Through PB website

PRASAR BHARTI
(India's Public Service Broadcaster)
Director General : Doordarshan
Doordarshan Bhawan, Copernicus Marg
New Delhi -110001.

Dated: 11/07/2022

Subject: Draft Technical Specifications for SITC of Native UHD Multi- Format Mobile Production Facilities (OB Vans / Trucks) of Twelve Cameras each.

The Draft specification of the upcoming tender is enclosed herewith to offer comments, if any by prospective bidders/Firms/OEMs.

2. Bidders/OEMs are requested to provide information about available local content (Make in India) in respect of items listed in suggestive BOM along with budgetary quote.

3. Bidders may please submit the above detail on or before due date by e-mail to ddpurchase401@yahoo.co.in or at following Address.

Assistant Engineer
Room No. 403,
Directorate General: Doordarshan,
Doordarshan Bhawan, Copernicus Marg,
New Delhi -110001 (India)
Telephone: **011- 2311 4401/4403**

Specification For: Draft Technical Specifications for SITC of Native UHD Multi- Format Mobile Production Facilities (OB Vans / Trucks) of Twelve Cameras each.

Specification no: SD 02/2022 Dated: 29.06.2022

Due Date to offer Comments: 25.07.2022

Encl.: As above (35 Pages)

Signed by Girish Kumar
Date: 11-07-2022 17:51:22
Reason: Approved

(Girish Kumar)
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Doordarshan Directorate: Doordarshan

PRASAR BHARATI
(INDIA'S PUBLIC SERVICE BROADCASTER)
DIRECTORATE GENERAL: DOORDARSHAN

Technical Specifications for SITC of Native UHD Multi-Format Mobile Production Facilities (OB Vans/Trucks) of Twelve Cameras each

Specifications No.: SD 02/2022
Dated: 29.06.2022

1. Overview:

The specifications outlined in the following document are for the Supply, Installation, Testing and Commissioning (SITC) of multiple OB Vans / Trucks. Each such Mobile facility shall be equipped with twelve Camera Chains for outputs in Baseband and in IP SMPTE ST 2110-20/30/40, SMPTE ST 2082-10; and production in 12G Ultra High Definition (UHDTV) & High Definition (HDTV) formats for Doordarshan Network. Each Mobile Production facility, details of which are common, will be used as an independent program production facility, anywhere in India, for venue based production, remote production (IP output through the cameras) as well as in Baseband (3G and 12G) for a wide spectrum of events – indoor and outdoor. The outputs from these facilities shall include content for multiple genres including News, Current Affairs, Conferences, Ceremonial and other event coverages.

2. Scope of Work:

a) The broadcast and other infrastructural equipment offered in the bid should be from reputed manufacturers and the same should be field proven and in use by globally renowned broadcasters/ media houses.

b) The bidder should not include and quote for end of life equipment.

c) The bidder should submit a list of broadcasters/ media houses with whom the quoted major equipment viz camera chains, lenses, vision mixers, routers, comms systems, graphics, sound consoles, wireless camera systems, etc. are in usage. Any bid without offered model specific users list is liable to be rejected.

d) The bidder shall submit only one solution (Single BOM) for the offered system. Any bid with multiple options (BOMs) is liable to be rejected.

3. Eligibility Criteria:

a) The bidder should have a proven track record of design, build and operation of multi-camera OB Vans/ Fly-pack systems/ Broadcast Studios during the last 10 years (Each system with a minimum of eight

UHD/ HD Camera Chains). The bidder should submit the following relevant documents which will corroborate its experience and ability, required to undertake this project:

(i) Minimum of one such project equivalent to or more than 80% of the estimated cost of this project, or

(ii) Minimum of two such projects, each equivalent to or more than 60% of the estimated cost of this project, or

(iii) Minimum of three such projects, each equivalent to or more than 40% of the estimated cost of this project.

Contact details of clients for whom work has been done and cited as relevant experience, are required in the bid.

Cut-off date for the experience shall be the last date of bid submission for this project.

Experience documents including copies of signed contracts and/or work orders supported by self-certified documents confirming that the design, build, operation and value of the project/s are in accordance with the requirements stated above shall necessarily have to be submitted along with the bid, without which the bid is liable to be rejected.

Any entity not possessing the relevant work experience and/or experience of executing such projects equaling to or more than the value as specified above, but are interested in bidding for the project as stated above, may tie up with a partner possessing such experience. The two parties will necessarily have to sign a notarized MOU (Memorandum Of Understanding) specifically for the execution of this project. The said MOU will have to be notarized before the submission of the bid. Both members entering this notarized MOU shall be jointly responsible for the execution of the project. Experience document/s, as mentioned above, should be submitted along with the bid. In the absence of such document/s, as stated above, the bid is liable to be rejected.

b) The bidder should be registered under the Companies Act 1956 or the Companies Act 2013 or should be a Partnership firm/ LLP registered in India under the Partnership Act 1932/2008, as amended, and should have been in operation in India for at least the last 3 Years.

c) The average annual turnover or Net Worth (*CA certified document*) for the last 03 Financial Years (*Except the Financial Years affected by Covid i.e. FY 2020-21 and FY 2021-22*) should be:

(i) Average Annual Turnover equivalent to or more than 100% of the estimated cost of this project, in the last 03 financial years (FYs 2017-18, 2018-19, 2019-20), or

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(ii) Cumulative Turnover equivalent to or more than 300% of the estimated cost of this project in the last 03 financial years (FYs 2017-18, 2018-19, 2019-20), or

(iii) Average Annual Net Worth of a minimum of 50% of the estimated cost of this project in the last 03 financial years (FYs 2017-18, 2018-19, 2019-20), or

(iv) Cumulative Net Worth of a minimum of 150% of estimated cost of this project in the last 03 financial years (FYs 2017-18, 2018-19, 2019-20)

d) The bidder should be Solvent as on the bid submission date. Self certification by the bidder to confirm the above has to be submitted along with the bid.

e) The bidder should not be blacklisted/debarred by any Government organization in India as on the bid submission date.

4. Supply, Installation, Testing and Commissioning (SITC):

a) This turnkey project includes Supply, Installation, Testing and Commissioning (SITC) of all vans including infrastructural and broadcast equipment.

b) It will be the bidder's responsibility to ensure after-sales service. A warranty for 03 years from the date of commissioning, will need to be provided along with the bid. This warranty must be from manufacturers of, but not limited to, Camera Chains, Lenses, Vision Mixers, Sound Mixers, Graphics Systems, Intercom Systems, Routers, Wireless Camera Systems, Air-Conditioning Systems, UPS, etc.

c) The bidder will need to use the highest quality of appropriate video/audio/ data/power cables, connectors and other accessories.

d) All cables, at both ends, should be identified by numbers/ tags and colour coded for ease of identification.

e) All Racks should be equipped with professional grade MDUs, cooling fans and efficient cable management systems. All racks should be of the highest quality steel to ensure they are able to take the weight of equipment installed on them along with the finest quality of powder coating.

f) Technical Block and Line diagrams of Video, Audio and Power chains need to be displayed, in colour, at appropriate positions of the van. These Technical Blocks, Line Diagrams and Schematics have to necessarily be part of the bid.

g) Comprehensive input and output routing of video and audio signals, to and from the routers/ distribution amplifiers, Vision mixers and Routers should be ensured.

h) The specified inputs, outputs and performance parameters as mentioned in this document are suggestive in nature and minimum in quantity. Better parameters and more I/Os can be offered.

i) Each OB Van should be capable of working in tropical/sub-tropical conditions where ambient temperature may vary from subzero to 50° Celsius. Specific care for flooring parameters and design is required, based on the calculation of any extra heat generated from the ground.

j) The successful bidder needs to submit necessary certificates and licenses, if required.

k) A Pre-bid meeting will be held ten days after the issuance of this Tender. Queries, if any, need to be submitted in writing to Doordarshan at least four days prior to the Pre-bid meeting.

