
Kind Attention to all prospective Bidders

Draft Specification of up-coming tenders are uploaded as under to offer comments if any by the due date at e-mail ddpurchase401@yahoo.co.in or on the following address:

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Specification No.	Specification for	Due date to offer comments.
SATD/SITC of RF Chain at DTH_Oct_2018. Dated 01.10.2018	SITC of (3+1) RF Chain at DTH at Earth Station Todapur, New Delhi.	20.11.2018

Prabhat Kumar Singh
Assistant Engineer
For Director General, Doordarshan

for purchase invitation to

(251)

PRASAR BHARATI
(BROADCASTING CORPORATION OF INDIA)
DIRECTORATE GENERAL: DOORDARSHAN

**SPECIFICATIONS
FOR
SITC OF (3+1) RF CHAIN
AT
DTH EARTH STATION TODAPUR,
NEW DELHI**

Specification No.: SATD/ SITC of RF Chain at DTH_Oct_2018

Dated: 01/10/2018

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**SPECIFICATIONS
FOR
SITC OF (3+1) RF CHAIN
AT
DTH EARTH STATION TODAPUR,
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1. Introduction

This project envisages SITC of (3+1) RF chain consisting of Up converters, KHPA and its associated accessories at Doordarshan's present DTH platform "DD Free Dish". The present DTH Platform is up-linking 80 TV channels in MPEG-2(5 streams), 20 TV Channels in MPEG-4(one stream), and 40 Radio channels (6 streams) in "Free- To- Air" mode.

2. Scope of Work

- 2.1.1 The scope of this project includes Supply, Installation, Testing and Commissioning (SITC) of Up-converters 3X (1+1) and KHPA (3+1) system, associated waveguide and Power Supply System at Ku-Band DTH Platform at Todapur, New Delhi.
- 2.1.2 The bidder shall first dismantle the existing RF equipment KHPAs, and install new (3+1) system in its place and commission it.
- 2.1.3 A suggestive block schematic is provided to give a general idea about the intended configuration. A complete schematic of actually proposed implementation should be supplied along with the quote. Physical topography may be different than the suggestive block diagram but it should meet the project objectives.
- 2.1.4 The cabling and routing of wiring between racks to be done from the TOP of the racks.
- 2.1.5 Cabling from monitoring port of all equipments such as Up-converter, HPA, Directional coupler (before each Diplexer) will be provided through a existing patch panel.
- 2.1.6 Output of all the new KHPAs and Up-converters are to be integrated with existing monitoring systems.
- 2.1.7 The new KHPA systems are to be integrated with existing Uplink Antennas.
- 2.1.8 Cables are to be laid from IF patch panel (DTH building) to Up-converters rack (Porta cabin) and from Up-converter rack to HPA racks.
- 2.1.9 The layout plan needs to be submitted for approval of Doordarshan before execution of SITC work at site.

3. Eligibility Criteria

- 3.1 Bidder should have a proven track record of carrying out similar projects in the past. The list of such projects successfully completed by the bidder in the preceding past five years should be submitted with the bid.
- 3.2 Bidders should have successfully completed one or more similar SITC of SSPA/TWTA/KHPA in (m+n) redundancy mode (where $m \geq 1$ & $n \geq 1$) for C/Ku Band Digital Earth Station/DSNG (i.e. MCPC/SCPC, VSAT Hub, or Teleport) in immediate preceding past Six years. The list of such turnkey works successfully done by the bidder in the past Six year along with the full details should be enclosed along with the bid.
- 3.3 Copies of work order and successful completion certificate of one KHPA/TWTA HPAs in (m+n) redundancy mode in para 3.2 above to various organizations in preceding past Six years should essentially be submitted along with the bid document.
- 3.4 Bidder shall offer KHPA system and Up-convertors of only those OEMs who are having past experience of :
- 3.4.1 At least five years of manufacturing similar KHPAs and similar Up-convertors. The documentary evidence is required to be submitted in this regard, and
- 3.4.2 Supplying at least 10 Nos. of offered KHPAs and 10 Nos. of Offered Up-convertors in immediate preceding past five years.
- 3.5 Copies of supply order and receipt certificates/challan/factory dispatch certificate/copy of invoice in respect of above said quantities at para 3.4 of KHPAs and Up-convertors in preceding past five years should essentially be submitted along with the bid document.
- 3.6 The bidder must have a valid Dealer Possession License at the time of submission of bid. A copy of valid Dealer Possession License should be submitted along with the bid.
- 3.7 Bidder not having relevant work experience may tie up with other partner/partners having requisite work experience as mentioned above. In this case, the partner/partners will be responsible for carrying out Design, Fabrication, Installation, Testing & Commissioning of these Systems. The documents for requisite experience of the partners/partner are to be submitted along with bid. 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.
- 3.8 The bidder must have his local office/ authorized representative/ dealer in India for after sales support.
- 3.9 The cutoff date for the experience shall be the date of NIT.

