Watts or better</p> <p>Rated Impedance 8 Ohms or better</p> <p>Sensitivity at 1 mtr 89 dB SPL or better</p> <p>Maximum Peak Output 116 dB SPL or better</p> <p>Coverage Angle 105 Degree Conical or better</p> <p>Transformer Taps at 60, 30 & 15 Watts at 70/100 V & 8 Ohm Bypass or better</p> <p>Painted ABS Polymer Enclosure or better</p> <p>IP-54 Rated or better</p>
BOQ Item 37	Audio Power Amplifier Specification not present	<p>Audio Power Amplifier 2 Channels or better</p> <p>200 Watts per channel into 4 and 8 Ohms loads or better</p> <p>Energy Star Qualified Amplifier or better</p> <p>Bridgeable outputs for higher power or better</p> <p>Auto-Ramp provides quiet startup and power-down or better</p> <p>Output Power :</p> <p>8Ω dynamic, all channels driven : 200 Watts or better</p> <p>4Ω dynamic,all channels driven : 200 Watts or better</p> <p>Bridged Mode :-</p> <p>8Ω & 4Ω Per Channel : 400 Watts or better</p> <p>70v , 100v or better : 350 Watts or better</p>

		<p>Signal to Noise Ratio : (A weighted, 20 Hz-20 kHz) : >100 dB or better</p> <p>Input Sensitivity : 1.23 Vrms (+4 dBu) or better</p> <p>Maximum Voltage Gain : 25.0 dB or better</p> <p>Output Circuitry : Class D or better</p> <p>Frequency Response : 20 Hz - 20 kHz or better</p> <p>Highpass Filter : Switchable 80 Hz when Bridged in 70V & 100V or better</p> <p>Agency Approvals : UL, CE, ENERGY STAR, RoHS/WEEE compliant, FCC Class B (Conducted and Radiated emissions) or better</p>
BOQ Item 46	Control Processor Specification not present	<p>Hardware Based Control processor</p> <p>Should Support secure industry standard communications protocols including HTTP (insecure), HTTPS, SSH, SFTP, SMTP, NTP, Discovery Service, DHCP, DNS, ICMP, and IPv4 or better</p> <p>Six bidirectional RS-232 serial ports with software handshaking or better</p> <p>Two bidirectional RS-232/RS-422/RS-485 serial ports with hardware and software handshaking or better</p> <p>Eight IR/Serial ports for one-way control of external devices or better</p> <p>Four Flex I/O ports or better</p> <p>Eight Relay ports or better</p> <p>Four independently switched 12 VDC outputs or better</p> <p>Ethernet monitoring and control</p> <p>Should Support popular BMS – Building Management System protocols, such as BACnet, KNX, and DALI or better</p> <p>Should Support 10/100/1000Base-T or better</p> <p>Integrated IR Learning capability or better</p> <p>Automatic clock synchronization allows touchpanel to display the accurate time and date or better</p> <p>Front panel port status indicators or better</p> <p>Should support Multi-level password protection i.e should Allow for security to be set based on user roles</p>
BOQ Item 47	Touch Panel Specification not present	<p>Retina Display or better</p> <p>9.7-inch (diagonal) LED-backlit Multi-Touch display with IPS technology or better</p> <p>2048x1536 resolution at 264 pixels per inch (ppi) or better</p> <p>Fingerprint-resistant oleophobic coating or better</p> <p>Wi-Fi (802.11a/b/g/n); dual channel (2.4GHz and 5GHz) and MIMO or better</p> <p>Bluetooth 4.2 technology or better</p> <p>Operating temperature: 0° to 35° C (32° to 95° F) or better</p> <p>Non-operating temperature: -20° to 45° C (-4° to 113° F) or better</p> <p>Relative humidity: 5% to 95% non-condensing or better</p>
BOQ Item 51	Wireless Access Point Specification not present	<p>Advanced Dual-Band N Router</p> <p>Switch Port Speed : 10/100 Mbps (Fast Ethernet) or better</p> <p>Radio Frequency : 2.4 and 5 GHz or better</p> <p>Security features : WEP, WPA, WPA2 or better</p> <p>Security key bits : Up to 128-bit encryption or better</p> <p>Storage File System Support : FAT, and NTFS, and HFS+ (V3 only) or better</p> <p>Power : 12V, 1A</p> <p>Certifications : FCC, IC, CE, Wi-Fi (IEEE 802.11a/b/g/n) or better</p> <p>Operating Temp : 0 to 40°C (32 to 104°F) or better</p>
BOQ Item 49	Docking Station Specification not present	<p>Ergonomically designed</p> <p>Universal Mounting Pattern</p> <p>Should be compatible with the proposed Apple IPAD</p>
BOQ Item 50	Gigabit Ethernet Switch Specification not present	<p>16 Port Gigabit Ethernet Switch or better</p> <p>Protocol : CSMA/CD or better</p> <p>Data Transfer Rate : 2000Mbps (Full-duplex) or better</p> <p>Topology : Star or better</p> <p>Fan less Operation or better</p> <p>Operating Temperature : 32 degrees Fahrenheit to 104 degrees Fahrenheit or better</p> <p>Storage Temperature : 14 degrees Fahrenheit to 158 degrees Fahrenheit or better</p> <p>Humidity : 5% ~ 90% RH, non-condensing or better</p>
BOQ Item 54	Stereo Audio / Control Cable Specification not present	<p>22 AWG stranded (7x30) Stereo Audio / Control cable or better</p> <p>High-conductivity tinned copper conductors or better</p> <p>Polypropylene insulation or better</p> <p>Should have PVC jacket</p> <p>Operating Temperature Range: -20°C To +75°C or better</p> <p>EU Directive 2011/65/EU (ROHS II) compliant or better</p> <p>Non Plenum</p>
BOQ Item 52	Microphone Cable Specification not present	<p>24 AWG stranded (27x38) Microphone cable or better</p> <p>High-conductivity bare copper conductors or better</p> <p>Should have PVC insulation</p> <p>Bare copper spiral shield (90% coverage) or better</p> <p>Should have PVC jacket</p> <p>Operating Temperature Range: -30°C To +60°C or better</p> <p>Non Plenum</p>
BOQ Item 53	Speaker Cable Specification not present	<p>Multi-Conductor - High-Conductivity Copper Speaker Cable</p> <p>Twisted Jacketed Connector</p> <p>14 AWG stranded (42x30) tinned copper conductors</p> <p>PVC insulation</p>