5. Vehicle & its Customization: Key Features

a) Must be robust enough to stand up to tough road conditions and outfitted with hydraulic jacks and GPS tracking.

b) Coach build should be on a chassis of **40 feet** approx. (*the length of the vehicle to be calculated from front registration number plate to rear registration number plate*). The coach build should consist of at least one side expanded when the truck is stationary (single expando on the side of graphics, editing and server). Chassis, Engines and the Driver Cabins should be from reputed manufacturers such as Tata Motors, Ashok Leyland, Bharat Benz, Mann, Volvo, etc. having pan India service/ maintenance support.

c) Equipped with an engine compliant with BS-VI emission norms or better, if available, at the time of procurement, based on Statutory Regulations.

d) Internal layouts and design of each coach should incorporate clearly demarcated bays/ areas for Production, Vision Engineering, Graphics, Servers, Sound Recording Cabin, Control System based on the principle of spacious seating, ease of access for operation and maintenance, ergonomics and aesthetics.

e) All internal drawings including layouts of Equipment, Air Conditioning, Power Supplies have to be part of the bid. The successful bidder can submit multiple options for layout & design of the van and the equipment within. It will need to get the same approved from Doordarshan in the case of multiple options, immediately after receiving the Supply Order.

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f) Adequate storage spaces for Cameras, Lenses, Tripods, Cable drums and other miscellaneous equipment in flight cases, should be provided for in the lower portion of the van, in a separate compartment.

g) A vehicle reversing set including proximity sensors, rear view camera(s), LCD screen(s) in driver cabins and air suspension on rear wheels. Portable Fire Extinguishers in each section of the Van. A First Aid Kit in each vehicle.

h) Shock absorbing suspension systems, both for rear and front, to absorb jerks and shocks, especially during movement.

i) Load bearing capacity of the chassis should be in excess of the entire weight of the Coach including all Video & Audio equipment, Technical Furniture, A/C units, other power supply equipment and the driver's cabin. Human load inside the truck has to be part of load calculation.

j) Properly illuminated storage compartments.

k) Binding straps/belts for ensuring of equipment in static positions during movements.

l) Coach structure combining premium quality Phospated MS Tubes and Aluminum Alloy to ensure structural ruggedness and anti-corrosive strength.

m) High technology light weight material for ensuring insulation from heat and noise in the entire van. All material should be fire resistant and retardant.

n) Coach joints to be sealed with premium quality sealant and aluminum joints with Metal Inert Gas (MIG) weld.

o) Painted with mechanical sanding and Aluminum Anti-rust coating across the under body of the Van.

p) Size including length, width and height should conform to Indian regulations. For example, height should be restricted to 3.7 meters or the current maximum regulatory height. The van will need to be registered, by the bidder, in the name of the Doordarshan Kendra, as specified in Appendix III.

q) Cost of certifications from all Regulatory Authorities, charges for obtaining Registrations, Permits, Insurances, Road Taxes, etc. need to be included in the financial bid. These will have to be secured by the successful bidder before hand over of the vans to Doordarshan.

r) Easy access from the perspective of maintenance and operation.

s) All production areas combined should provision for seating of a minimum of twelve crew including engineering, operational and production.

t) Foldable retractable awnings on both the doors, roof and rear of the van.

u) Robust roof to enable stable camera mounting and any other equipment.

v) Fold down hand rails on the roof and ladder should also be provided with the Van.

w) Rear of each Van should provision for the following key features:

   i. At least 14 motorized cable drums for HOFC and other cables, each drum for cables of a minimum of 300 meters in length.

   ii. Multi core audio and video cables on other motorized Cable drums.

   iii. Under floor side access for storage boxes.

   iv. Copper mains, flexible cables, each of 150 metres in length.

   v. Termination panels for video and audio inputs & outputs in UHD-SDI, HD-SDI, SD-SDI; AES/EBU and analog respectively. Clean colour coded markings/ designations on each panel mounted connector.

   vi. RJ-45: two Nos. at tail board, for streaming.

   vii. Industrial grade input power sockets for Mains & DG Power Supply. Power outlets for external equipment such as DSNG (32A, 1Ø socket), etc.

   viii. UHD, HD and SD outputs for recording and feeding to DSNG, OFC, etc.

x) The OB Van should have a driver cabin with sleeper facility.

6. Power Supply, Air Conditioning and Illumination: Key features

a) Each van should operate on three phase (phase to neutral 230 volt ± 10%, @50 Hz) commercial power supply.

b) The van should be fitted with 3 phase power supply driven inverter type Air-conditioners of tonnage adequate for cooling all equipment and for crew. Temperature in all areas of the Van should be maintained at 21±1 degree Celsius. This temperature should be uniform throughout the Van. There should be 2 or more Air conditioning units to facilitate redundancy.

c) Cooling from each AC unit should be distributed to every cabin to ensure at least minimum air conditioning in the eventuality of the failure of any one unit.

d) The successful bidder has to calculate the estimated heat load and provide a full design of the A/C system to Doordarshan, for approval.

e) Hot air path of the air conditioning units should be obstruction free.

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f) Mounting of Air-conditioning compressor units should not cause hindrance to movement or for parking of the van.

g) The bid should include details, specifications and cost of a 20 KVA On - line UPS, 3-phase input & 3-phase output with 30 minutes backup. Power Supply to all equipment and internal lighting should pass through the UPS. Load of the Air conditioning system should not be on the UPS. The successful bidder, after calculating the load of all equipment should finalise on the load bearing capacity of the UPS.

h) The battery bank of the UPS should be placed on a shock proof platform with easy access for operation and maintenance.

i) Mains and UPS Power Supply status (Aural & Visual) should be available in the Operational Area.

j) Aesthetically designed three phase Power Distribution Rack with on load Change-over Switch and operable on mains and DG supply, inclusive of Digital Metering & Monitoring Panels, Separate Circuits & Switch Gears for Equipment Racks, Internal lighting and Air Conditioning.

k) Aesthetically designed script lights across the van. Adequate LED light fittings to enable easy operation and maintenance.

l) The Mains AC and DG Power feeding the terminal block should not be exposed to rains, dust, etc.

m) Earthing for Video, Audio and Power equipment should be in accordance with broadcast standards.

n) The bidder must ensure and certify that service and support for the UPS and Air conditioning is available pan-India.

7. Technical Specifications & System Requirement: General specifications of the System are mentioned in **Appendix-I**.

8. Equipment for each OB Van: Key features

a) Brand and model number of all equipment should be clearly mentioned in the Bill of Material (BoM) included in the bid.

b) Equipment Specifications are mentioned in **Appendix-II**. The bidder is required to provide the complete list of equipment: hardware, software and technical furniture in order to comply with technical specifications. Quantity/ies including sub-modules are to be specified, failing which the bid is liable to be rejected summarily.

