

PRASAR BHARATI
(INDIA'S PUBLIC SERVICE BROADCASTER)
DOORDARSHAN KENDRA :: HYDERABAD

No:11(2)2019-E/TVH

Dated: 04.07.2019.

Subject: Draft Technical specification for body building and customisation of Multi camera Mobile Production facility (OB Van) in Ashoka Leyland Cowl Chassis.

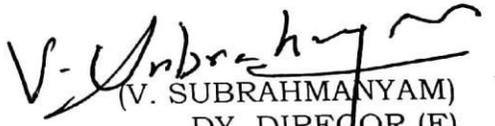
The Draft technical specification of the upcoming tender is enclosed herewith to offer comments, if any by due date at e-mail address sgeddh@yahoo.com or on following address:

Dy. Director General (E)
Doordarshan Kendra
Ramanthapur
HYDERABAD-500 013
Ph.No. 040-27038649

Draft Specification : For body building and customization of Multi camera mobile production facility (OB Van).

Due date to offer comments : 18/07/2019.

Encl: As above.


(V. SUBRAHMANYAM)
DY. DIRECTOR (E)
FOR DY. DIRECTOR GENERAL (E)

Note: The prospective bidder is also be requested to submit their budgetary quote.

प्रसार भारती / PRASAR BHARATI
भारतीय लोक सेवा प्रसारक / INDIA'S PUBLIC SERVICE BROADCASTER
अपर महानिदेशक (अभि.) (द.क्षे) का कार्यालय / O/o. **ADDL. DIRECTOR GENERAL (E)(SZ)**
आकाशवाणी एवं दूरदर्शन / ALL INDIA RADIO & DOORDARSHAN
स्वामी शिवानंदा सालै, चेन्नई / SWAMY SIVANANDA SALAI, CHENNAI – 600 005

**Technical Specifications for
Body building and Customization of Multi Camera Mobile production facility
(OB Van) in Ashok Leyland Cowl chassis.**

Dated: 04.07.2019.

The specifications aimed for Body building and Customization of Multi Camera Mobile Production facility in Ashok Leyland 1618/1 Cowl Chassis BS IV for Doordarshan Kendra, Hyderabad. The Mobile Production Facility (OB Van) will be used as Programme Production Facility for a wide variety of Indoor as well as Outdoor events, anywhere in India. The customization should be wired for 8 HD Camera setup.

1. Essential Eligibility Criteria:

- a) Each and every offered equipment should be from internationally reputed manufacturer and the quoted model should be field proven and in use by leading broadcasters in various continents of the World.
- b) The bidder should essentially submit the list of the broadcasters to whom the quoted model has been supplied/ customized. **Bid without broadcaster user list is liable to be rejected.**
- c) **The bidder shall submit only one solution (Single BOM) for the offered system. The offered BOM shall not contain any alternate item/ items for the item mentioned in the BOM specified in DD Specifications. Bid with alternate item(s) and/or multiple options (BOMs) is liable to be rejected.**
- d) The bidder should have a proven track record of design, fabrication and installation of multi-camera HDTV EFP/OB Van and should have work experience of at least **TWO** such projects in the **last ten years** prior to the submission of the bid. The cutoff date for the experience shall be the date of opening of the technical bid. The bidder not having work experience may tie up with other partner with requisite work experience as mentioned above. In this case, the partner will be responsible for carrying out design, fabrication, installation, testing & commissioning of the facility. The Memorandum of

Understanding (MOU) of partnership to this effect should be submitted along with the bid. However, this MOU does not absolve the bidder from successful completion of the SITC job as per the terms and conditions of the tender. The list of such turnkey works successfully done by the bidder/partner in the past 10 years along with the full details should be enclosed along with the bid. The supporting documentary evidence like work order with successful completion certificate should also be submitted along with the offer. The offer from the bidder not having work experience of **TWO** such projects in the **past ten years** prior to opening of the technical bid will not be considered.

- e) A pre bid conference will be held at an appropriate time before the last date of the submission of the bid to bring clarity to all the prospective bidders in respect of the requirement of tender specifications. The date and venue will be intimated to all the prospective bidders. The prospective bidders must submit their queries (if any) in writing so as to reach Doordarshan at least three working days before the pre-bid conference.

2. Turnkey Implementation and Commissioning:

- a) The complete project consists of Body building, Customization, Testing and Commissioning of the Multi camera Mobile production facility (OB Van) in Ashok Leyland 1618/1 Cowl chassis. The project will be carried out on turnkey basis.
- b) It will be the responsibility of the bidder to ensure after-sale service and guarantee for the offered equipment from various manufacturers provided in this Bid. In case of the firms that are dealing with the turnkey implementation of the project only, they can be considered only if the manufacturer(s) of different equipment, 17" LED backlit video monitors with HD-SDI input, Audio monitoring system, Peripherals, UPS, Air-Conditioning, HD Patch panels, Power Supply Accessories and other ancillary modules/accessories/equipments extend and ensure all Guarantee with respect to their equipment/ to the bidder and in turn to the procurement authority i.e., Doordarshan.
- c) The Bidder will be required to use only high quality HD video/audio cables, connectors and other accessories. The HD video cable should be similar to Belden 1855 for rack wiring and Belden 1505 & 1694A for other applications. The HD BNC connectors of high quality suitable for these video cables similar to Neutrik should be used. XLR connectors should be of high quality and similar to Neutrik.
- d) The Bidder should use Video/Audio cables of different colors for ease of identification. Identification tags on both ends of the connected video cables should be provided for ease of identification.