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4. Turnkey Implementation and Commissioning :

- 4.1 The complete project will consist of Supply, Installation, Testing and Commissioning (SITC) of the RF system (3+1 KHPA system, 3X(1+1) up converters and other accessories) at DTH Todapur as detailed at Clause No. 2, Scope of Work. The project will be carried out on turnkey basis.
- 4.2 Each and every offered equipment and accessories including software should be from internationally reputed manufacturer and the quoted model should be of high class, high MTBF, field proven and in use by leading broadcasters/ organizations in various continents of the World. Any customized product which is not field proven in the industry will not be acceptable.
- 4.3 The bidder shall submit only one solution (Single BOM) for the offered system. Bid with multiple options against any requirement is liable to be rejected. BOM shall not contain any optional items as an alternative for any line entry item. However, bidder can offer additional accessory items as options for performance improvement of main line entry item of same make.
- 4.4 The bidder must ensure completeness of the offered system in all respects. The system should be completed and fully wired for all the indoor equipment fitted in 19" standard racks. The offered system must have enough flexibility in adapting the changing requirements from the technical and operational point of view. The bidder should submit detailed schematics and layouts for proposed solution/ solutions based on the offered equipment along with the offer. In order to ensure the completeness of the system, any additional equipment/accessories which bidder feels necessary to complete the configuration should also be quoted. However, in such case they should provide proper justification for the additional equipment required.
- 4.5 As an SITC contract, all supplied equipment are to be installed, tested and commissioned at site as mentioned at Clause 4.1 by the Bidder. The cost of any other interconnecting material and labour required for laying of cables etc. should be included in the tender.
- 4.6 Cost of any other work, consultancy and material required to complete the installation & commissioning of the earth station should be taken into account and clearly mentioned while submitting the tender.
- 4.7 The bidders are required to submit the proposed system design layout drawing, rack layout drawing along with the bid.
- 4.8 The successful bidder will be required to prepare and submit the final system design as per the site condition in consultation with Doordarshan and get it approved by Directorate General, Doordarshan before actual implementation.
- 4.9 Assorted items required for the project like RF cables with connectors (N type, Male & Female), Bullets N type, RF splitter (1:4 passive type) etc are also to be provided.

- 4.10 All interconnecting material including cables and connectors.
- 4.11 The offer shall include supply, installation, testing and commissioning of the setup, complete in all respects. A representative block schematic is provided to give a general idea about the intended configuration. A complete schematic of actually proposed shall be supplied along with the quote.
- 4.12 The successful bidder will be required to print and display the final Technical Block diagram and Line diagrams of adequate size for RF chain in the facility after the completion of the installation.
- 4.13 Each offer should be complete in all respect. Incomplete & non-compliant offers may be rejected summarily, without making any references to bidder.
- 4.14 The successful bidder must submit the firm's self-certified copies of import license at the time of commissioning in respect of RF Equipment for issuance of operating license from WPC.
- 4.15 For facilitating maintenance issues, bidder must also submit firm's self-certified copies of Bill of Entry/Custom Invoice of all imported items to DC: DD for release of PBG.
- 4.16 All invoices shall bear Serial Numbers of the equipment to meet the requirement of WPC.
- 4.17 If required, bidder may have to give a presentation to explain their technical offer within one week from the date of issue of letter, as part of technical evaluation.
- 4.18 In the process of technical evaluation Doordarshan can ask for any clarification/ query as required through e-mail/FAX/Post etc, which shall be treated as a part of tender and invariably attended and replied by the bidder within the time stipulated therein.
- 4.19 Bidder may have to demonstrate the features of equipment offered as and when asked as part of technical evaluation of tender. However it will not bestow any right of acceptance of the bid.
- 4.20 Cross reference in respect of supporting documents, should be given with proper page number and volume no. etc. If required Doordarshan may also ask for any other supporting document to ascertain the claim of bidder and their OEM.
- 4.21 To avoid any delay due to inter dependent activities like site readiness, providing power supply etc. The bidder should submit time frame for completing the activities up to the commissioning of the set-up on a bar chart starting from date of issue of Purchase Order (P. O.)/Handover of DL (i.e. dd/mm/yyyy).
- 4.22 All software being offered, are to be licensed to Doordarshan on perpetual basis without specifying any time limit or without specifying any end of life of the software. Software upgrades within warrantee period will have to be supplied free of cost.
- 4.23 The bidder may visit the site before the submission of the bid. The bidder's desiring to visit the site must submit the request one week in advance with the details of the persons. All visits will take place only during working days from 1500 to 1700 hours only.

5. Specification for RF system

The RF Chain consists of the following equipment.

- Ku-Band Up-converter(U/C) in 3X(1+1) redundant configuration
- KHPA (Ku-Band, 2.45 k W) in (3+1) redundant configuration
- RF equipment control system

5.1 Specification for Up- Converters

S. No.	Parameter	Specification
1	Input Frequency	70 ±18 MHz
2	Output Bandwidth	±18 MHz
3	Frequency Step Size	Synthesized 125 KHz
4	Input Power	-20 dBm Nominal
5	Output Frequency Range	13.75 GHz to 14.5 GHz
6	Frequency Accuracy	±/- 200 Hz
7	Frequency Stability	± 10 ⁻⁸ ppm from 0 to 50 deg. C
8	Output power	10dBm (min) at P1 dB
9	Phase noise	10 KHz : -90 dBc per Hz 100 KHz : -90 dBc per Hz
10	Spurious	-60 dBc carrier related -65 dBm non carrier related
11	Harmonics	-60 dBc
12	Input return loss	18 dB minimum
13	Input Impedance	75 Ohms
14	Output Impedance	50 Ohms
15	Output return loss	18 dB minimum
16	Gain	30 dB (min.)
17	Amplitude response/ Gain Flatness	± 1.0 dB per 36 MHz (Max)
18	Gain Adjustment step size	0.2 dB (Max)
19	Remote Control	RS232 or RS422/485 or RJ 45 or any other port. This should be connectable to LAN using required format converters.