Following is the proforma for the BOM:

Sr. No.	Description of Equipment	Brand	Model No.	Part No., if	Qty.	Remarks

				any		
1.	2.	3.	4.	5.	6.	7.

8.1 Camera Chains (with hard carrying cases and rain covers): Key features

a) The OB Van should be designed, wired, and equipped for twelve Native Ultra High Definition (UHD) Camera Chains for outputs in baseband (3G and 12G) and IP. Each camera chain should include full rack Base Stations/ CCUs, Remote Control Panels, UHD Lenses, Camera Support Systems, etc.

b) Each camera chain should be of broadcast standards and of the same brand and model. Each camera should have three 2/3" CMOS sensors, 16:9 Aspect Ratio, 3840 x 2160 or better native resolution sensors supporting UHD TV standard with 60 dB or better S/N Ratio, 2000 Horizontal TV Lines or better.

c) Each Chain should include one 7" (approximate) Colour LCD viewfinder equipped with LED backlit LCD panels having a resolution of 1920 (H) x 1080 (V) pixels or better, front and rear tally lamps. Rear tally lamps should be bright and large enough for images inside to be visible from all angles, without distortion.

d) Each Van should include a total of three colour eyepieces (more than 2").

e) Each Camera should support High Dynamic Range (HDR): (HLG & SLog-3) and Wide Colour Gamut/Space (WCG).

f) Each Camera should have focus assist functions.

g) Should provide real time self-diagnostic systems displaying its status in the viewfinder and RCP.

h) Camera heads/fiber adaptors should be connected to CCUs/ Base Stations through hybrid optical fiber cable with Lemo/ Lemo Type Connectors.

i) Camera heads should be equipped with motorized ND filter wheels and Optical/Electronic Color Correction (ECC) filters. Both filters should be remotely controllable from RCPs.

j) Bi-directional signal transmission between the camera head/ adaptor and the Base Station/ CCU should be enabled via telco provided IP network to support live remote production.

k) Besides UHDTV (3840 x 2160 4:2:2(YCbCr), the Base Stations/ CCUs should provide 12G-SDI and SMPTE-2110 IP Video outputs, HDTV (1080/50i & 1080/50p) outputs.

l) RCPs should be joystick type with full control over camera settings.

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m) Cameras should be enabled with software control panels which can be operated from a workstation or off the shelf available pads which can control all cameras.

n) Each camera should be supplied with one dual muff headset. In addition to these, four single muff communications headsets should be provided for each Van.

o) The bidder has to provide fifteen UHD lenses, as detailed below:

(i) 23 X or higher magnification (minimum focal length varying from 7.6 to 7.8 mm) with 2X built in extender, servo zoom and servo focus. Quantity: **5**

(ii) 14X or higher magnification Wide Angle Lenses (minimum focal length varying from 4.3 to 4.5 mm) with 2X built in extender; servo focus and servo zoom with quick zoom facility: **2**

(iii) 45X or higher magnification (minimum focal length varying from 9.5 to 9.7 mm) with 2X built in extender; servo focus and servo zoom with quick zoom facility, built-in optical image stabilizer and lens supporters. Quantity**: 2**

(iv) 107X or higher magnification (minimum focal length varying from 8.3 to 8.4 mm) with 2X built in extender; servo focus and servo zoom with quick zoom facility, built-in optical image stabilizer and lens supporters. Quantity**: 4**

(v) 122X or higher magnification (minimum focal length varying from 8 to 8.2 mm) with 2X built in extender; servo focus and servo zoom with quick zoom facility, built-in optical image stabilizer and lens supporters. Quantity**: 2**

p) Six Camera Supports, of the same brand and model should include 150 mm ball base pan & tilt heads, two stage fibre tripods & OB dollies; six Camera Support systems of 250 mm ball base pan & tilt head, two stage fibre tripod & OB Dollies. Tripod Heads should have continuously variable perfect counterbalance and drag system.

q) All cameras, lenses and tripods should be offered along with hard carrying cases and rain covers.

r) <u>Camera wireless system:</u>

A complete wireless camera system, incorporating the latest 4K 12G technology, capable of 1080i, 1080p and HDR should be incorporated as part of the technical bid. It should have a COFDM transmitter which can be attached to a camera via a standard V-lock battery clip. Other key features of the wireless system should be:

1. Low battery consumption. Switchable RF power from 50mW to 250mW.

2. Swappable RF module to ensure ease of use in different frequency bands.
3. Ability to have HDMI or SDI inputs, 3G or 12G via removable SFP modules.
4. Choice of efficient modulation schemes for optimum performance: DVB-T, LMS-T, ISDB-T.
5. Integral data receiver for camera control.
6. Front panel display featuring Confidence Monitoring.
7. Latest technology for 1U 19" rack mount with ability to add additional receiver cards and expand upto at least 04 RF inputs in a range of output formats including SDI, IP.
8. The wireless camera system should have the feature of transmitting signals through a combination of cellular network signals in addition to wireless COFDM.
9. The offered system should come with a minimum of four-way diversity and should be upgradable to sixteen-way diversity.

s) Remote Controlled (PTZ) Camera Systems:

Each OB Van shall be outfitted and wired for an additional 02 camera systems. These wired camera systems should include the remote control of Pan, Tilt, Zoom, Focus and Iris functions. Each of these 02 UHD remote controlled camera systems should include a minimum of the following functions:

1. Large 1" MOS sensor
2. High Quality UHD 50p/60p formats
3. 12G-SDI, HDMI, Optical Fiber, IP Outputs
4. Optical zoom lens of a minimum of 20X magnification
5. Minimum viewing angle of 75 deg
6. Night mode, Tally, OFC

The camera systems must necessarily have an independent remote controller. This remote controller should have a large LCD Display (minimum of 3.5") with GUI menu. The controller should incorporate the facility of multiple presets.

8.2 Recorders/Players: Key features

(a) The design and BoM should include two Recording Decks (*will be provided by Doordarshan*). Rack space, cabling and space for one operator should be factored in. In addition, an NLE system loaded with Adobe Premier or similar software (licensed for the entire warranty period of 03 years) along with a 19" or bigger colour monitor will need to

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be provided by the bidder and space for an editor/ operator will also need to be factored in.

(b) The bid should include two SSD recorders supporting UHD/HD/SD, Sony XDCAM (MXF), Apple ProRes 422 (MXF), Avid DNX (MXF) formats, etc.

(c) The SSD Recorder should facilitate UHD file-based recording with in-built 1 TB or more storage. Each SSD recorder should be accompanied with four externally compatible SSDs of 2 TB each for UHD recording.

(d) An interface to transfer growing MXF file over FTP, simultaneous with recording, from the Deck to an NLE/Server.

(e) Each SSD recorder should be equipped with a redundant power supply.

8.3 Graphics Systems: Key features

a) The bid should include one UHD/HD switchable I/O 3D Graphics System for each OB Van. It should be able to edit all features on a preview channel while the program output is on Air (Same text on Air, but editing should reflect only after take).

b) Each System should support Unicode characters with fonts which are scalable in size, bold, italic.

c) Apart from English, the Character Generator of the system should be loaded with fonts for Indian regional languages.

d) Each System should be genlockable to an external reference sync.

e) Each System should have user friendly drag and drop graphical user interface (GUI).

f) It should be able to create single line as well as multi-line text on a single page, create multiple pages and images in a single document and facilitate seamless page scrolling.

g) Multiple simultaneous crawls, rolls and tickers in both directions.

h) Animation and Video File formats such as PNG, TGA, JPEG, BMP, TIFF, etc.

i) The System should be loaded with 3D animation creation software for text and logos, as well as cut and paste tools.

j) The System should facilitate wipes, effects, page transitions with audio as well as texts, have a built-in downstream keyer and a spell check feature too.