- e) The offered audio and video racks should be equipped with professional grade MDUs for powering various equipment. The rack should also have cooling fans etc.
- f) The system integrator should display in vantage positions in the Multi Camera Mobile production facility (OB Van) the Technical Block and Line diagrams of the Video, Audio and Power chain.
- g) The essential input and output routing of video signals to and from the production switchers and routing switcher will be through sufficient number of HD video patch panels. Only high quality digital patch panels which support high bandwidth should be offered. The patch panels should be normal through with 75 ohm termination.
- h) The Multi Camera Mobile production facility (OB Van) should be capable of working properly in the tropical/sub-tropical conditions where ambient temperature may vary from subzero to 50° Celsius.

3. Vehicle & its Customization:

- a) The Vehicle meant for the Multi Camera Mobile production facility (OB Van) is Ashok Leyland 1618/1 Cowl chassis compliant to BS-IV emission norms.
- b) The Mobile production facility (OB Van) should be built on chassis given by Doordarshan not exceeding overall vehicle length of **30 feet** approx. (from front registration number plate to rear registration number plate).
- c) The Mobile production facility (OB Van) should be equipped with equipment bays for Production, Recording, CCU, and Monitoring Equipment with an ease of access while servicing.
- d) The Mobile production facility (OB Van) should be provided with ergonomically & aesthetically designed Production, CCU, Audio, Recording, End Control Desks, Video Monitoring walls etc.
- e) Technical Furniture including Operator revolving chairs (10nos) etc. will also be part of the offer.
- f) The Multi Camera Mobile production facility (OB Van) should be provided with suitable storage spaces for Cameras, Lens, tripod, various cable drums and miscellaneous equipment etc.
- g) The Multi Camera Mobile production facility (OB Van) should have hydraulic stabilization jacks.
- h) The Multi Camera Mobile production facility (OB Van) should be equipped with vehicle reversing set including proximity sensors, rear view camera(s) along with LCD/LED screen(s) in driver cabin.
- i) Fire alarm system and Portable Fire Fighting Extinguishers of suitable type in each partition should also be provided.

- j) Provision of First Aid Kit is also required to be made in the offer.
- k) The interior and exterior of the Camera Mobile production facility (OB Van) should be ergonomically & aesthetically designed to meet the physical and environmental conditions as well as comfortable working for personnel.
- l) Internal area as well as all storage compartments provided in the external body of the Van should be properly illuminated with LED light fittings. At least 04 light fittings (water proof) should be provided at the outside of the Van to facilitate working around the Van.
- m) Binding straps/belts should be provided inside the Van & as well as in the outside compartments for holding the equipment in position when the vehicle is on move.
- n) Since the Vehicle has to carry a large number of sophisticated and costly equipment, utmost care should be taken while designing the body of the Van. Vehicle customization shall include all aspects including Structural Analysis, System Design, Coach Building, proper heat insulation, Equipment Installation, Field Testing etc.
- o) Adequate care should be taken in the Body design for proper working of the Van in the tropical/sub-tropical conditions where ambient temperature may vary from subzero to 50° Celsius.
- p) The vehicle should be customized by applying leading edge technology in accordance with the international quality standards using corrosive resistant high grade raw material. The vehicle body structure should be of a hybrid type with a combination of Premium quality Phospated MS Tubes (load bearing members) and Premium Quality Aluminum Alloy material 6063 material (sheet of minimum 3 mm thickness) to ensure structural ruggedness with anti-corrosiveness.
- q) Latest technology materials should be used for heat and noise insulation of the walls, ceiling, doors and floor operational areas. All the materials should be fire retardant. PUF sheet of minimum 40 mm thickness for heat insulation should be used.
- r) All body joints are to be sealed with premium quality sealant and all Aluminum joints to be done with MIG (Metal Inert Gas) welding.
- s) The offer is also includes PVC flooring in the inside area of the Van.
- t) Due process for painting the vehicle's outer body like Mechanical sanding, 2K Aluminum Primer coating, Final top coating has to be strictly followed. Under body anti-rust coating should also be essentially carried out for the Mobile production facility (OB Van).