5.2 Technical Specifications for RF Redundancy Switch:

A. Essential Features:

- (i) The offered Up-converter and RF Redundancy Switch should be of same make so that both are compatible for providing the redundancy.
- (ii) In case of failure of main Up-converter, the RF Redundancy should be able to provide RF signal output from redundant Up-converter.
- (iii) Facility for Automatic, Manual and Remote (through NMS) switching should be available.
- (iv) In case of failure of main / redundant Up-converter, alarm should be generated to indicate the failure of main/ redundant Up-converter.
- (v) The external RF redundancy switch shall be offered.

B. Technical Specifications:

Sr. No.	Parameters	Specifications
(i)	Operating Frequency Range	13.75 GHz to 14.5 GHz
(ii)	Insertion loss	< 0.5 dB
(iii)	Isolation	60 dB or better
(iv)	Input return loss	13 dB min
(v)	Output return loss	13 dB min
(vi)	RF Input/Output Connector	SMA/N-Type
(vii)	Impedance	50 Ohm
(viii)	Remote control	RS232 or RS422/485 or RJ 45 or any other port. This should be connectable to LAN using required format converters.

5.3 Specification for Klystron High Power Amplifier (KHPA)

A. Introduction

The Klystron High Power Amplifier (KHPA) is to be used for the final power amplification of the digital RF signal in Ku- band, to be fed to the antenna after proper processing through filters, diplexer, switching networking etc. The KHPA will be supplied with linearizer. The KHPA will be used in (3+1) redundant configuration. Bidder should quote for the state of the art, highly efficient Klystron. The KHPA should be supplied with power saver for lower power consumption when KHPA is operational in low RF power output. Bidder should also supply and install aluminum duct or HDPE pipe as per site requirement to take out hot air of each KHPA from KHPA room to outside the room.

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B. Specification

S.No.	Parameter	Specification
1	Type of amplifier	Klystron HPA
2	Frequency range	13.75 GHz to 14.50 GHz
3	Klystron output power	2.45 KW
4	Output power at flange	2.0 KW (min.) for all channels.
5	RF bandwidth(-1 dB)	85 MHz (min.)
6	RF output power adjustment	0 to -20 dB continuous
7	Gain (at rated output)	77 dB min.
8	Gain stability	+/- 0.25 dB per 24 hrs. (MAX.) at constant drive and temperature. 1 dB max. from 20 ^o to 40 ^o C; +/- 2.5dB max. from 0 ^o to 50 ^o C (at constant drive).
9	Gain Slope	0.01 dB/MHz max over F ₀ +/- 30 MHz
10	Input VSWR	1.25 : 1 max
11	Output VSWR	1.30 : 1 max
12	Load VSWR	2.0 : 1 max for full spec. compliance; any value for operation without damage.
13	AM/PM conversion	4 Degree/dB at the rated output
14	Harmonic Output	-80 dBc
15	Noise and Spurious	<-135 dBw /4 KHz from 11.7 to 12.7 GHz <-65 dBw /4 KHz in pass band (-60 dBw /4KHz with linearizer) <-105 dBw / MHz from 12.7 to 40 GHz (excluding passband)
16	Phase Noise	Should be better than 6 dB of the requirements of IESS 308/309
17	Inter modulation Products	-28 dBc with two equal carriers at total output 7 dB below rated single carrier output.(without linearizer) -28 dBc with two equal carriers at total output 4 dB below rated single carrier output.(with linearizer)
18	Group delay (in any 72 MHz band)	0.1 ns/MHz (linear) max .02 nS/MHz ² (Parabolic) max 2.0 nSpk-pk ripple Max.
19	Preset channels	Up to 24
20	Primary Power	380 V - 415V AC 3 phase with neutral and ground (+/- 10%), 50 Hz +/- 2 %
21	Power consumption	8.0 KW max(app). Supplier should quote the exact figure at various back offs with the power saver unit "OFF" and with Power saver "ON".

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22	Power factor	0.90 (min)
23	Inrush Current	180 % of normal line current peak, max(first half cycle only)
24	Operating temp:	-10° C to + 50° C
25	Relative humidity	95% non condensing
26	Altitude	1000 m with standard adiabatic de-rating of 2°C/1000 ft. operating: 40,000 ft. non-operating
27	Acoustic noise	63 dBA at a distance of 1 M from the front panel.
28	Cooling	Forced air with integral blower and power supply fan.
29	RF Input connector	N type female
30	RF Output connector	WR 75 standard
31	RF power monitor connectors	N Type female
32	Dimensions	Supplier should give the dimensions of the system including RF section and power supply section.
33	Remote monitoring control	Supplier has to integrate the KHPAs with the existing remote control and monitoring facility, which can monitor as well as operate the system from a distance.
34	Average life of the Klystron	Supplier should give the average life of the tube and precautions to be taken to get the quoted life.
35	Protection facilities	The supplier should give a detailed account of the protection system like abnormal raise in temperature, reflected power, beam current used in the amplifier and its functioning. All the monitoring and protection system should be of the latest digital processing.
36	Display	All the parameters should use digital displays, the accuracy of the display should be given in the offer.