		<p>PVC jacket.</p> <p>Operating Temperature Range : -20°C To +90°C or better</p> <p>NEC/(UL) Specification: CL3 or better</p> <p>AWM Specification : UL Style 2587 (600 V 90°C) or better</p> <p>CSA Specification : FAS90 or better</p> <p>EU Directive 2011/65/EU (ROHS II) compliant or better</p> <p>EU RoHS Compliance or better</p>
BOQ Item 57	RJ-45 Crimp Connectors Specification not present	<p>Shielded RJ-45 Plug Kit</p> <p>Should have Metal strain relief and ground bonding</p> <p>Should be Ideal for high EMI/RFI environments</p> <p>Should have good Conductor alignment guide to reduce crosstalk and signal interference</p> <p>Gold plated contacts or better</p>
BOQ Item 56	Shielded CAT6 for HDMI Extenders Specification not present	<p>Shielded Twisted Pair Cable</p> <p>Non-Plenum</p> <p>Should Provide added protection from outside interference and ensures high quality signal transmission</p> <p>Certified to 475 MHz bandwidth at distances up to 330 feet (100 m) or better</p> <p>Engineered and tested to exceed HDMI error rate specifications of less than one pixel per billion at 100 meters or better</p> <p>SF/UTP design with four unshielded twisted pairs inside an overall braid and foil shield</p> <p>24 AWG solid copper construction or better</p>
BOQ Item 58	Equipment Rack Specification not present	<p>24U , Modular Equipment Rack or better (600mm x 600 mm)</p> <p>Multi Hollow Extruded Aluminum Frames Structure across the X, Y & Z axis to give an Uninstruct bolting mechanism (UL) and Further reinforced with 8 Nos. of corner bracket which ensure better stability and strength or better</p> <p>Configured to hold 19-inch equipment with the help of two pairs of mounting angle provided with square slots to accommodate M6 Cage nuts at universal pitch Pattern as per DIN 41494 or better</p> <p>Top cover ventilated on all sides along the width and depth thereby enhancing exhaust of hot air or better</p> <p>Cable entry provision is both at the top and bottom covers with 35mm round cable entry point, the cable entry provision comprising of a gland plate with cable entry points in round cut outs edge protected with rubber grommets or better</p> <p>Monitor Tray – Ventilation – Tray Specially designed with multiple bend and additional stiffeners for better load carrying capacity or better</p> <p>Metal Steel Ventilation Panel – Blank Ventilation Panels to help to fill the open space in the rack along with ventilation to facilitate air circulations or better</p> <p>Castor – 4 Nos. of heavy duty castors to take care of heavy load bearing capacities are provided, 2 Nos. in the front with Break & 2 Nos. on the rear without break or better</p> <p>Rack mount channels with Hardware sets or better</p> <p>Earthing Strip – Copper strip to take care of the grounding or better</p> <p>Colour Finishing – RAL - 7035 & RAL - 7037 Fine Texture with 60 – 80 microns, for better finish and aesthetic look or better</p>
BOQ Item 24	Flexible HDMI Patch Cable Specification not present	<p>Ultra Flexible molded HDMI Patch Cable , 6 Feet or better</p> <p>Should be 4K and 1080p/60 verified</p> <p>Should Conform to HDMI cable specifications</p> <p>Should support 4K @ 30 Hz (4096 x 2160), UHD @ 30 Hz (3840 x 2160), and 1080p @ 60 Hz signals or better</p> <p>Should support 4K @ 60 Hz in 4:2:0 color space</p> <p>Should support data rates upto 10.2 Gbps or better</p> <p>Should support Color depth up to 48 bits - 16 bits per color</p> <p>30 AWG copper wire construction or better</p> <p>Should have Gold-plated contacts or better</p>
BOQ Item 25	Flexible VGA + Audio patch Cable Specification not present	<p>Thin, molded , flexible cable with low profile VGA connectors 6 Feet or better</p> <p>Pin 9 is passed through from end to end or better</p> <p>Should be designed for transmission of computer video, ID bit signals, and audio or better</p> <p>Terminated with high quality molded VGA connectors and 3.5 mm connectors for audio or better</p> <p>VGA shell should be grounded for ESD electrostatic discharge protection or better or better</p> <p>Injection mold with overall foil shield for improved EMI electromagnetic interference isolation or better or better</p> <p>AWM 20276 rated or better</p>
BOQ Item 26	Flexible Display Port Patch Cable Specification not present	<p>Ultra Flexible molded DP Patch Cable , 6 Feet or better</p> <p>DisplayPort 1.2 compliant or better</p> <p>4K/60 4:4:4 Verified or better</p> <p>Should Support Video Resolutions upto 4096x2160 @ 60 Hz or better</p> <p>Should support data rates upto 21.6 Gbps or better</p> <p>30AWG Copper Wire Construction or better</p> <p>Gold Plated Contacts or better</p>
BOQ Item 40-45	High Definition Videoconferencing System Specification not present	<p>Package:- Full HD 1080p Codec, Microphone, Cables, and Wireless Remote Control</p> <p>Protocols:- H.323 and SIP Compliant</p> <p>H.261, H.263, H.264. The system should support higher Video Compression protocols such as H.264 High Profile/H.265</p> <p>H.239, BFCP</p> <p>H.263 & H.264 Video error concealment</p>