- u) **Shock absorbers should be provided on the mounting of equipment and racks wherever necessary so as to avoid them from being damaged during the vehicle movement.**
- v) Body size including height of the Van should conform to local Transport Authority regulations. The successful bidder is required to complete the formalities of registration of vehicle with the appropriate transport authority. Vehicle is to be registered in the name of Doordarshan Hyderabad.
- w) All necessary certifications which are required from different Central/State Government & Regulatory Authorities shall be obtained and provided by the successful bidder. The Initial charges towards Registration/FC, Permit, Insurance, Road Tax etc. will be part of the offer.
- x) The system shall be designed to allow rapid transportation in the Indian environment, quick and easy deployment, lower running cost and easy serviceability.
- y) **The detailed equipment list to be provided by Doordarshan is given in the Appendix-III. All the listed equipment & envisaged equipment should be accommodated inside the van leaving sufficient working space for production/ operational crew.**
- z) The installed equipment should have quick access to front and back panels for ease of maintenance.
- aa) Layout drawing of the Equipments, Racks, Production Desks, Air Conditioning, Power Supply, Video and Audio Schematic etc. are of prime concern and are to be submitted by bidders along with the bid. The successful bidder will be required to prepare and submit multiple options for layout & design of the van and with all equipment (both listed & offered) and will get the final layout & design approved by the Asst Director General(E)(SZ) AIR& Doordarshan, Chennai immediately after getting the supply order. The layout & facility design and selection of equipment should be done keeping in view the broadcast quality production and professional workflow requirements for HDTV production and requirements as described in these specifications.
- bb) The layout should be so designed as to maximize the utilization of the available space without compromising with the functional requirement.
- cc) The production areas should have sufficient seating for required number of operational and production staff. The operational crew's seating should have easy-to-reach controls in the panel.
- dd) Retractable Awnings on both the main doors & back doors of the Van may be provided which can be unfolded while working in sunny & rainy climate conditions.

- ee) Part of the roof of the vehicle is to be made strong enough for camera mounting and antenna for microwave link in future.
- ff) Fold down hand rails on the roof and ladder should also be provided with the Van.
- gg) The vehicle should be provided with moving hood (collapsible, waterproof) installed throughout the length of vehicle (on the entrance side) in two parts (Total 8ft width and extendable up to 6ft).
- hh) **Rear Connection and Stowage Area of the Mobile production facility (OB Van) should have the provision for the following:**
 - i. At least 8 motorized cable drums for long length OFC cables.
 - ii. Under floor storage boxes with side access should be provided.
 - iii. External termination panels for multiple nos. of inputs & outputs connections of Video for PGM, Clean Feed, Aux. etc. in HD-SDI, SD-SDI and Composite, External Graphics unit (Key & Fill), communications and Power Supply with proper designation marking on each connector.
 - iv. External termination panels for multiple nos. of inputs & output connections of Audio in Analog and AES/EBU for Mic., Line, Aux. etc. with proper designation marking on each connector.
 - v. External Fiber-Optic termination for HD-SDI to Optic converters.
 - vi. Input power switchboard and outlets for external equipment such as DSNG, microwave links etc.
- ii) The equipment layout should be such that the van is balanced from all sides.
- jj) The successful bidder has to obtain the approval of Asst Directorate General (E) (SZ). AIR & DOORDARSHAN, Chennai for the Colour Scheme of interior of the van immediately after getting supply order. As the Van will be plying under a national permit, it shall be painted in accordance with prevailing Motor Vehicle Act. **The Mobile production facility (OB Van) should have sleeper driver cabin.**

4. Power Supply and Air Conditioning:

- a) The van should be able to operate on three phase (phase to neutral 230 volt \pm 10%, @50 Hz) commercial power Supply.
- b) The offer should also include three sets of highly compact Single-phase 5 KVA On - line UPS having with built-in battery with 20 minutes backup at 100% load for all equipment and internal lighting load except Air conditioning system.

- c) The battery bank of the UPS should be suitably placed for easy accessibility during the maintenance and servicing.
- d) Mains and UPS Power Supply status (Aural & Visual) indication should be made available in the Operational Area through Remote Monitoring Facility. It should be clearly visible and audible.
- e) Power Distribution Rack with Metering facilities should be provided in the Mobile production facility (OB Van).
- f) Internal lighting suitable for both TV Production and Operation & Maintenance should be provided in the Mobile production facility (OB Van).
- g) The interior of the Van should be fitted with aesthetically designed script lights. Adequate quantity of **LED** light fittings to give proper illumination needed for operation and maintenance.
- h) The Mains AC and DG Power feeding terminal block should be provided external to the Van suitably located to avoid direct exposure to rain water. The connectors & cables should be of the best quality & adequate capacity with enough headroom.
- i) The offer should also include aesthetically designed, high quality Power Distribution Panel(s) with on load Change-over Switch with provision of operating on mains and DG supply, Digital Metering & Monitoring Panels, Separate Circuits & Switch Gears for equipment racks, internal lighting and air conditioning according to the estimated load requirements.
- j) Technical and Power Earthing for Video, Audio and Power equipment should be properly done as per the standard.
- k) The van should be fitted with 3 phase power supply driven inverter type air conditioners of sufficient tonnage capacity to provide adequate cooling necessary for all the equipment and operators. The temperature inside the Mobile production facility (OB Van) should be maintained at 21±1 degree Celsius. The offered air conditioners should provide uniform cooling throughout the Mobile production facility (OB Van). There should be 2 or more number of Air conditioner units to facilitate redundancy in the event of failure of one of the units.
- l) **The requirement of Air-conditioning is estimated to be about 6 TR with break-up like 3 TR capacity in Production Area, 3 TR capacity in Audio Area, CCU, VTR, Slow Motion & Equipment Area. However, it is essentially required from the integrator to give the calculation of the estimated heat load and give the full design of the A/C system for the Mobile production facility (OB Van). In case the heat load calculated by the bidder is more, the Air-conditioning system of suitably higher rating shall be offered.**