Note: Stand-by KHPA should be equipped with a fast electronic tuner to set a frequency of standby KHPA to the frequency of the outgoing KHPA with in a second. Frequency chart will be provided at the time of supply.

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5.4 RF Equipment Control System

A. RF control System Management Functions

The RF system control computer shall control the operation, redundancy switching and configuration of the all parameters of HPA, UP-converter including alarm, audio visual warning and fault logs for a minimum of 365 days.

B. Required Hardware and Software

The RF system control computer shall be based on industry standard hardware and software that will provide a user-friendly GUI to the operator. It will consist of Rack mounted industrial PC and 2 client computer with client license along with 21 inch display monitor, keyboard and mouse (one in RF room and one in monitoring room).

S. No.	Parameter	Specification
1	Man Machine Interface	Graphical User Interface (GUI)
2	Operational Features	Based on latest Windows version (a) Diagnostic log (b) Transaction log (c) Password privilege system (d) Multi user terminal support
3	Physical Connection to Equipment	Ethernet 10/100 Base-T/CAT 6 or better
4	Hardware Platform	Supplier to provide full details of the industry standard hardware platform proposed
5	Software	Supplier to provide full details of the industry standard software platform proposed
6	Back up DVD ROM	The back up/ recovery CDs for all the software are to be provided with proper licensees.

C. Remote Access

It shall be possible to add a remote user terminal and modem to provide access to the RF control system computer from a remote location via a dial-up telephone line/ broadband network. The remote user shall have access to all the commands available at the main control system, subject to password restrictions for security. The remote user shall be presented with a user interface, which is identical to the local user interface.

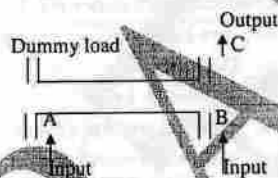
5.5 Waveguide

S. No.	Description	Specifications
(i)	Conductor Material	Copper
(ii)	Operating Frequency Band	10 to 15 GHz
(iii)	Cut-off frequency	7.8 GHz
(iv)	VSWR	≤1.1 at full freq. range
(v)	Attenuation at 15 GHz	≤ 4.0 dB/100 feet
(vi)	Power handling capacity	>2 KW

5.6 Specification for the Diplexer

A. Introduction

The Diplexer is an electrical operated four-port device.



B. Specification

Sl. No.	Parameter	Specification
1	VSWR (port A to C)	≤1.15
2	VSWR (port B to C)	≤1.15
3	Insertion Loss (port A to C)	≤1dB
4	Insertion Loss (port B to C)	≤0.3dB
5	Return Loss (port A)	23 dB or better
6	Return Loss (port B)	23 dB or better
7	Isolation (port A to B)	20 dB min.
8	Isolation (port B to A)	40 dB min.
9	Isolation (port A to C)	20 dB min.
10	Group Delay (port A to C)	4.0 ns max.
11	Group Delay (port B to C)	2.5 ns max.
12	Power Handling (port A to C)	2.5 KW min.
13	Power Handling (port B to C)	6.0 KW min.
14	Cooling	Forced Air
15	Frequency pass band for port A	to be intimated once the frequency of operation is finalized

8. General

8.1 Compliance and Authorization:-

- 8.1.1 The bidder must submit a point-by-point compliance statement in respect of all the points, sub-points and paras laid down in this specification from page 1 onwards along with the offer.
- 8.1.2 In addition to the above, compliance from respective OEMs (not from representatives) in respect of all the equipment listed below should necessarily be given on their letter heads, with reference to the points, sub-points and paras laid down in the technical specifications of respective equipment.
1. KHPA
 2. Up-converter
 3. RF redundancy switch
- 8.1.3 The OEM's authorization (not from representative) in respect of all the equipments listed under Sr. No. 8.1.2 should also be given on their letter heads along with bid (**Annexure II**).
- 8.1.4 Mere signature on a copy of Doordarshan specifications shall not be accepted as a compliance statement.
- 8.1.5 Compliance statement in the format as indicated below shall only be accepted.

Sr No. of DD specs.	DD Specs	Compliance (Yes/No)	Performance fig. of equipment offered.	Deviations, in case of non-compliance	Optional items if any required to make the system Compliant to DD specs.	Features in the system offered Which exceed DD specs.	Page No.	Remarks
1								
2								
3								
4								

- 8.1.6 The manufacturer should also record the performance figures of the equipment offered in the quote for which the compliance statement is enclosed.
- 8.1.7 The compliance statement should be supported by highlighted record of these in the technical literature/data sheets enclosed with the tender and a clear reference to the attached supporting document should be given in the remarks column against each & every specs. Any offer without proper supporting document of each & every specs and containing only a commercial hand out/pamphlet is liable to be rejected.

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6. Physical, Environmental & Mechanical Specifications

6.1 Power Supply

Equipment shall operate from a wide range of power supply voltages without interruption or damage.

Parameter	Specification
(a) Voltage Range	: 220/240 V-AC nominal 440 V AC
(b) Frequency	: 48-52 Hz

6.2 Environmental Specifications

Parameter	Specification
(a) Operating Temperature (Indoor)	: 0°C to 40°C
(b) Operating Temperature (Outdoor/door)	: -10°C to 60°C
(c) Storage Temperature	: -20°C to 60°C
(d) Humidity (Indoor) condensing	: 0 to 85% non-
(e) Humidity (Outdoor)	: 0 to 95%
(f) Altitude	: 0 to 1000 m

6.3 Mechanical Specifications

Indoor equipment shall be rack mounted.