8.4 Digital Production Switcher (Vision Mixer – VM): Key features

a) The Vision Mixer should be designed for UHDTV production with the same number of inputs and outputs in 3G/HD and 12G/UHD.

b) Power Supply should be redundant and hot swappable, for the main frame and control panel. Main frame should not exceed 8 RU in height.

c) The VM should have 80 inputs and 40 outputs (UHD 2160p - SMPTE ST 2082 – 10) including Auxiliary Outputs.

d) Out of 80 input sources at least 16 sources and out of 40 outputs at least 8 should be multi-format with internal up/down/cross conversion. Additionally, the system should support SD to HD, HD to SD conversion either internally or through external convertors.

e) The VM should have three full function multi-format M/Es and a minimum of six built-in full function keyers in each M/E. The 3 M/E control panel should have rotary control to set various parameters of the key layers on each M/E.

f) All full function keyers should have Linear, Luminance and Chroma Key (at least 6 Chroma Keys simultaneously), Mask, Matte, Fill and Key invert.

g) It should be equipped with at least four 3D DVEs capable of resizing and repositioning of respective windows on the screen.

h) The VM should have a minimum of 4 channels internal frame memory to store at least 1,500 frames of uncompressed UHD resolution. It should be able to instantly recall the stored frame/clip and support embedded audio for these clips. It should also be able to import frames/clips through an external interface.

i) Each M/E should have wipe and pattern generators which can be modified with softness, position, aspect ratio, rotation, multiplication, modulation, border width and border color, etc.

j) Each M/E should have two matte generators capable of multicolor wash and assignable to background, key fill and border fill.

k) Each key of all 3 M/Es should have a selection feature for assigning different key & fill signals. It should be able to copy the entire content of a keyer in the same or different M/Es.

l) The output of any one M/E should be usable as the background or a key on any other M/E.

m) It should have the ability to create transition/wipes using graphics from the frame memory. The VM should have 256GB or more internal storage to store different effects, timelines and macro control settings and be able to edit and recall these settings.

n) The VM should be able to facilitate transition from On-Air video to a new video through cut, mix (dissolve) and wipe. This transition should be possible manually by T-Bar fader as well as automatically from a

button. Auto transition should be at the desired speed in terms of frames & seconds.

o) The 3 M/E Control panel should have at least 35 directly accessible cross point source buttons in M/E Buses and access to the remaining through shift operation. It should be capable of mapping any source to any cross point.

p) All buttons on the control panel should be well illuminated and have assignable Mnemonic displays for directly accessible cross-points.

q) Tally output for all inputs should be available.

r) Control of the Vision Mixer should be enabled with a high- resolution touch screen menu panel. In the absence of such a panel, the bidder should offer an external high resolution touch screen menu panel from either the VM manufacturer itself or a similar panel of approximately 12 inches to 17 inches, diagonal in size, recommended by the OEM. This panel should have instant functionality selection with intuitive user control and work in any harsh environment.

s) The VM should be able to create and store macros and recall them with automated multiple keystroke operations at the press of a single button. The macros should be editable through control panel buttons.

t) The VM should indicate non-synchronous source(s), on-air source(s) and failure of a power supply unit.

u) External devices such as Recorders and Video Servers should be directly controllable from the VM via ethernet, serial AMP, serial BVW protocol, NMOS 1S-04 and IS-05

v) The controls mentioned above should be possible through a software panel too.

8.5 UHD/HD/SD-SDI AUTO-SENSING ROUTER SWITCHERS OF A MINIMUM SIZE OF 48X48 WITH INTEGRATED MULTIVIEWERS: Key features

(a) The bidder should offer one Digital Router of a minimum size of 48 x 48, operable in UHD-SDI, HD-SDI, SD-SDI formats. Each router system should include two X-Y RCPs and eight single bus RCPs. The router panels can be LCD types also. Inputs to the router should include HDMI (through external convertors).

(b) The Router should support 2160/50p, 1080/50p, 1080/50i.

(c) It should be genlockable with local reference sync and be transparent to embedded audio. It should also have Dolby E facility and hot swappable auto switchable redundant power supply units.

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(d) The offered routing switcher should have an integrated Multiviewer of 48 inputs with 4 outputs via coax or fiber and support UHD, 12G, 3G, 1080p resolutions.

(e) The multi-viewer should also deliver high resolution output in HDMI/BNC connectors for driving LED-LCD displays.

(f) In addition to video images, the multi-viewer should facilitate displaying other information like internally generated Analog & Digital Real time Clocks, Time-Code, Tally, Source names and Alarms.

(g) The Multiviewer should display Embedded audio signals as bar graphs either at the side of each channel or overlaid on respective Video sources.

(h) The multiviewer should support upto 48 scalers and any scaled source should be duplicated in any position on any output. It should support 16 channels of embedded audio per video channel and be capable of Dolby-E metering.

(i) The multiviewer should be capable of displaying upto 48 tiles on a single screen plus additional tiles for Clocks and Tallies.

(j) It should generate alarms like Video Loss, Freeze Picture, Audio Loss, Silence, Excessive Audio Levels and support programmable color and alarm thresholds.

(k) The multiviewer should acknowledge fault indication.

(l) **Brief Technical Specifications:**

I.	Input	:	UHD-SDI/HD-SDI/SD-SDI, 12G, 3G with embedded audio (i/c Dolby E)
II.	Output	:	UHD-SDI/HD-SDI/SD-SDI with embedded audio (i/c Dolby E)
III.	Connector	:	BNC
IV.	Impedance	:	75Ω
V.	Return Loss	:	4 dB up to12G
VI.	Signal Level	:	800mV± 10%
VII.	Equalization	:	Automatic for at least up to 60 m at 12 Gb/s

8.6 Monitoring Equipment: Key features

The following provisions for Video Monitors and Waveform monitors/ Vectorscopes are required:

A. Video Monitors: For a Production wall consisting of eight UHD resolution high end LCD Television Monitors, horizontally stacked. The monitors should have the following features:

i. High intensity and contrast, wide screen (49"/50" diagonal), wide viewing angle - both horizontally and vertically with no reduction in contrast, brightness and colour saturation, thin bezel.

ii. Input source connectors matching the multi-viewers.

iii. LED backlight technology resulting in lower power consumption and incorporating a slim lightweight design, faithful, color reproduction.

iv. Minimum response time and high refresh rate.

Video Monitors for other spaces: Provision for ten 17" or more LCD video monitors including four being HDR compliant and an additional two 4"X4" 12G-SDI quad input monitor stacks. Key features should include anti-glare/anti-reflection protection, high contrast ratio, high brightness, tally, tiltable mounting, third party tally and IMD support. 4"X4" monitor stacks are required for Vision Engineering and other source monitoring.

Six 17" non-quad monitors for other areas in the van and outside.

