

**PRASAR BHARTI (BCI)
DIRECTORATE GENERAL: DOORDARSHAN
DOORDARSHAN BHAVAN, COPERNICUS MARG,
NEW DELHI – 110 001.**

F.No. 14(2)2010-11/ EI (P) TV.

Dt.:31.08.2010

To
M/s
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Subject: Replies/ Amendments to the Specification No:SATD/Digital Up Link Chain 2 Carrier mode at Agartala,Gangtok,Imphal,Itanagar & Kohima,April/2010 in Tender No. 14(2)2010-11/ EI (P)TV

Ref: : Prebid Conference held on 05.07.2010 for SITC for Upgradation of Digital Up Link Chain from Single Carrier mode to 2 Carrier mode at 5 Earth Stations.

Dear Sir,

Please find enclosed herewith the following in reference to queries raised in prebid conference held on 05.07.2010.

2. **Replies to queries raised in prebid meeting held on 05.07.2010(Annexure-1).**
3. **Amendment-I dated 13.08.10 in the Specifications referred to subject above(Annexure-2).**
4. All the aforesaid replies /amendments are hereby authorized.
5. All bidders may read these replies /amendments in the specification carefully.

All other terms & conditions of the tender will remain unchanged.



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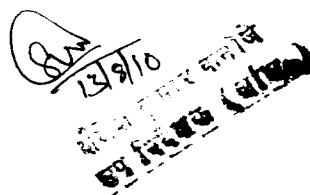
Tender No. 14(2)2010-11 EI(P)TV

Sub: Replies to queries raised in Pre-Bid Conference held on 05.07.2010 in the Specification No. SATD/Digital Uplink chain 2 Carrier Mode at Agartala, Gangtok, Imphal, Itanagar & Kohima, April 2010


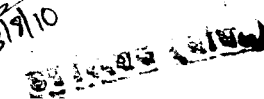
QUERIES & REPLIES

S. No.	Page No.	Point No.		Description	Reference
1	4	1.2.3	DD Specs	Local & Remote Control: NMS should be able to control the equipment like Upconverter, HPA, UPS etc.	M/s Grass Valley query Sl. No. 1 through email dated 4th July 2010
			Query	DD is requested to confirm and amend whether NMS should control only compression equipments and other third party equipments wherever it is possible to control.	
			Reply	There is a requirement of dedicated compression equipment control system as mentioned at Sl. No. 7 in BOM for control of only compression equipment. And apart from compression control computer an additional control computer is required as Remote Control Computer System which should be able control other equipment like HPA Upconverter etc (to be supplied in this project) as mentioned at S. No. 11 in BOM. Please refer amendment at S. No. 3.	
2	5	2.1/b	DD Specs	It should have audio proc amp to correct input levels.	M/s Grass Valley query Sl. No. 2 through email dated 4th July 2010
			Query	GV does not do processing amp in Embedder unit. DD is requested to clarify the need and amend/delete it.	
			Reply	No change in DD Specs.	
3	5	2.1/c	DD Specs	It should have variable audio delay	M/s Grass Valley query Sl. No. 3 through email dated 4th July 2010
			Query	GV does not do audio delay processing in Embedder unit. DD is requested to clarify the need and amend/delete it.	
			Reply	No change in DD Specs.	
4	5	2.1/A-II-5	DD Specs	Audio Delay: 0-0.5 sec.	M/s Grass Valley query Sl. No. 4 through email dated 4th July 2010
			Query	GV does not Comply. DD is requested to clarify the need and amend/delete it.	
			Reply	No change in DD Specs.	
5	6	2.2/a	DD Specs	Unit should have single/ multi mode optical SDI output.	M/s Grass Valley query Sl. No. 5 through email dated 4th July 2010
			Query	GV comply with Single mode. DD is requested to clarify the need and amend it.	
			Reply	No change in DD Specs.	