Parameter	Specification
(a) Construction	: Modular approach, EIA RS-310C, 19" rack-mount

7 Complement of Equipment for RF System

7.1 The make and model/part no. of each and every equipment/item/installation material etc. should be clearly mentioned in the offered Bill of Material (BoM).

7.2 The suggestive Bill of Material (BOM) has been provided in Annexure-I. The bidder is required to provide the complete list of equipment, software and accessories etc. 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 is liable to be rejected summarily. The following is the Proforma for the BOM:

S. No.	Description of Item as per Specification (Suggestive BOM)	Description of Item as offered by the Bidder	Qty. per site	Total Quantity as per Suggestive BOM	Make	Model
1	2	3	4	5	6	7

7.3 Any substandard equipment included in the offer may result into the rejection of complete offer with the sole responsibility of bidder.

7.4 The offer should also include the detailed technical brochure and technical manual containing all the technical specifications of all the offered equipment, accessories, and software etc.

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- 8.3.3 It is the responsibility of local office/ Authorized representative/ dealer of the bidder to arrange the repair/ replacement of faulty items for Doordarshan i.e. no transportation charges would be paid by DD for transporting the defective/ repaired items, if required to be removed from site, during the guarantee period.
- 8.3.4 Guarantee period is to be extended corresponding to the outage period if the failure rectification takes more than 15 days' time.
- 8.3.5 Bidder shall provide the guarantee/ warranty in respect of the equipment as mentioned in Clause 8.1.2 through respective OEMs. *A certificate, duly signed by the OEM on the OEM letterhead, in this regard of the respective equipment must be submitted with the offer by the bidder (Annexure III for clause no. 8.3.1 to 8.3.4).*
- 8.3.6 After sales service support for additional 2 (TWO) years for the repairs/ maintenance of Earth Station equipment after the completion of guarantee/ warranty period shall also be provided by the OEM of the Earth Station equipment either directly or through his representative in India. In this regard a certificate, duly signed by the OEM on the letterhead, must be submitted with the offer by the bidder (Annexure IV).

8.4 Inspection and Commissioning:

- 8.4.1 All the equipment to be supplied against the supply order for this tender shall be subjected to pre-dispatch inspection before the commencement of the installation at bidder's premises/Delhi or at site by Doordarshan. The successful bidder should produce the factory test reports of all the offered equipment to facilitate inspection.
- 8.4.2 Post installation inspection of the system will be carried out by a team of Doordarshan Officers authorized by Doordarshan Directorate and based on approved Acceptance Test Procedure (ATP).
- 8.4.3 A draft copy of ATP (Acceptance Test Procedure) must be submitted by the bidder one month in advance of the proposed date of inspection of system to Doordarshan Directorate for approval. ATP should describe the standard test procedure of individual equipment and of the integrated system chain. The factory test report will not be treated as ATP.
- 8.4.4 The accepted ATP /approved ATP with or without changes shall be sent back to the successful bidder which will be used for inspection and commissioning of ES equipment by DD Engineer(s) at site. All the equipment required for the inspection as per the approved ATP are to be provided by the successful bidder.
- 8.4.5 The SITC certificate will be issued by the team of Officers appointed at S.N. 8.4.2 above.

8.5 Delivery Period

Six months from the date of issue of purchase order or four months from the date of the Decision Letter provided by DD in respect of RF equipment, whichever is later.

8.6 Pre-bid Conference

- 8.6.1 A pre bid conference on technical Specifications and other issues shall be held on date and time specified in the NIT. All prospective bidders may attend the pre bid conference to discuss their queries and suggestions.

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- 8.2.1 Data sheets should be submitted in respect of all offered equipment. Any deviation from the specification detailed in the compliance statement is to be highlighted separately. Page no. of location of data sheet should be given in page no. column above with search facility.
- 8.1.8 Offers without proper & duly completed compliance statement are likely to be rejected with the sole responsibility of bidder and no further claim/ correspondence will be entertained.

8.2 Documentation

- 8.2.1 One set of technical manual for all the equipment are to be provided along with the tender to facilitate the technical evaluation, otherwise the tender is liable to be ignored.
- 8.2.2 One set of technical manual for all the equipment offered are to be uploaded along with bid. In addition, one set of hard copy of uploaded technical manual for all the equipment offered are to also be provided to facilitate the technical evaluation. In case, there is any discrepancy in the uploaded manual and hard copy of technical manual, the uploaded technical manual shall prevail.
- 8.2.3 The successful bidder will have to supply set of printed technical manuals along with factory test report of all the offered equipment.
- 8.2.4 Technical Manual for all equipments should also be supplied on CD/DVDs with search facility.
- 8.2.5 All offered software should have perpetual validity and should be in the name of Doordarshan. All software backups should also be supplied on CD/DVDs.
- 8.2.6 The successful bidder must submit the firm's self-certified copies of import licenses at the time of commissioning in respect of RF equipment for issuance of operating license for WPC.
 - a) For facilitating maintenance issues the bidder must submit the firm's self-certified copies of Bill of Entry/Bill of Laden/Custom Invoice of all imported items to DG: DD at the time of release of PPG.
 - b) The successful bidder must ensure that all Invoices bear serial numbers of equipment to meet the requirement of WPC.
 - c) The successful bidder will be required to print and display the final Technical Block diagram and Line diagrams of Input, Compression, RF & Antenna and Power supply chain of in the technical area of the concerned Kendra after completion of the installation.