		<p>G.711, G.722, G.722.1 audio protocols</p> <p>H.281 far end camera control</p> <p>Video Inputs:- It should have 2 x HD Camera Interface.</p> <p>It should have another inbuilt 3 x HDMI/DVI/VGA port for PC, Document Camera etc.</p> <p>Video Outputs:- It should have atleast 2 x HDMI/DVI ports to connect displays.</p> <p>It should have 1 x HDMI/DVI for connecting recording device.</p> <p>Main Video Resolutions:- Shall work in high definition video resolution of 1080p60fps for live video for both Transmit and receive</p> <p>Content Resolutions:- The system should support 1080p30fps content along with 1080p30fps Main Video</p> <p>It should be capable of enhancing video conferencing experience (by adding additional hardware/software in future) with advanced speaker-tracking technology such that it automatically scans the room and seamlessly commands the main camera to appropriately frame the speaker during a call without any manual intervention.</p> <p>Audio Inputs:- It should support 3 nos of Omni Directional Microphones either directly or through array</p> <p>It should have additional Audio Input for PC Audio</p> <p>Audio Outputs:- It should have atleast 1 x HDMI port</p> <p>It should have atleast 1 x 3.5mm/RCA Stereo Line-Out port</p> <p>Network:- Should have 100/1000 Mbps auto speed Ethernet port</p> <p>Support Data Rate of 6 Mbps or more on IP (H.323 and SIP)</p> <p>Multipoint :- The system should have capability to connect to 7 more locations all with Full HD resolution (1+7) using the inbuilt capability</p> <p>Other Ports:- Serial/Ethernet control port for integrating with external control system</p> <p>Other Features:- Should work with IPv4 and IPv6 addressing schemes</p> <p>Should support QOS (Quality of Service) definitions</p> <p>Should support H.460.X Firewall traversal protocol</p> <p>Global Directory / Centralized directory support</p> <p>Power:- Should operate on 230v, 50 Hz Power supply</p>
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Annexure-III