B. Seven UHD, 12G/HD-SDI (1080p & 1080i), SD-SDI Digital Waveform Monitors/ Vectorscopes with cabinet and rack mounting kits. Six of these WFMs are required for Vision Engineering (3), Control System / Technical Director (1), Audio Engineer (1), VT Engineer (1). The seventh one should include the following for maintenance:

a. Eye/Jitter pattern display

b. Audio display capability

c. Data Analysis capability

d. High Dynamic Range (HDR)

C. One Audio Monitoring Station with an Audio Monitoring Unit (AMU) incorporating HD-SDI, AES/ EBU, analogue audio with audio bar graph and a pair of high end speakers should be part of the technical bid.

D. Multiple monitoring speakers with headsets for various bays within the OB Van including but not limited to Production, VT, Technical Director, etc.

8.7 Glue/ Modular and other Video Equipment: Key features

a) SPG: One set of Dual SPG with an Auto Change-over unit. It should have HD Tri-level, Bi Polar Sync, Black Burst, VITC, NTP and LTC Time code

Signal outputs. In addition, a built-in GPS receiver with GPS antenna and cable should be part of the system.

b) Four 12G Digital Frame Synchronizers: UHD-SDI (12G), HD-SDI (upto 3G) and SD-SDI Inputs/Outputs. These should also function as up/down/cross converters and have colour correction features. They should support SD/HD/3G/12G/UHD up/down/cross conversion with clean cut features, RGB Legalizers with Black Level adjustment limits, Linear motion adaptive frame rate conversion for all supported standards, including UHD, HD 50/59.94/60p, along with video processing, picture enhancement, edge enhancement and noise reduction, upto16-channel embedded audio processing and PCM/Dolby channel-based audio delay compensation, redundant power supply, Balanced AES and analog audio I/O.

c) Adequate Re-clocking Digital Distribution Amplifiers, Embedders and De-Embedders. Multiple outputs, based on approved workflow and provision for redundancies, will need to be terminated at the tail board of the Van.

d) All Frames should have redundant power supplies.

8.8 Digital Sound Consoles and other Audio Equipment: Key features

a) The bid should include a Digital Broadcast Sound Console for each OB Truck, designed for live productions: Venue, Remote and On-Air Studio.
b) The console should have a minimum of 16 faders with a 12 layer operation.
c) It should be integrated for External Loudness Metering (EBUR128 and ATC A85)
d) The console should have a TFT Touch Screen for all Channels.
e) It should have a minimum of eight groups for automix and at least 4 free control knobs for each fader channel.
f) The Sound Console should have a IP Native Core standard conforming to SMPTE 2110 (Home/Impulse), have 192 Buses and 32 Auxes.
g) The IO Count for Stageboxes should be: 32 Mic/Line and 16 Line Out: 8 AES I/O; 1 MADI; 8 GPIO.
h) Specifications for Stageboxes Input and Output should be as follows:
    i. Switchable Mic/Line Inputs on XLR/D-Sub. +48V Phantom Power. It should support balanced and unbalanced sources through floating Analog stage design. Dynamic range should be 119dB(A) with maximum input level of +24dBu.
    ii. AES3 Inputs (Stereo) on XLR/D-Sub with SRC (Input Sample Rates: 28.4-100kHz)
    iii. AES3 Outputs (Stereo) on XLR/D-Sub.
    iv. MADI Ports (Redundant Pair) on SFP.
    v. Media Streaming & Control Ports (SFP/RJ45 100/1000 Base-T Ethernet).
    vi. Management & Control Port (RJ45 100/1000 Base-T Ethernet).
    vii. Wordclock IN on BNC (75Ω).

viii. Wordclock Out on BNC (75Ω).
ix. Support for the following protocols: SMPTE ST2110-30/31, AES67, RAVENNA.
x. Stream Redundancy SMPTE ST2022-7 CLASS C coping with up to 150ms redundant path differential.
xi. 128 Audio RX Channels with 128 RX Stream Receivers. Each RX Audio Channel should feature up to 160ms of jitter buffer.
xii. 128 Audio TX Channels in up to 128 TX Streams. Stream formats from 1 to 64 Channels should be supported.
xiii. Sample Rates: 44.1, 48, 88.2, 96 kHz.
xiv. IEEE1588 PTPv2 master or slave operation.
xv. Wordclock master or slave operation.
xvi. PTP <-> Wordclock conversion.

8.9 Digital Intercommunications System: Key Features

a) A minimum of 32 ports with a hot swappable redundant power supply unit.

b) A minimum of ten Remote Control Panels (RCPs) with alphanumeric electronic displays for various keys. All panels should be with talkback headphones. Four gooseneck microphones should also be included. One audio output of the Director/Producer command from the intercom system should be available for transmitting into the final PGM Output to the Broadcast Station through DSNG/MW/OFC.

c) Two wired beltpacks with small dual muff headsets for Floor Managers. Two additional wired beltpacks with IFBs for anchors/talents.

d) Two base stations for permanent two-way communications stations should be integrated with the main digital matrix communication system. Twelve Walkies Talkies with headsets for hands free operation.

e) A four-channel digital telephone hybrid system.

8.10 Other Miscellaneous Equipment: Key features

a) GPS Clock with digital clock display.

b) A hand held & high precision Infrared Thermometer Gun for monitoring & measuring temperature of electrical contacts of various devices.

c) A Tally Controller/ Distributor to distribute tally signal across the system.

d) A stop clock at the Production Bay.

8.11 Control System for each Van: Key features

a) Each OB Van should have a Control System which should include software & hardware, an overarching configuration with a control and

monitoring package specifically designed for the dynamic orchestration of the broadcast media network in the van.

b) This Control System should offer independent control and monitoring of all major equipment thus allowing operation, configuration and system integration of the same.

c) It should abstract the control parameters of many devices into a single control layer and provide a platform to freely create workflows, configurations and user interfaces to simplify operational tasks.

d) The Control System offered by the bidder should seamlessly integrate with all equipment offered in the bid. These include Cameras, Routers, Vision Mixers, Audio Consoles, Multiviewers, Intercom Systems, Modular Equipment and other broadcast devices. It should talk in native protocols, where possible and seamlessly integrate with all major equipment in the van. It should provide a unified northbound matrix representation of the network toward an overall centralized control in the van. The control system should follow industry specifications like NMOS.

8.12 Power Supply System: Key features

a) The main Power Distribution Panel should include switchgears like On load Change Over Switches, Bypass Switches, MCCBs, MCBs, Phase Sequence Switches, Digital Phase Sequence Meters, Digital Volt and Ampere Meters, Digital Frequency Meters, etc. Sub Distribution Panels should also be provisioned for, where necessary.

b) Automatic Changeover for connecting external mains power and generator powered supply. UPS should be bypassed in the eventuality of failure. Change Over and bypass switches should be MCCB type to ensure disruption free supply on change over at full capacity.

9. General Terms & Conditions: Key features

9.1 Completeness of the System:

(a) Features are macro level suggestive only.

(b) Completeness of the system is the responsibility of the bidder.

(c) The successful bidder will be solely responsible for commissioning of the system, in accordance with specifications in the approved bid.

(d) If, in the opinion of the successful bidder, the system requires altered / additional hardware & software for better functionality, it may quote for those items as Optional and provide justification for its utility. If accepted by Doordarshan, costs for the same shall be incorporated as additional costs.

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9.2 Software:

a) All Software are required in original media and should be permanently licensed to Doordarshan.