8.3 Guarantee

- 8.3.1 All the offered equipment shall be guaranteed against any manufacturing defect for a period of 3 (THREE) years from the date of Commissioning.
- 8.3.2 Any part failing during the guarantee period shall be repaired/replaced free of charge by the successful bidder at site. For repairing of any defective equipment during guarantee period, the defective module or equipment requiring repairs will be handed over to local office/local authorized representative/ dealer who will arrange repairs locally at site or send/export the defective modules to OEM factory and re-import/send back after repairs.

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Suggestive Bill of Material (BOM) (Annexure I)
Bill of Material (BOM)

Sl. No	Equipment	Qty	Unit
A	RF System		
1	Ku Band Up-converter 3X (1+1) configuration consisting of		
a	IF to Ku Band Up-converter	6	nos
b	Redundancy RF switch for (1+1) Up-converters	3	Nos.
c	i. RF Cable with suitable connectors from Up-converters to HPA racks .- 100 mtrs ii. RF cable with suitable connectors from IF patch panel (DTH building) to Up-converters rack (Porta cabin) – 100 mtrs (similar to Belden, Commscope or RFS as per requirement).	1	set
d	1:2 IF Splitters	3	Nos.
e	Installation of above Up-converters and redundancy switches and integrating its monitoring system with existing monitoring system.	1	job
f	Essential item / works (If any) to complete the installation of Up-converters	1	Lot
2	Klystron High Power Amplifiers (KHPAs) (with 3+1 configuration) (3 for fixed frequency and one for DFTS) consisting of		
a	2.45 KW Ku-band Klystron KHPA	4	nos
b	Solid State Intermediate Power Amplifier(SSIPA) for KHPA (integral)	4	nos.
c	Lineariser (Integral)	4	nos
d	RF ganged waveguide switch (coaxial switch ganged with the waveguide output switch)	1	sets
e	5 KW rating Dummy load for KHPA system	1	set
f	Ku band Diplexer (Center frequency of transponders will be given at the time of order)	2	sets
g	Interconnecting rigid waveguide assembly for fitting of Diplexers with KHPAs	2	sets
h	Supply and installation of aluminum duct or HDPE pipe as per site requirement to take out hot air of each KHPA from KHPA rack to outside the room. (Min length 4 mtr)	1	set
i	19" wired rack for KHPA	1	sets
j	Installation of above KHPAs in place of existing old KHPAs and its monitoring with existing RF monitoring system. KHPAs are to be integrated with existing Uplink Antennas.	1	job
k	Any other essential item/work (if any) to complete the installation of HPA system	1	lot
3	Dehydrator with required accessories 3-5 PSI (user configurable)	2	nos.

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- 8.6.2 All the queries and suggestions should be sent to Doordarshan at least 2 days before the date of pre bid conference. No queries/ suggestions shall be entertained after pre bid conference.
 - 8.6.3 Amendments subsequent to the pre bid conference shall be sent to prospective bidders, who have purchased tender document, by e-mail/fax/ post.
 - 8.6.4 It shall be bidder's responsibility to check for any amendments/addendum on the website before submitting their duly completed bids.

8.7 Check List and Enclosures

The bidders may ensure the following check list while submitting the bid including some important list of enclosures for ease of technical evaluation (Annexure V).

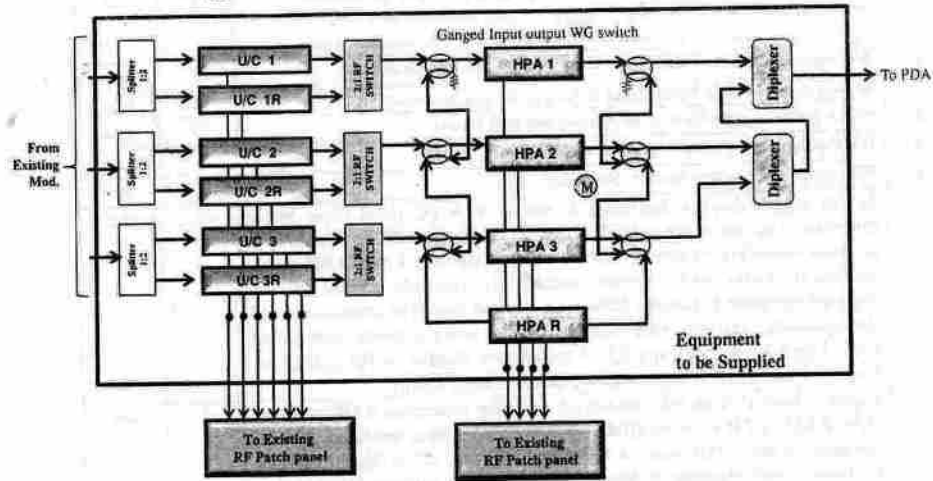
- 8.7.1 Whether documents related to fulfilment of the eligibility criteria as per Clause 3 have been submitted.
- 8.7.2 Whether point-by-point compliance statement of the bidder in respect of all the points, sub-points and Paras laid down in this specification from page 1 onwards along with the offer as given in Clause 8.1.1 has been included.
- 8.7.3 Whether point-by-point compliance statement of OEM in respect of all the points, sub-points and Paras laid down in the specification of respective equipment and their authorization mentioned in Clause 8.1.2, 8.1.3 & 8.1.4 have been included. Authorization and Compliance Statement from OEMs will only be acceptable and not from the authorized dealer of the OEMs.
- 8.7.4 Whether the Compliance has been submitted in the prescribed format as given in Clause 8.1.4.
- 8.7.5 Ensure that all equipment and accessories as given in the Suggestive bill of material have been included in the offered BOM.
- 8.7.6 Whether the page numbers of the relevant enclosed technical data sheet/manual against each parameter of the specifications have been given in the compliance statements.
- 8.7.7 Whether the requisite undertakings for after sales support by OEMs and bidder have been submitted.
- 8.7.8 Ensure that no alternate item has been offered.
- 8.7.9 Ensure that the relevant technical brochures containing all the parameters of technical specifications of all the offered equipment and accessories have been included with proper indexing for ease of identification.
- 8.7.10 Ensure that the Un-priced BOM has been included.
- 8.7.11 Any other item mentioned elsewhere in the tender.