<u>Approved Makes</u>	
CIVIL	
Water Proofing Compound	FOSROC/Dr.Fixit/Sika
G.I. Pipe	TATA/ Zenith
Cement	ULTRATECH/ Lafarge/Zauari/jk Laxmi
Granite counter for wash basin, WC wall ledge & pantry counter	As per sample approval
Corian counter for Pantry	LG/Dupont/Samsung
Mirror	Modi/ Asahi /Saint Gobain
FLOORING, DADO & SKIRTING	
600 x 600mm Vitrified flooring	RAK/ Kajaria/Somany/Nitco
1000 x 1000mm Vitrified flooring	RAK/ Kajaria/Somany/Nitco
Carpet for Auditorium	Tera-nova/ Flotex
Solid wood flooring	Ego/Apex/Armstrong
White cement	BIRLA/ JK
Ceramic dado	RAK/ Kajaria
PLUMBING	Hindware, Jaquar
WC	Hindware - Twilight - cat no 92092- star white
Wash basin	Hindware - Mini oval- star white - cat no 60018
Urinal with sensor	Hindware - Alexa E - sense- cate - 96005 - star white
Sink	Nirali - omni- 410 x 410mm
Hand Dryer' 230 volts	Kimberlyclark
SS soap dispenser (Handwash area)	Jaguar or equivalent
Tissue paper dispenser	kimberlyclarkor equivalent
Pillercoack	Jagaur- PRS - 031 or equivalent
Sink cock-	Jagaur- FLR - 5015 or equivalent
2 way Bib cock	Jagaur- CON- 041KN or equivalent
Health Faucet only	Jagaur- ALD- 565 or equivalent
Flush plate	Hindware- loop or equivalent
Flush tank	Hindware- loop or equivalent
CEILING	
Gypsum Ceiling	Saint gobain, Gyproc, India gypsm
600 x 600mm Metal grid	Armstrong/AMF
Acoustic ceiling	Hiloft/ Anutone/Armstrong
Tiled ceiling	Armstrong/AMF
Wooden baffle /slat ceiling	Hunter douglas /Armstrong
Trape door	AMF/ NSA buildtech
PARTITION	WOODWORKS/ BOARDS/ GLASS