- m) The distribution of conditioned air in various cabins should be planned in such a way that each outdoor A/C unit will cater to multiple cabins so that conditioned air is available in all the cabins even in case of failure of any unit.
- n) The hot air path of the air conditioning plants should be obstruction free.
- o) The mounting of Air-conditioning equipment should be such that it does not cause any hindrance to movement and parking of van.
- p) The bidder must ensure and certify that service support for the offered UPS and Air conditioning equipment is locally available where the van is to be supplied.

5. Technical Specifications & System Requirement:

The General specifications of the System applicable to all the equipment are given in **Appendix-I**.

6. Complement of Equipment for the Mobile production facility (OB Van):

- a) This Mobile production facility (OB Van) should have the entire supportive infrastructure like Monitoring, Routing, Communication, Distribution of Reference Sync Signal (Gen locking) etc.
- b) The Van must offer enough flexibility in adapting changing requirements from the technical and operational point of view.
- c) The make and model/part no. of each and every offered equipment/item/ installation material etc. should be clearly mentioned in the offered Bill of Material (BoM).
- d) The Bill of Material (BOM) has been provided in **Appendix-II**. The bidder is required to provide the list of offered equipment, software (if any) and accessories etc. including the technical furniture offered to meet the specifications requirement. The quantity of each item including sub-module etc. are to be specified clearly and compulsorily, failing which the bid will liable to be rejected summarily. The following is the proforma for the BOM:

Sr. No.	Description/Name of the item	Make	Model	Part No., if any	Qty.
1.	2.	3.	4.	5.	6.

7. Technical Specifications of Equipment:

- a) All the equipment in the offer should be from internationally reputed and leading manufacturers of their respective industry, who have proven records of offering high class, high MTBF equipment.
- b) The offer should also include the detailed technical brochure and technical manual containing all the technical specifications of such equipment.
- c) Any substandard equipment included in the offer may cause the rejection of complete offer with the sole responsibility of bidder.

8.1 OB Van Camera Chains:

- a) The Mobile production facility (OB Van) should be designed and wired for 08 HD cameras.
- b) Doordarshan provide Eight numbers of HDTV cameras as detailed in **Appendix-III**. The rack space & I/O cabling for the above Cameras should be planned accordingly.

8.2 Slow Motion Server:

The design should also accommodate one no. of 4 Channel HD Slow Motion Video Server. **The Server is not part of the offered system and will be provided by Doordarshan.** The bidders have to integrate the Video Server with the Mobile production facility (OB Van). The rack space & I/O cabling for this Video Server should be planned accordingly.

8.3 VCRs/Deck:

The design should also accommodate 2 nos. of VCRs/Decks (to be provided by Doordarshan). The rack space & I/O cabling for the above VCRs should be planned accordingly.

8.4 Character Generator & Graphics:

- (i) The Van should be designed for accommodating one HD switchable Character Generator (to be provided by Doordarshan). The rack space & I/O cabling for the above CG should be planned accordingly

8.5 Digital Production Switcher and Router:

- a) Doordarshan will provide one 16 input HD-SDI Digital Production Switcher with control panel and one 16x16 HD-SDI type Digital Routing Switcher along with 2 nos of X-Y RCPs and 2 nos of single bus RCPs. The design should also accommodate the above equipment.

- b) The bidders have to integrate the provided Production Switcher and Router with the Mobile production facility (OB Van). The rack space & I/O cabling for these equipment should be planned accordingly. The I/O Cabling for Router should be done for 32 x 32 router through necessary HD patch panels.

8.6 Monitoring Equipment:

- a) Provision of 2 nos. of 17" LED backlit video monitors with HD-SDI input, wide screen & Anti-glare/Anti-reflection protection, 1920 x 1080 resolutions, high contrast ratio, high brightness, tally, tiltable mounting, third party tally and IMD support etc. is to be made for the monitoring at various locations as detailed below:

Sr. No.	Description	Qty.
(I)	CCU Area	
a)	Cameras/ PGM	1 no.
(I)	Commentator Booth	
	PGM Monitoring (with standalone Desktop stand)	1 no.
	TOTAL	2 nos.

- b) One no. of Audio Monitoring Station having HD-SDI, AES/ EBU and analogue audio with audio bar graph and speaker should be included in the offer.
- c) Doordarshan will provide the following monitoring equipments to integrate with envisaged customization work.
1. Two numbers of HD-SDI Multi-viewers and two numbers of 55" LED TVs with HDMI interface for Production Control Room
 2. One number of HD-SDI Multi-viewer and One number of 55" LED TV with HDMI interface for Camera Control Unit (CCU) area.
 3. Four numbers of Dual input Waveform Monitor in CCU area.
 4. Two Sets of Speakers for Audio monitoring
- d) The rack space & I/O cabling for the above monitoring equipment should be planned accordingly.