A certificate to this effect is required to be submitted by the successful bidder.

b) The successful bidder will provide software upgrades free of charge during the warranty period. An undertaking to this effect, should be included with the bid.

10. Compliance:

(a) A point by point full compliance statement in respect of all parameters, from the principal manufacturers in the format given below, is to be part of the bid. Mere signature on the copy of DD specifications shall not be accepted as a compliance statement.

The above information should be supported by technical literature / data sheets enclosed with the bid. Reference to the page number should be mentioned in the relevant column. Bids without compliance statement or with incomplete compliance statement are liable to be rejected at the sole responsibility of the bidder. Any deviation from specifications detailed in the compliance statement is to be highlighted separately.

Sr. No of DD specs.	DD specs.	Compliance (Yes/No)	Performance Fig. of equipment Offered.	Reference to the Page Number of enclosed literature	Deviations, in case of non-compliance	Optional items, if any, required to make the system Compliant to DD specs.	Features in the offered Product which exceed DD specs.	Remarks, if any
1.	2.	3.	4.	5.	6.	7.	8.	9.

(b) A separate point by point compliance statement duly signed by the bidder in respect of all points laid down in the specifications for all equipment should be submitted as part of the bid in the above mentioned proforma.

If the bidder does not have requisite experience and has entered into an MOU with a partner, the point by point compliance statement should be duly signed by the bidder as well as its partner.

(c) In addition to the above, authorization from manufacturers of the equipment listed below should necessarily be submitted along with the bid:

i. Camera Chains
ii. Lenses
iii. Camera Support Systems
iv. Wireless Camera System
v. Remote Controlled PTZ systems
vi. Graphics System
vii. Vision Mixer
viii. Routing Switcher and Multiviewers
ix. Waveform monitors / Vectorscopes
x. Sync Pulse Generators
xi. Glue/ Modular
xii. Audio Mixer
xiii. Control System
xiv. Intercom system

11. Technical Literature:

One set of electronic technical and operations manual for all equipment is to be provided on a non-returnable basis along with the bid to facilitate evaluation in the absence such literature the bid is liable to be ignored. The successful bidder will have to supply an additional set of electronic technical, operational and maintenance manuals with respect to all equipment with the final delivery of the vans to Doordarshan.

12. Training:

Cost for three weeks comprehensive operation and maintenance training at each specified location for all equipment including for Cameras, Vision Mixers, Audio Consoles, Graphics Systems, Intercom systems, etc. should be included in the financial bid.

The schedule for training has to be submitted at least one month in advance by the successful bidder.

13. Warranty:

a) The complete system including equipment, vehicle & non-broadcast infrastructure should have a warranty period of three years from the date of commissioning. Failure, if any, during this period, will need be rectified free of cost to Doordarshan. In case it is not rectified within one week, or a time period approved by Doordarshan on the basis of a request from the successful bidder, replacement of the same shall be arranged by the bidder. OEMs will be required to give undertakings to this effect along with the bid.

b) Service level agreements (SLAs) for an additional 5 (five) years for immediate repairs/maintenance of the equipment after the completion of the three year warranty period should also be available, should Prasar Bharati request for the same. The maximum charges for such SLAs shall not exceed 5% on an annualized basis, of the value as mentioned in the bid. Such payment shall be made by Prasar Bharati to the bidder on a quarterly basis, in arrears. OEMs will be required to give undertakings to this effect along with the bid. For the avoidance of all doubts, the SLA period shall be from the beginning of year four to the end of year eight, after the initial successful commissioning of the project. Prasar Bharati shall also not be liable to pay any customs duty or levies on any imported spares, except for applicable local taxes like GST.
Bidders are required to submit details of arrangements for the execution of such service level agreements by undertaking to stock and store critical and other spares and provide the same in any location in India where the equipment may be at the time of breakdown. The SLA agreement is attached in Appendix (IV) and will need to be signed by the bidder and submitted as part of the bid.

14. Delivery Period:

All bidders will need to submit an undertaking with the bid confirming that in the eventuality of their success in the bid, they will deliver these Mobile Production Facilities (OB vans with equipment), in accordance with the bid specifications, within 9 months from the date of supply order or the agreed period.

Delivery period does not include training and Vehicle registration as mentioned in Clauses 5 (p) and 5(q).

15. Inspection:

The project, based on the approved specifications for SITC, shall be subjected to inspection, from time-to-time by Doordarshan officials.

16. Enclosures:

The bidder must necessarily submit the enclosures, as specified in this document, alongwith the technical bid.

The bid is liable to be rejected in the absence of the above enclosures at the sole responsibility of the bidder.

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Appendix-I

GENERAL TECHNICAL SPECIFICATIONS APPLICABLE TO ALL EQUIPMENT

1.	**System/ Formats**	:	**UHDTV:** 3840x2160/50 conforming to SMPTE 2082-10 and ITU-R BT. 2020 (amended upto date) (UHD-SDI: 11.88 Gb/s) **HDTV:** 1920x1080/50/I/P conforming to SMPTE 292M, SMPTE 424M and ITU-R BT. 709 (CIF)(amended upto date) (HD-SDI: 3 Gbps & 1.485 Gb/s) and **SDTV:** 625/50i (16:9 aspect ratio) conforming to SMPTE 259M and ITU-R BT. 601(amended upto date) (SDI: 270 Mb/s, PAL, 2:1 Interlace, 25 frames/s, 50 fields/s). The video in all systems is with embedded audio.
2.	**Digital processing**	:	**UHDTV**: 4:2:2, Y: 148.5 MHz, Pr: 74.25 MHz, Pb: 74.25 MHz Sampling rate, 10 bit quantization. **HDTV**: 4:2:2, Y: 74.25 MHz, Pr: 37.125 MHz, Pb: 37.125 MHz Sampling rate, 10 bit quantization. **SDTV**: 4:2:2, Y: 13.5 MHz, Pr: 6.75 MHz, Pb: 6.75 MHz Sampling rate, 10 bit quantization.
3.	**Power supply**	:	230 Volts ±10 %, 50 Hz
4.	**Operating temperature**	:	5 - 50 degrees, Celsius
5.	**Relative humidity**	:	30% - 85%
6.	**Mounting/Dimensions**	:	Standard 19" Rack mount in case of Stand alone Units. Otherwise 19" Rack mounting kits should be provided.
7.	**Connectors**		
a)	Video	:	75 Ω BNC
b)	Audio	:	3 Pin XLR
c)	Control	:	BNC/Mini XLR/RS-422/GPI/Ethernet as applicable
8.	**Video Signal**		
a)	Digital Video	:	0.8 V p-p ± 10%, across 75 ohms.
b)	Reference signal	:	Tri-level sync and PAL black burst
9.	**Audio**		
		:	(a) Embedded audio unless specified otherwise.
		:	(b) AES/ EBU
10.	**Time code**	:	VITC on black and LTC