Flexy ply/ Marine Plywood/ Commercial ply	CENTURY PLY /Green/Anchor
Glass Partition	JEB/ Otic/ Alloy
Wooden Frames	CP Teak/ Steam Beach/ Hardwood
Entrance partition frames	jindal, Hindalco, Bhoruka
Tempered/Toughened Glass - fire rated glass	Saint Gobain/ Asahi/Modigaurd
Acoustic paneling	Hiloft/ Anutone/Armstrong
Wooden slats paneling	Fibercrete/Armstrong /Hunterdouglas
Laminate paneling	Marino/ Green lam/ centur
Fabric paneling	Response/ innovative
Veneer	Decowood/ Century/Anchor
DOOR HARDWARE/ ACCESSORIES	
Sound reducing & fire rated door	Sukrati/Naviar/ promat
Styled door	JEB/ Otic/ Alloy
PAINTING/ POLISHING	
Acrylic emulsion	Asian paint/ ICI/ Burger
Writable paint	Idea paint/ We paint
MISCELLANEOUS	
Roller blinds	Vista /Mac/Hunterdouglas

HVAC SYSTEM

- PROPELLER FAN: GEC / CROMPTON / KHAITAN / ALMONARD/BAJAJ
- INLINE FAN: CARRYIARE / AIRFLOW / OSTBERG
- FACTORY FABRICATION DUCT: ROLASTAR / ZECO / DUCTO FAB
- G.I SHEETS: TATA / HSL / SAIL / JINDAL
- GRILLES /DIFFUSERS: CARYAIRE / AIRMASTER / RAVI STAR / COSMOS
- NITRILE RUBBER: ARMAFLEX / THERMO BREAK
- VIBRATION ISOLATOR: RESISTOFLEX / KANWAR / DUNLOP
- FIRE DAMPER: CARYAIRE / RAVI STAR / AIR MASTER / COSMOS
- M.S.PIPES: JINDAL / GST / TATA /MSL/ZENITH
- AHU/FCU: EDGETECH/VTS/FLAKTWOODS/ ZECO
- ELECTRICAL PANEL:CPRI APPRVED MANUFACTURER WITH APPROVED COMPONENTS
- VFD: DANFOSS / ABB
- ELECTRICAL MOTORS: ABB/ CROMPTON/SIEMENS
- THERMOSTAT: SIEMENS/ HONEYWELL/ SCHNEIDER/BELIMO/ JCI
- FLEXIBLE DUCT CONNECTOR: MUPRO/EASYFLEX/RESISTOFLEX
- VALVES: ADVANCE/L&T/ AUDCO /JCI/OVENTROP/T&A

- PIBCV: HONEYWELL/BELIMO/DANFOSS/FLOWCON
- 2 WAY VALVE FOR FCU: HONEYWELL/BELIMO/DANFOSS/JCI
- Y STRAINER: SANT / EMERALD / TRISHUL
- SOUND ATTENUATOR: CARYAIRE / RAVI STAR / AIR MASTER / SYSTEMAIRE
- FILTERS THERMADYNE/AAF/CAMFIL

SPRINKLER SYSTEM

- SPRINKLER (UL LISTED): SPRAY SAFE / HD/ TYCO/ NEWAGE
- PIPES (MS/ GI): JINDAL/TATA/ZENITH
- GROOVED FITTINGS: VICTAULIC/ GRINNELL
- VALVES: ADVANCE/INTERVALVE/L&T/ AUDCO /JCI /OVENTROP/T&A
- PRESSURE GAUGE : FEIBIG/HGURU
- VANE TYPE VALVES: HONEYWELL

ELECTRICAL AND LV SYSTEM.