8.7 Peripherals & Other Video Equipments:

- a) Open Gear modular rack Frame unit with redundant power supply & internal cooling, capable to house at least 12 cards in 2 Frames should be included in the offer.

- b) The HD digital distribution amplifiers (6 no.s with at least 4 outputs),HD MUX (2 no.s),HD to SD Converters (4 no.s), SD to HD converters (4 no.s with HDI and HDMI Provision), each inclusive of back plates to interface in Open Gear frame unit.
- c) Doordarshan will provide the following additional Peripherals & other Video equipments to integrate with envisaged customization work.
 - a. One set of Dual SPG with Auto Change-over facility.
 - b. One number of digital Frame Synchronizers.
 - c. The digital & analog peripherals (as detailed in Appendix-III).
- d) The rack space & I/O cabling for the above Peripherals & Other Video equipments should be planned accordingly.

8.8 Audio Mixer and other Audio Equipment:

- a) Doordarshan will also provide the following Audio equipment to integrate with envisaged customization work.
 - a. One set of 16 channel Sound Craft Audio Mixer
 - b. Two numbers of ADAs
 - c. One set of Professional Speakers
- b) The rack space & I/O cabling for the above Audio equipment should be planned accordingly.
- c) **All the audio Input/Outputs should be on XLR. If required, necessary beak-out cables should be offered.**

8.9 Intercommunication System:

- a) Doordarshan will also provide the Intercommunication system (detailed of make/model mentioned in Appendix-III) to integrate with envisaged customization work.
- b) The rack space & cabling for the above Intercommunication system should be planned accordingly.

8.10 Power Supply System:

- a) Power Distribution Panel with the required switchgears like On load Change Over Switches, Bypass switches, MCCBs, MCBs, Phase sequence switch, digital Phase sequence meters, digital Volt and Ampere Meters, digital frequency meters etc. should be provided. The required numbers of Sub Distribution Panels should also be provided. The entire Switch Gears should be of high quality and should be of reputed brands such as L&T, Siemens etc.

- b) The van should have the provision of connecting external mains power supply and diesel generator supply with the necessary on load changeover facilities. There should be a provision to bypass the UPS in case of any failure. The change over and bypass switches should be on load full capacity MCCB type and not contactor based to ensure interruption free supply on change over.
- c) The power cables to be used for internal wiring for various purposes should be of adequate rating with sufficient headroom, fire retardant and of the best quality.

8. General Terms & Conditions:

9.1 Completeness of the System:

- (a) Completeness of the system is the responsibility of the bidder.
- (b) The successful bidder will be solely responsible for commissioning and operationalisation of the system to the satisfaction of Doordarshan as per the specifications requirement.

9.2 Compliance:

(a) A point by point full compliance statement in respect to all the parameters related to the concerned equipment/item(s) laid down in the specifications from the respective principal manufacturers is to be enclosed along with the offer in the format given below. Mere signature on the copy of DD specifications shall not be accepted as a compliance statement.

The figures so mentioned should be supported by record of these in the technical literature enclosed with the tender and reference to the page number of enclosed literature for all features and technical specifications should be mentioned in the relevant column. Offers without the compliance statement or with incomplete compliance statement will liable to be rejected with the sole responsibility of the bidder. **Any deviation from the specification 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 exceeds DD specs.
1.	2.	3.	4.	5.	6.	7.	8.

(b) In addition to above, a separate point by point compliance statement duly signed by the bidder in respect of all the points laid down in the

specifications for all the equipment/item(s) should also be submitted along with the bid by the bidder in the above mentioned proforma.

In case the bidder does not have requisite experience and enters into an MOU with a partner, the point by point compliance statement in respect of all the points laid down in the specifications for all the equipment/item(s) shall be duly signed by the bidder as well as his partner.

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

- i. Un-interpreted Power Supply (UPS)
- ii. Offered Air-Conditioning System
- iii. Professional 17" LED Video Monitor
- iv. Audio Monitoring System
- v. Video and Audio Peripherals
- vi. HD Patch panels.

9.3 Technical Literature:

One set of printed technical and operation & maintenance manuals for all the offered equipments is to be provided on non-returnable basis along with the tender to facilitate the technical evaluation, otherwise the tender is liable to be ignored. The successful bidder will have to supply one set of printed operation, service and maintenance manuals with respect to each offered equipment, along with the van.