Appendix-II

Suggestive Bill of Material for each EFP/ OB Van

Sr. No.	Description	Qty.	Remarks
(A)	**Video Equipment consisting of:**		
(I)	**Camera Chains:**		
1.	Digital UHD Camera Chains including Base Stations, Camera Control Units with individual RCPs, Tripod Adaptors, 7" Colour LCD Viewfinders equipped with LED backlit LCD panels having resolution 1920(H) x 1080(V) pixels or better. LEMO/ LEMO Type Connectors for HOFC cables with the following major specifications: Camera Head Specifications: Three 2/3" CMOS Sensors Aspect Ratio: 16:9; 3840 x 2160 Native UHD resolution: UHD Sensors; Supporting UHDTV standard; High Dynamic Range (HDR): HLG and SLog-3 & Wide Colour Gamut/Space (WCG), IP Direct mode support; F10 at 2000 lux (3200K, 89.9% reflectance), 60dB S/N Ratio or better; 2000 Horizontal TV lines or better; Gain: -6 dB to + 12 dB. Softwares for controlling camera systems from a PC or a tab. Motorized ND filter wheels and Optical/Electronic Colour Correction (ECC) filters. Both filters should be remotely controllable from the RCP. Bayonet lens mount. All cameras should be provided with Hard Carrying Cases and Rain covers. 19" Rack Mountable Full Rack Base Stations with LEMO / LEMO type Connectors for HOFC cables.	12	
2.	Remote Controlled (PTZ) Camera Systems: Each OB Van shall be outfitted and wired for additional camera systems. These wired camera systems should include the	2 sets	

	remote control of Pan, Tilt, Zoom, Focus and Iris functions. Each of these 02 UHD remote controlled camera systems should include a minimum of the following functions: 1. Large 1" MOS sensor 2. High Quality UHD 50p/60p formats 3. 12G-SDI, HDMI, Optical Fiber, IP Outputs 4. Optical zoom lens of a minimum of 20X magnification 5. Minimum viewing angle of 75 deg 6. Night mode, Tally, OFC The camera systems must necessarily have an independent remote controller. This remote controller should have a large LCD Display (minimum of 3.5") with GUI menu. The controller should incorporate the facility of multiple presets.		
3.	2" or more eye piece viewfinders for cameras in A. (I). 1	3	
4.	Dual muff camera talkback headsets	9	
5.	Single muff camera talkback headsets	4	
6.	Broadcast Quality EFP UHD Digital Zoom Lenses: 23X or higher magnification (minimum focal length 7.6 to 7.8 mm) with built in 2X Zoom Extenders, Servo Zooms and Servo Focuses with hard carrying cases	5	
7.	Broadcast Quality UHD Digital Zoom Lenses: 45 X or higher magnification (minimum focal length from 9.5 to 9.7 mm) with built in 2X Extenders, Servo Focuses, Servo Zooms, with quick zoom facility, built in Optical Image Stabilizers, Large Lens supporters for the lenses with hard carrying cases.	2	
8.	Broadcast Quality UHD Digital Zoom Lenses 107 X or higher magnification (minimum focal length from 8.3 to 8.4 mm) with built in 2X Extenders, Servo Focuses, Servo Zooms with quick zoom	4	

	facility, built in Optical Image Stabilizer, Large Lens supporters for the lens with hard carrying cases.		
9.	122X or higher magnification (minimum focal length varying from 8 to 8.2 mm) with 2X built in extender; servo focus and servo zoom with quick zoom facility, built-in optical image stabilizer and lens supporters.	2	
10.	13-14X Wide Angle Lenses (minimum focal length from 4.3 to 4.5 mm) with 2X built in extenders; servo focuses and servo zooms with quick zoom facility with hard carrying cases.	2	
11.	Camera Support Systems with 150mm Ball bases supporting above mentioned cameras and EFP type lenses along with Two stage fiber Tripods, OB Dollies, with hard carrying cases.	6	
12.	Camera Support Systems with 250mm Ball bases supporting above mentioned cameras and Box type lenses along with Two stage fiber Tripods, OB Dollies, with hard carrying cases.	6	
13.	Wireless Camera system including permanent UHD license, camera mounted transmitter consisting of 3G and 12G inputs SFP, 4X Tx and Rx antennae, 4 way diversity upgradable to 16 way diversity; Receiver, 3G and 12G outputs SFP, 4X2GHz down convertors, connecting cables, SMPTE Fiber Base Station, SMPTE Fiber Remote Unit, Camera Control. The system must be UHD COFDM based with a backup cellular adapter attached to the transmitter. The bonded cellular system should be capable of bonding at least four SIM cards.	1 Set	
(II)	SSD recorders to facilitate 4K recording. (Necessary adapters for fast file FTP transfer while recording to an NLE/Server if required).	2	

(III)	2 TB SSD supporting 4K recording and playback.	2	
(IV)	NLE System based on a software similar to Adobe Premier.	1	
(V)	**Graphics System**		
1.	Should incorporate SD-SDI/HD-SDI/UHD-SDI I/O and Support for Indian Regional Languages.	1	
2.	Indian regional language fonts as specified vide Specification's clause no. 8.3(ii)	1 Set	
(VI)	**Vision Mixer and Router**		
1.	Vision Mixer with 80 UHD SDI Inputs, 10 bit Processing or better, Multi format UHD/HD/SD Support, 3 M/E, 6 full function keyers per M / E, 3D DVEs, Image Store, 40 Outputs and Redundant Power Supplies for both 3 M/E Control Panel & Main Frame as mentioned in specifications earlier in this document	1	
2.	Minimum of 48 x 48 12G, UHD-SDI, HD-SDI and SD-SDI Digital Routing Switcher with integrated multiviewer with 4 HDMI/BNC outputs and redundant power supplies and redundant controller for the router along with 2 X-Y RCPs, 8 single bus RCPs. The size of the multiviewer integrated with the router should be 48 Inputs with 4 Outputs.	1 set	
VII	**Control System**		
1.	Control System software with redundant hardware. It should offer independent control and monitoring which allows operation, configuration and system integration of the approved broadcast equipment.	1 system	
VIII	**Video Monitors**		
1.	UHD LED Televisions of a size of 49"/50"	6	

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2.	17" LCD video monitors with 12G-SDI video inputs simultaneously having 3840 x 2160 or better resolution. Four of these should be HDR compliant.	10	
3.	4"X4" 12G Monitor Stacks	2	
4.	17" UHD Monitors for varying sizes	6	
IX	**Test and Measurement**		
1	UHD/HD/SD Digital Waveform Monitors/ Vectorscopes along with cabinets and rack mounting kits	6	
2.	UHD/HD/SD Digital Waveform Monitor/ Vectorscope with cabinet, rack mounting kit and the following display features: i. Eye/Jitter pattern display ii. Audio display capability iii. Data Analysis capability iv. High Dynamic Range(HDR)	1	
X	**Sync Pulse Generators**		
	Dual SPG with Auto Change-over facility working as Master/Slave SPG. It should have HD Tri-level, Bi Polar Sync, Analog Black Burst, DARS, Word Clock, VITC, LTC Time code outputs, NTP, built-in GPS receiver and antenna & cable	1 set	
XI	**Glue / Modular**		
1.	HDR Compliant Digital Frame Synchronizers with UHD-SDI, HD-SDI & SD-SDI I/Os and Up/Down & Cross conversion facilities with redundant power supplies.	4	
2.	HDR Compliant Digital Glue, Based on Final Approved Design, including Embedders and De-Embedders, Re-clocking Digital Distribution Amplifiers, etc. All frames to be equipped with redundant power supplies.	1 lot	
(B)	**Audio Equipment consisting of:**		
1.	**Sound Mixer**: 12 motorised faders	1	