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4 a	Rigid Waveguide for Dummy load at Antenna Changeover Switch (Rate to be quoted as per unit basis)	5	nos.
b	Flexible waveguide with power handling capacity 2 KW in assorted lengths - 2meter x 8 nos. and 1 meter x 6 nos. (similar to Andrews, Apollonmicrowaves, Flexiguide or Lasa electronics microwave div.)	1	set
c	Waveguide E-Plane bend (Rate to be quoted per unit basis)	4	nos.
d	Waveguide H-Plane bend (Rate to be quoted per unit basis)	4	Nos
e	Wave guide Twist (Rate to be quoted per unit basis)	5	nos
5	RF Equipment Control system consisting of		
a	RF equipment control system Software	1	no
b	21" or bigger display, keyboard & mouse with PC (Intel i7 or better processor), 16 GB or more DDR RAM, 1 TB or more HDD, Windows 8 or latest operating system, Graphics card, minimum 4 nos. USB ports, Integrated Audio with external speakers to remotely control all the supplied equipments through Ethernet ports and should be connected to all the equipment through Fast Ethernet Switch using properly rack wired CAT-5 or CAT-6 cable and RJ-45 connectors. Similar to HP, DELL or Lenovo (One for HPA room and one in monitoring room).	2	Set
c	Laptop (Intel i7 with 6th Generation or better processor, 8 GB or More DDR RAM, 1 TB or more HDD, Windows 8 or latest operating system, minimum 4 nos. USB ports, 4 GB Graphics card, 15" or bigger display, keyboard (with Digipad & Mouse Switches) and external DVD writer, Integrated Audio with speakers to remotely control all the supplied equipments. Similar to HP, DELL or Lenovo.	1	set
d	Essential item/works (If any) to complete the installation of RF equipment Control System	1	lot
B	MISCELLANEOUS ITEMS	1	sets
6	Dismantling, shifting of Existing KHPAs and RF equipments alongwith its monitoring.	1	job
7	24 ports IP switch for network controls	1	set
8	Ethernet cable Cat 6 min. 150 meters (as per site requirement)	1	set
C	DOCUMENTATION		
9	Operation and maintenance (wherever applicable) manuals for all the equipment supplied (hard copy)	2	sets
10	All software backups are to be supplied on CDs.	2	sets
11	Operation and maintenance (wherever applicable) manuals (Softcopy) for all the equipment supplied on CD's (with Search facility etc).(2 set for the station, 1 set for DG DD and 1 set for ADG (NZ))	4	sets
12	Firm's self certified copies of import license in respect of RF Equipment (Upconverter, HPA) for issuance of operating license from WPC.	1	set
D	TRAINING		
13	In India: One Seminar (including theoretical & Practical training, hands on experience) for RF(two days) for Doordarshan personnel. (This period is not part of Delivery period)	1	job

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Suggestive Block Schematic of DTH Todapur Replacement of RF Chain



DRG: 1

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Annexure II

OEM LETTER HEAD
CERTIFICATE FOR AUTHORIZATION

Date:

Tender No. :

We, M/s (Name and Address of the OEM), do hereby authorize M/s..... (Bidder's name), having its office at (Bidder's address) to submit the bid and sign the contract with Doordarshan for the products offered by us against the above tender.

Signature
Name & Designation of authorized signatory.....
Name of the OEM -
Stamp

DRAFT

OEM LETTER HEAD

CERTIFICATE FOR GUARANTEE

Date:

Tender No. :

We, M/s (Name and address of the OEM), do hereby confirm that:

1. All the offered equipment shall be guaranteed against any manufacturing defect for a period of 3 (THREE) years from the date of Commissioning.
2. Any part failing during the guarantee period shall be repaired/replaced free of charge by the successful bidder at site. For repairing of any defective equipment during guarantee period, the defective module or equipment requiring repairs will be handed over to local office/local authorized representative/ dealer who will arrange repairs locally at site or send/export the defective modules to OEM factory and re-import/send back after repairs.
3. It is the responsibility of local office/ Authorized representative/ dealer of the bidder to arrange the repair/ replacement of faulty items for Doordarshan i.e. no transportation charges would be paid by DD for transporting the defective/ repaired items, if required to be removed from site, during the guarantee period.
4. Guarantee period may be extended corresponding to the outage period if the failure rectification takes more than 15 days time.
5. All software being offered, are to be licensed to Doordarshan on perpetual basis without specifying any time limit or without specifying end of life of the software. Software upgrades within warranty period will have to be supplied free of cost.