9.4 Guarantee:

- (a) With reference to the clause no.8.2 of the “General Terms and Conditions (GTC)” under ANNEXURE-II of tender document, the complete system including all offered items/equipment should be guaranteed for **three years** of trouble free operation from the date of commissioning. In case of any item or equipment failure including software and hardware within this period, the same shall be rectified or replaced free of cost to Doordarshan at the site. In case, it is not rectified within one week, replacement of the equipment shall be arranged by the bidder.
- (b) The guarantee should cover all hardware, software and modules of the complete system.
- (c) The firm will provide up gradation of all the offered software free of charge during the guarantee period. **The firm will be required to give undertaking to this effect, along with the bid.**

9.5 Delivery Period:

The firm shall deliver the Multi-camera Mobile Production Facility Van complete in all respect in accordance with the specifications, including, registration as per clause 4(w) etc. within **3 months** from the date of supply order.

9.6 Inspection:

The equipment and Customization work shall be subjected to inspection by Doordarshan officials.

9.7 Enclosures:

The bidder must necessarily submit the following enclosures along with the technical bid:

- (a) Compliance statement with respect to all the points of the specifications duly signed by the OEM should be submitted for all the offered equipment. The reference to the page number of enclosed literature for all features and technical specifications should be essentially mentioned in the relevant column of the compliance statement.
- (b) A separate point by point compliance statement duly signed by the bidder or bidder as well as the partner, as applicable, in respect of all the points laid down in the specifications for all the equipment/ item (s) in the proforma mentioned in clause no. 9.2 (a).

- (c) The Van layout indicating all operational areas such as production, CCU, VTR, slow motion and audio etc.
- (d) Detailed Video and Audio schematics including block diagrams etc.
- (e) Power supply schematic with the layout of power switchgears, PDP etc.
- (f) Intercommunication schematic.
- (g) Power supply load calculation sheet. Power supply schematic with the layout of power switchgears, PDP etc.
- (h) The design details of the vehicle.
- (i) Air-conditioning details including heat load calculation and system design.
- (j) Details of the stowage area.
- (k) Technical manuals/Detailed technical literature/catalogues for all the offered products for substantiating the model no. and technical specifications.
- (l) **Product/Model specific User list of the offered product.**
- (m) Work experience details including contact details of the clients and supporting documentary evidence.
- (n) Any other document mentioned elsewhere in the tender document.

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

GENERAL TECHNICAL SPECIFICATIONS APPLICABLE TO ALL THE EQUIPMENT

1.	System	:	HDTV: 1920x1080/50/I conforming to SMPTE 292M and ITU-R BT. 709 (CIF)(amended up to date) (HD-SDI: 1.485 Gb/s) and The video in the systems is associated with embedded audio.
2.	Digital processing	:	HDTV: 4:2:2, Y: 74.25 MHz, Pr: 37.125 MHz, Pb: 37.125 MHz Sampling rate, 10 bit quantization.
3.	Power supply	:	230 Volts ±10 %, 50 Hz
4.	Operating temperature	:	5 to 40 Deg. Celsius
5.	Relative humidity	:	30% to 85%
6.	Mounting/Dimensions	:	Standard 19” Rack mount in case of Stand alone units. Otherwise 19” Rack mounting frame housing the units with auto switchable Redundant power supply unit.
7.	Connectors	:	
a)	Video	:	75 Ω BNC
b)	Audio	:	3 Pin XLR/75 Ω BNC
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	:	1080/50/I HDTV 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

Suggestive Bill of Material for each EFP/OB Van

Sr. No.	Description	Qty.	Remarks
(A)	Video Equipment consisting of :		
(I)	Camera Chains:		
1.	Digital HD Camera Chain including Base Station / Camera Control Unit, individual RCP, Tripod Adaptor, Viewfinders Including OFC Triax cables Model: HITACHI, CUHD-1000E	8 Nos.	To be Provided by Doordarshan (Not part of this offer)
(II)	Character Generator & Graphics:		
1.	Character Generator with HD-SDI I/O and Support for Indian Regional Languages.	1 No.	To be Provided by Doordarshan (Not part of this offer)
(III)	Digital Production Switcher and Router:		
1.	Digital Production Switcher with 16 HD Input, Multi format HD Support, 2 M/E, 2D DVE, Image Store, 16 Outputs and Redundant Power Supply for both Control Panel & Main Frame Model:For-A	1 No.	To be Provided by Doordarshan (Not part of this offer)
2.	32 x 32 HD-SDI Digital Routing Switcher with redundant power supply along with 2 nos. of X-Y RCPs and 2 nos. of single bus RCPs. (Presently provided with 16 inputs which will be upgraded to 32 input later) Model: Sierra 16X16 DAA	1 set	To be Provided by Doordarshan (Not part of this offer)
(IV)	Monitoring Equipment:		
1.	High resolution Multiviewer having 16 HD-SDI Input video sources with Tally facility, HDMI outputs with dual redundant Power Supply.	3sets	To be Provided by Doordarshan (Not part of this offer)
2.	LED Television of size 55" with HDMI input	3 Nos.	To be Provided by Doordarshan (Not part of this offer)
3.	17" HD HDI input LED video monitors with wide screen & Anti-glare/Anti-reflection protection, 1920 x 1080 resolutions, high contrast ratio, high brightness, tally etc.	2 nos.	Similar to SONY LMD-A170, Ikegami HLM-1751 WR, KROMA LM 7017, TV Logic XVM-175W
3.	Dual Input HD/SD Digital Wave form Monitor along with cabinet having facility of simultaneous display of waveforms of both the input signals.	4nos.	To be Provided by Doordarshan (Not part of this offer)