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	broadcast quality Digital Audio Mixing Console for live mixing as detailed in specifications outlined earlier in this document.		
2.	**Audio Monitoring Station:** Audio Monitoring Unit having HD SDI, AES/ EBU and analogue audio with audio bar graph and speakers.	1	
3.	**Speakers:** Powered Speakers with AES/EBU and analog audio inputs	1 lot	
4.	**ADAs:** Audio Distribution Amplifiers with individual Level control on each output	1 lot	
(C)	**Intercom / Communications System**		
1.	32 Ports Digital Matrix Intercom System with belt packs and IFBs, RCPs as required in the system configuration specified earlier in the document.	1 set	
2.	Base stations for permanent two way communications integrated with main matrix communications.	2	
3.	Handsfree walkie talkies	8	
4.	4 channel digital telephone hybrid system	1	
5.	4 channel commentary unit	1	
6.	Anchor earpieces, headphones and other audio accessories	1 lot	
(D)	**Microphones**		
1.	Long Shotgun Microphones with stands, operable on battery and phantom power	4	
2.	Stereo Shotgun Microphones with narrow acceptance angle for long distance sound pick up; switchable low frequency roll off. Microphones, operable on battery and phantom power	4	
3.	Wired Lapel Microphones	2	
4.	Reporter's microphone with omni-directional pick-up pattern.	2	
5.	Plug-on transmitters transforming the above microphones into RF with true diversity receivers.	2	
6.	Lip Ribbon Commentary microphones.	2	

(E)	**Miscellaneous**		
1.	GPS Clock with digital clock display.	1 lot	
2.	Hand held Mini Infrared Thermometer Gun.	1	
3.	Tally Controller for Tally as well as IMD.	1	
4.	Stop clock for Production Bay.	1	
(F)	**Power**		
1.	20 KVA or higher load capacity UPS.	1	
2.	3 phase Power Distribution Panel.	1	
3.	Mains/DG Distribution Panel.	1	
4.	Auto Changeover Switches, MCCBs, MCBs, Phase Reversal Switch, Digital meters for Phase Sequence, Frequency, Voltage, Ampere, Terminal Blocks.	1 lot	
5.	Inverter type multiple Air Conditioning units for cooling levels and distribution.	1 lot	
(G)	Installation material including cables, racks, batch panels, tailboards, etc.	1 lot	
(H)	**Hybrid Optical Fibre, Video, Audio, Data, Power and Other Cables including:**		
1.	Optical Fiber Cables: 10 mtrs, terminated at both ends for bench test.	2	
2.	Optical Fiber Cable: 50 mtrs, terminated at both ends.	1	
3.	Optical Fiber Cables: 100 mtrs, terminated at both ends.	5	
4.	Optical Fiber Cables: 300 mtrs, terminated at both ends.	5	
5.	HOFC connector cleaning kits.	2	
6.	Flexible low loss microphone cables (four core rolls of 300 meters each), terminated at both ends.	2	
7.	Flexible low loss microphone cables (four core rolls of 200 meters each), terminated at both ends.	2	
8.	Video, audio, data, power cables of varying sizes: 10, 15, 20, 25, 50, 100 mtrs, terminated at both ends.	1 lot	
9.	Motorized Cable Drums.	14	
(J)	**Vehicle including Chassis, Customized Coach Build and Technical Furniture**		
1.	Vehicle equipped with appropriate Capacity engine with Sleeper Cabin for driver and BS-VI emission compliant	1	

	vehicle, enabled with GPS tracking.		
2.	Chassis and customized Coach Build	1	
3.	Vehicle reversing features including proximity sensors, rear view camera(s) along with LCD screen(s) in driver cabin.	1 set	
4.	Portable Fire Extinguishing Equipment	1 lot for each Cabin	
(K)	**Other Equipment**		
1.	Digital Thermometer & Humidity meter in each cabin.	1	
2.	Modular, Sturdy and Ergonomically designed technical and other furniture.	1 lot	
3.	Integrated foldable Aluminum ladder.	1	
4.	Tool kit consisting of essential Mechanical and Electrical tools for Cable Crimping, etc., Soldering, Digital Multi meter, Clip-on Meter, etc.	1	
(L)	**Documents for Vehicle**		
	Vehicle Registration including permit, insurance and road tax, in favour of Doordarshan, on the following basis: i) One time Vehicle Registration Charges ii) Road Tax for one year iii) Comprehensive vehicle insurance for one year All India National Permit for 05 years along with fee payment for one year	1 lot	
(M)	**Any Other Equipment/ Item for Completion of the Project**		
	All other equipment/installation material/works essential for completion of the project on SITC basis to ensure full functionality of the OB Van.	1 lot	
(N)	**Training:**		
1.	Three weeks of comprehensive operation and maintenance training at the specified site for all equipment.	1 schedule	
(O)	**Software and Documentation:**		
1.	Software for all equipment to be supplied in original media, licensed to Doordarshan with perpetual validity.	1 lot	

2.	Operation & Maintenance Manuals of all equipment	1 set	

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Appendix-III

CONSIGNEE DETAILS

Sl. No.	Zone	Location of Doordarshan Centre	Qty.
1.			
2.			

Appendix-III

CONSIGNEE DETAILS

Sl. No.	Zone	Location of Doordarshan Centre	Qty.
1.	**North Zone**	DDK Delhi	01
2.	**South Zone**	DDK Bengaluru	01

Appendix –IV

SLA Document from the respective OEM

This is to state that as the Original Equipment Manufacturer [OEM] of the following products, which the bidder has procured from us for the tender no. _____ dated _____ floated by DD, we shall provide to DD via the bidder, an extended warranty, hereinafter referred to as a Service Level Agreement [SLA] for, the beginning of year 4 from the date of delivery/commissioning of this SITC project till the end of year 8 i.e. for a period of 5 years post warranty. This SLA, should we receive a formal/written request for the same from the bidder, shall cover the following products:

As part of the SLA, we will provide the following services to the bidder, should they succeed in their bid, in order for them to provide the same services to DD, for the smooth working of the product:

1. Replacement of any part which may develop any fault due to a manufacturing default. For avoidance of all doubts, this service is not available for parts which may develop faults due to wear and tear and mishandling.
2. Such parts shall be delivered to the bidder in an expeditious time frame.
3. We undertake to store critical spare parts of all products covered under the SLA, in India, in order to provide expeditious support services for the project.
4. It shall be the responsibility of the successful bidder, to ensure that such replacement of the part happens in the quickest time frame from the time it is handed over to the bidder.
5. Where required, telephonic support via a helpline shall be made available to Doordarshan for support and associated services.
6. Wherever required Software update and up-gradation
7. In lieu, of all the support services as mentioned above for the SLA, we will charge the successful bidder no more than 4.5%, plus applicable taxes, of the bid value of the products covered under the SLA. We accept the condition that the payment shall be made to us quarterly in arrears, as agreed by the bidder.

Appendix-IV

SLA Document from the Bidder

1. This is to confirm that we will charge DD no more than 10% in excess of the amount payable by us to the OEMs, as stated in the annexures.
2. We undertake to provide the service of repairing any faulty parts in the fastest possible time after receiving the said replacement from the manufacturer. At the same time, we undertake to extend software update and up-gradation, wherever required.
3. The cost of SLA shall include all replacements/repair, delivery, installation and telephonic support.
4. We agree to receive payments for the agreed SLA amount for DD, quantity in arrears, as mentioned in the RFP.