Signature
Name & Designation of authorized signatory.....
Name of the OEM -
Stamp

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Annexure IV

OEM LETTER HEAD

CERTIFICATE FOR AFTER SALES SERVICE SUPPORT

Date:

Tender No. :

We, M/s (Name and address of the OEM), do hereby confirm that after sales service support for additional Two (2) years for the repairs/maintenance of offered products after the completion of three (3) Years guarantee/warranty period shall be provided through our representative/authorized dealer/service provider for the offered equipment and accessories in India as mentioned below.

S. No.	Name of the authorized person	After sales & support office address	Telephone/Fax	Email of concerned personnel
1				

Signature.....
Name & Designation of authorized signatory.....
Name of the OEM -.....
Stamp

BIDDER LETTER HEAD

DECLARATION BY THE BIDDER

1. Bill of Material (BOM)- [Yes/No]
2. Bidder's compliance (As per specs clause no. 8.1.1) [Yes/No]
3. The copy of Dealer Possession License in case of possession of RF equipment (as per clause no. 3.6) [Yes/No]
4. Copy of the Memorandum of Understanding (MOU) (if any) of partnership (as per clause no. 3.7) [Yes/No]
5. OEM Compliance for following equipment from their respective OEMs (as per clause no. 8.1.2):

S. No.	Name of equipment	Name of OEM	OEM compliance submitted (Yes/ No)
i.	KHPA		
ii.	Up-converter		
iii.	Redundancy switch (if any)		
.			
.			

6. Certificate for Authorization for following equipment from their respective OEMs:

S.No.	Name of equipment	Name of OEM	Authorization certificate submitted (Yes/ No)
i.			
ii.			
iii.			
.			
.			

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Annexure IV

OEM LETTER HEAD

CERTIFICATE FOR AFTER SALES SERVICE SUPPORT

Date:

Tender No. :

We, M/s (Name and address of the OEM), do hereby confirm that after sales service support for additional Two (2) years for the repairs/maintenance of offered products after the completion of three (3) Years guarantee/warranty period shall be provided through our representatives/authorized dealer/service provider for the offered equipment and accessories in India as mentioned below.

S. No.	Name of the authorized person	After sales & support office address	Telephone/Fax	Email of concerned personnel
1				

Signature
Name & Designation of authorized signatory
Name of the OEM
Stamp

7. Certificate for Guarantee for following equipment from their respective OEMs:

S.No.	Name of equipment	Name of OEM	Guarantee certificate submitted (Yes/ No)
i.			
ii.			
iii.			
-			
-			
-			

8. Certificate for After sales service support for following equipment from their respective OEMs:

S.No.	Name of equipment	Name of OEM	After sales service support certificate submitted (Yes/ No)
i.			
ii.			
iii.			
-			
-			
-			

9. Datasheet for the offered equipment as per offered BOM: [Yes/No]
 i.
 ii.
 iii.

Signature
 Name & Designation of authorized signatory.....
 Name of the Bidder -
 Stamp

11/6/2018

Yahoo Mail - Regarding Uploading of Draft specification at Doordarshan Web Portal (www.doordarshan.gov.in).

Regarding Uploading of Draft specification at Doordarshan Web Portal (www.doordarshan.gov.in).

From: engineering_jun@doordarshan (ddjune@ase01@yahoo.co.in)
To: dhanrajg@doordarshan.com; itee@doordarshan.gov.in; itee@doordarshan.gov.in; itee@doordarshan.gov.in
Sent: Friday, 6 November 2018, 3:48 PM (IST)

Dear Sir,

Please find attachment of the scan copy of Draft Specification for the subject mention above for uploading on Doordarshan Website. As per Standard Operating Protocol (SOP) of DG/DD dated 24.04.2018 and Prasar Bharti dated 23.08.2018 for tenders of procurement of Goods/Services in Prasar Bharati required to publish on Web Portal of Doordarshan for 1-2 weeks before inviting NIT to get industry feedback.

It is also pertaining to mention that the old website (www.ddindia.gov.in) is no more functional. So that, it may be uploaded on new website of Doordarshan (www.doordarshan.gov.in) in the Draft Specification under the Tender Notice (Engineering). If required, it may be created for the sake of convenient of the prospective bidders to access easily.

The link of uploaded Draft Specification may please be provided to share with indenting wing and prospective bidders.

The Draft Specification with the following details to be uploaded.

1. Specification for **SITC of (3+1) RF Chain at DTH Earth Station Todapur, New Delhi**
2. Specs no. **SATD/SITC of RF Chain at DTH_Oct_2018.**
3. Due date to offer comments:- **20.11.2018**

Regards,

Prabhat Kumar Singh
Assistant Engineer
for DG/DD
011-23397629

Attachment: **BidT Specs of SITC of 3+1 RF Chain.pdf**