4.	Audio Monitoring Station having HD SDI, AES/ EBU and analogue audio with audio bar graph and speaker.	1 No.	Similar to TSL AMU1-3G Non Dolby, Wholer VMMDA-1 Bel Digital Audio BM-A2-4SHD
(V) Peripherals & Other Video Equipments			
1.	Dual SPG with Auto Change-over facility	1 set	To be Provided by Doordarshan (Not part of this offer)
2.	Digital Frame Synchronizer with HD-SDI	2 Nos.	To be Provided by Doordarshan (Not part of this offer)
3.	Digital Peripheral Equipment Open Gear Modular Frame unit With redundant power supplies and internal cooling	1 no	Similar to Snell, ROSS, GVG, Evertz, Nevion make
4.	Digital Peripheral Equipment Re-clocking type Digital Distribution Amplifiers with back plate interface to integrate in Open Gear module ,	6 nos	Similar to Snell, ROSS, GVG, Evertz, Nevion make
5.	HD Multiplexers (Each inclusive of back plates to interface in open gear frame unit)	2 no.s	Similar to Snell, ROSS, GVG, Evertz, Nevion make
6.	SD to HD Converters	4 no.s	To be Provided by Doordarshan (Not part of this offer)
7.	HD to SD Converters	4 no.s	To be Provided by Doordarshan (Not part of this offer)
(B) Audio Mixer and Other Audio Equipment:			
1.	Audio Mixing Console	1 Set	To be Provided by Doordarshan (Not part of this offer)
2.	Compact size Ampli-speakers with AES/EBU and analog audio inputs		To be Provided by Doordarshan (Not part of this offer)
3.	Audio Distribution Amplifier (ADA)	2nos	To be Provided by Doordarshan (Not part of this offer)
(C) Other Miscellaneous Items:			
1.	Hi-quality rack mountable Blue-ray disc Player	1 No.	To be Provided by Doordarshan (Not part of this offer)

2.	GPS Clock with digital clock display.	1 lot	To be Provided by Doordarshan (Not part of this offer)
(D) Intercommunication System:			
1.	16 Ports High Quality Intercom System with wired and wireless belt packs, along with four remote control panels	1 set	To be Provided by Doordarshan (Not part of this offer)
2.	Wired belt packs with miniature dual muff headsets for FMs	2 nos.	-Do-
3.	Wired belt packs with IFB for anchors/talents.	2 nos.	-Do-
(E) Microphones:			
1.	Long Shotgun Microphones with stand & operation on both battery and phantom.	2 sets	To be Provided by Doordarshan (Not part of this offer)
2.	Shot Gun Microphones with narrow acceptance angle for long distance sound pick up; Good sound rejection from the sides and rear of microphone, switchable low frequency roll off. Microphones should operate on battery and phantom supply	2 sets	To be Provided by Doordarshan (Not part of this offer)
3.	Lapel Microphone	3 sets	To be Provided by Doordarshan (Not part of this offer)
4.	Noise Canceling Lip Microphone with Lip guard	3 Nos.	To be Provided by Doordarshan (Not part of this offer)
5.	Reporter's microphone with omni-directional pick-up pattern.	2 Nos.	To be Provided by Doordarshan (Not part of this offer)
6.	Plug-on transmitter to make any of the above microphones RF microphone and true diversity receiver	2 sets	To be Provided by Doordarshan (Not part of this offer)
(F) Installation Materials:			
1.	All kinds of Installation Materials i/c HD Patch Panels with 2.5 GHz bandwidth & Normal through type, Audio, Video, Data, Control, Power Cables, Audio- Video Racks, Tail Boards, Connection Terminals etc.	1 lot	
(G) Power Supply & Air-conditioning Equipment:			
1.	5 KVA Single phase-input and output On Line UPS system with built-in battery with 20 Minutes Back Up at 100% Load.	3 No.s	Similar to APC, Pillar, Eaton make
2.	Power Distribution Panel as per specifications	1 set	
3.	Mains/DG Distribution Panel	1 set	
4.	On load Change over Switches, MCCBs, MCBs, Phase Reversal Switch, Digital meters for phase sequence, frequency, Voltage, Ampere, Terminal Blocks, Power Cables, Amphinols and Other Installation Materials	1 lot	Switchgears similar to L&T, Siemens make