- CABLES: POLYCAB / FINOLEX / RR CABLES
- CABLE TERMINATIONS: COMET / DOWELL / EQ.
- SWITCH SOCKET: LEGRAND / ANCHOR / HAVELLS
- EARTHING SYSTEM: FASTRACK / ASHLOK
- LIGHT FIXTURES PHILIPS / WIPRO / LT/EQUIVALENT.
- CABLE TRAYS LEGRAND
- RACEWAY AND JUNCTION BOX: PUSHPAK / PROFAB / EQUIVALENT.
- PATCH PANEL: LEGRAND / TYCO / EQUIVALENT
- NETWORK SWITCH : CISCO / NETGEAR OR EQUIVALENT
- WIFI ROUTER: CISCO / NETGEAR OR EQUIVALENT.
- CCTV CAMERAS: CP PLUS / HIKVISION / EQUIVALENT
- FAS SYSTEM: JCI / EDWARDS / BOSCH OR EQUIVALENT.
- TELEPHONE: LEGRAND / ANCHOR / CISCO / KRONE
- CAT 6 CABLE: AMP / TYCO OR EQUIVALENT.

A V Solution works

55 Inch Professional LED Display	Barco, NEC, Samsung
Display Wall Mount Kit	Chief, Btech, Premier
43 Inch Professional LED Display	Barco, NEC, Samsung
Preview Monitor Cart with VC Shelf	Chief, Btech, Premier
85 Inch Ultra High Definition , Professional LED Display	Barco, NEC, Samsung
Professional Wall Mount Kit	Chief, Btech, Premier
Cable cubby with VGA + Audio , HDMI , Display Port and Dual Universal Power Outlets	Extron/ Magnum/ AMX
8X8 Modular Matrix Chassis	Lightware / Extron / AMX
HDMI &HDBaseT Input Board	Lightware / Extron / AMX
HDMI & HD BaseT Output Board	Lightware / Extron / AMX
Multiformat Twisted Pair Transmitter	Lightware / Extron / AMX
Under Desk Mounting Brackets	Lightware / Extron / AMX
Active Wall Plate with VGA + Audio , HDMI & Display Port Connectivity	Lightware / Extron / AMX
Twisted Pair HDMI Reciever	Lightware / Extron / AMX
Twisted Pair HDMI Transmitter	Lightware / Extron / AMX
4 Output Distribution Amplifier	Lightware / Extron / AMX
Full HD PTZ Camera , 20x Optical Zoom	Lumens / Panasonic / Sony
Camera Wall Mount Bracket	Custom
Full HD PTZ Camera , 10x Optical Zoom	Lumens / Panasonic / Sony
Visca Cable Extender for the Source End	Lumens / Panasonic / Sony
Visca Cable Extender for the Cameras	Lumens / Panasonic / Sony
H.264 Streaming Media Processor & Recorder	Lumens / Panasonic / Sony
USB Hard Drive	WD / Sony / Seagate
Flexible HDMI Patch Cable , 6 Feet	Extron, Klotz , Belden
Flexible VGA + Audio Patch Cable , 6 Feet	Extron, Klotz , Belden
Display Port Patch Cable , 6 Feet	Extron, Klotz , Belden

Expansion Module for Audio DSP	Bose / QSC / Renkus Heinz
Addressable Network Paging Station	Bose / QSC / Renkus Heinz/JBL
Compact Cieilng Speakers	Bose / QSC / Renkus Heinz/JBL
Audio Power Amplifier	Bose / QSC / Renkus Heinz/JBL
Stereo Audio / Control Cable	Belden, Extron, Eurocable
Installation and Cabling charges	Branded
Shielded Cat6 cable	Belden / Extron / C2G
Shielded RJ45 Crimp Connectors	Belden / Extron / C2G
Speaker Cable	Belden, Extron, Eurocable

Furniture

- Chairs: Godrej/Herman Miller/Steelcase
- Auditorium Chairs: Godrej/Herman Miller/Steelcase