	etc.		
5.	Inverter type Split Air conditioners with multiple Outdoor and multiple Indoor units of approx. 6TR or more capacity	1 set	Similar to Daikin, Hitachi make
(H)	Hybrid Fiber Optical Cable & Audio-Video Cables etc.		
1.	Optical Fiber cable 10 mtrs. Of length with necessary connectors at both ends for bench test	2 nos.	To be Provided by Doordarshan (Not part of this offer)
2.	Optical Fiber cable 150 mtrs. Of length with necessary connectors at both ends	3 nos.	To be Provided by Doordarshan (Not part of this offer)
3.	Optical Fiber cable 300 mtrs. Of length with necessary connectors at both ends	3 nos.	To be Provided by Doordarshan (Not part of this offer)
4.	HOFC cable connector cleaning Kit	2 sets	To be Provided by Doordarshan (Not part of this offer)
5.	6-core flexible Fiber-optic cable having high tensile strength with suitable terminations for the stand alone optical converters. (2 x 100 mtr) with Cable drum.	2 Nos.	To be Provided by Doordarshan (Not part of this offer)
6.	Motorized Cable Drums for Audio, Video, OFC cables.(OFC-8 no.s, Video/Audio-3nos)	11 nos	
(I)	Vehicle, Body Building & Technical Furniture etc.:		
1.	Vehicle Chassis	1 No.	To be Provided by Doordarshan (Not part of this offer)

2.	Van Chassis and Body Building and Customization of the Van, PVC flooring/ acoustic/foam/cloth covering, false ceiling including sleeper cabin etc.. as per specifications.	1 lot	
3.	Vehicle Registration in favour of Doordarshan including permit, insurance & road tax as detailed below:- (i) One time Vehicle Registration Charges (ii) Road Tax for one year (iii) Comprehensive vehicle insurance for one year (iv) All India National Permit for 05 years along with validity fee payment for one year (subsequent year's validity fee to be paid by the Doordarshan Kendra, Hyderabad)	1 lot	
4.	Modular, Sturdy and Ergonomically designed Production Desk, Audio Desk, CCU Desk, Slow Motion Desk, Recording Desk and Engineering Desk	1 lot	
5.	Required no of audio and video racks equipped with professional grade MDUs. The rack should also have cooling fans etc	1 lot	
6.	Technical Furniture including 10 number of revolving chairs for operator etc.	1lot	
7.	Moving hood (waterproof throughout the length of vehicle in two parts, 8X6 ft.) (manually operated)	2 sets	
8.	Vehicle reversing set including proximity sensors, rear view camera(s) along with LCD screen(s) in driver cabin.	1 set	
9.	Fire Ball Fire Fighting Equipment for various cabins including Driver's cabin	4 No.s	
10.	Fire alarm system suitable to Van	1 set	
11.	First Aid Kit	1 set	
12.	Digital Thermometer & Humidity meter in each cabin	1 lot	
13.	Integrated foldable Aluminum ladders	1 lot	

14.	Tool bag consisting of essential Mechanical & Electrical tools, Cable Crimping tools (Video, Data), Soldering station, Digital Multi meter, Clip-on Meter etc.	1 lot	
(J)	Any other Essential item(s) required:		
1.	Any other essential item(s)/equipment/ installation material/works required for completion of the work on to make the system fully functional in all respect	1 lot	
(K)	Software & Documentation		
1.	The software of all the offered equipment, if any including Operating System and Application software etc. are required to be supplied in original media and should be licensed to Doordarshan with perpetual validity.	1 lot	
2.	Operation & Maintenance Manuals of each & every offered equipment	1 set	

S. No	Name of the Equipments	Make & Model	QT	Dimensions in Inchs			Details of input/outputs	Approx Heat Load	Weight	Power consumption
				L	W	H				
1.	Complete camera chain with CCU	Hitachi CCU HD-1000E	8	17.5	9.5	5.25				
2.	HD Cam OCPs	Hitachi-RU-1500JY	8	13	4	2.5				
3.	HD Digital Production Switcher	For-A	1							
4.	HD Router 16 x 16	Sierra 1616DAA	1	16	19	5.25				
5.	Router Panel XY	Sierra	2	4	19	1.75				
6.	Remote Control panel	Sierra	1	1.75	19	1.75				
7.	HD Peripherals	Ross & BFR 810	1	12	19	3.5				
8.		Network	1	7	19	3.5				
9.	Multi viewer		3set							
10.	55" LED display		3 n							
11.	HD Frame Synchronizers	FORA FA 9500	1	17	19	1.5				
12.	SPG	Triology 350	1	17.5	19	1.75				
13.	Analog VDA	MCBS 106M4	2	11	19	5.25				
14.	Audio Patch panels	Flash Link	2	2	19	1.75				
15.	HD Video Patch panels	ADC	3	3.5	19	3.5				
16.	Wave form Monitors	Tektronics 1731	4	17.5	19	5.25				
17.	Intercom system	RTS-Zeus - II	1	16	19	3.5				
18.	Intercom Panels	RTS-MKP-12	4	7	19	1.75				
19.	Slow Motion server	EVS - XT3HS - 6U -444	1	27	17.5	10.5				
20.	Character Generator	HP - XW 6600	1	17.25	6.75	17.5				
21.	Audio console	Sound Craft B-800	1	34.5	32.5	44				
22.	Power units	do	4	15	19	3.5				

23.	ADAs	Comcon	2	8.5	19	1.75				
24.	VCR/Deck Units	SONY	2		8	6				