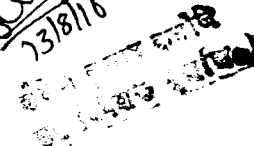

Sl. No.	Page No.	Point No.		Description	Ref
6	6	2.2/B-3	DD Specs	Output Connector. SC/PC.	M/s Grass Valley query Sl.No. 6 through email dated 4th July 2010
			Query	GV comply with LC. DD is requested to clarify the need and amend it.	
			Reply	No change in specs.	
7	6	2.2/B-5	DD Specs	Output Mode: Single/ Multi Mode	M/s Grass Valley query Sl.No. 7 through email dated 4th July 2010
			Query	GV comply with Single mode. DD is requested to clarify the need and amend it.	
			Reply	Any mode of operation either single or multi mode is acceptable to DD, hence no change in specs.	
8	6	2.2/B-7	DD Specs	Extinction Ratio: >7.5:1	M/s Grass Valley query Sl.No. 8 through email dated 4th July 2010
			Query	DD is requested to confirm about this parameter	
			Reply	No change in specs.	
9	6	2.3/a	DD Specs	Receiver should be able to receive single/multi mode optical SDI signals.	M/s Grass Valley query Sl.No. 9 through email dated 4th July 2010
			Query	GV comply with single mode. DD is requested to clarify the need and amend it.	
			Reply	Please refer reply at sl. no. 7.	
10	7	2.3/A-6	DD Specs	Input Mode: Single/ Multi Mode	M/s Grass Valley query Sl.No. 10 through email dated 4th July 2010
			Query	GV comply with single mode. DD is requested to clarify the need and amend it.	
			Reply	Please refer reply at sl. no. 7.	
11	10	3.2.6/b	DD Specs	Facility for SI/PSI insertion should be in the encoder.	M/s Grass Valley query Sl.No. 11 through email dated 4th July 2010
			Query	Our encoder generates such SI/PSI. It is not required/ possible to insert in the encoder. DD is requested to clarify and amend it.	
			Reply	Please see amendment at sl. no. 6.	
12	12	3.4.1 (c)	DD Specs	Provision for Seamless and linear bit rate changeover from 1 to 15 Mbps for 4:2:0 profile and 1.5 to 50 mbps for 4:2:2 profile frame by frame basis should be available. There should be no any break in service during change of operating parameters of compression equipment.	M/s Grass Valley query Sl.No. 12 through email dated 4th July 2010
			Query	Regarding the change of parameters, yes it is seamless. Whereas changing the profile i.e. 4:2:0 to 4:2:2, it will not be seamless regarding the delay. It is possible to have immediate switching through 1+1 system for 4:2:0 and 4:2:2 separately not the 2+1 system. DD is requested to clarify and amend.	
			Reply	DD requirement is for seamless change of parameters of compression equipment without any break in service during change of parameters. If it is not possible to have changes in profiles without any break then 1+1 system for 4:2:0 and 1+1 system for 4:2:2 profile is acceptable to DD. Please see amendment at sl. no. 1, 2, 10 and 18.	
13	12	3.4.2 (e)	DD Specs	Required Hardware and Software: Operational Features: Satellite code downloads to IRDs.	M/s Grass Valley query Sl.No. 13 through email dated 4th July 2010
			Query	DD is requested to provide the details requirements.	
			Reply	Please see amendment at sl. no. 11	

Sl. No.	Page No.	Point No.		Description	Ref
14	3	1	DD Specs	The digital chain consisting of Encoders (2+1),HPA (1+1), IF switch, RF splitter, RF combiner.	M/s Harmonic query SI.No. 1 through email dated 9th august 2010
			Query	Under introducing section, we request you to allow 422 & 420 encoders as 1+1 as agreed during the pre-bid.	
			Reply	Please see amendment at sl. no. 1.	
15	9	3.2.3(c)	DD Specs	3.2.3 Video Compression Parameters (c) Video Bit-rate 1 – 15 Mbps for 4:2:0 & 1.5 to 50 Mbps 4:2:2 Profiles.	M/s Harmonic query SI.No. 2 through email dated 9th august 2010
			Query	Harmonic support 4 to 50 Mbps in 4:2:2 which is also very low because in 4:2:2 the quality goes very bad below 5 Mbps bandwidth	
			Reply	Please see amendment at sl. no. 5.	
16	9	3.2.3 (b),	DD Specs	3.2.3 Video Compression Parameters (b) Profiles and Levels MPEG-2 Main Profile @ Main Level, 4:2:2MP@ML	M/s Harmonic query SI.No. 3 through email dated 9th august 2010
			Query	Please correct 422MP&ML to 422P@ML else MPEG-4, 4:2:2 as widely known to all.	
			Reply	Please see amendment at sl. no. 4.	
17	10	3.2.6 (b)	DD Specs	Other required features b) Facility for SI/PSI insertion should be in the encoder.	M/s Harmonic query SI.No. 4 through email dated 9th august 2010
			Query	Please use the word generation not insertion because encoder generates the PSI-SI information.	
			Reply	Please see amendment at sl. no. 6.	
18	12	3.4.1(c)	DD Specs	(c) Provision for Seamless and linear bit rate changeover from 1 to 15 Mbps for 4:2:0 profile and 1.5 to 50 Mbps for 4:2:2 profile frame by frame basis should be available. There should be no any break in service during change of operating parameters of compression equipment.	M/s Harmonic query SI.No. 5 through email dated 9th august 2010
			Query	Please change the 422 bit rate to 4 to 50 Mbps else remove the paragraph because once it is allowed to have 1+1 encoder system then it is always seamless switching	
			Reply	Please see amendment at sl. no. 10 and also refer reply at slo. No. 12.	
19	12	3.4.2(e)	DD Specs	(e) Satellite code downloads to IRDs	M/s Harmonic query SI.No. 6 through email dated 9th august 2010
			Query	Please check whether code download is required in PIRD or STB or to be removed from specs.	
			Reply	Please see amendment at sl. no. 11.	
20	21	7.4 IRD	DD Specs	Also the IRD should be able to store at least 20 channels in memory.	M/s Harmonic query SI.No. 7 through email dated 9th august 2010
			Query	Harmonic request DD to amend the present memory slots from 20 to 10.	
			Reply	Please see amendment at sl. no. 13.	
21	21	7.4.2 (d)	DD Specs	(d) Audio Decompression Type: MPEG-1 Layer-II audio (Stereo/ Musicam, i.e. Single Mono, Dual Mono, Stereo, and Joint Stereo) Digital AAC (HE, LE Mode) AC-3 passes through	M/s Harmonic query SI.No. 8 through email dated 9th august 2010
			Query	Please separate the two with comma as follow (Digital AAC (HE, LE Mode), AC-3 passes through).	
			Reply	Please see amendment at sl. no. 16.	


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Sl. No.	Page No.	Point No.		Description	Ref
22	32	BOM- Sl. no. 4	DD Specs	Encoders (in 2+1 configuration) consisting of:	M/s Harmonic query Sl.No. 9 through email dated 9th august 2010
			Query	Please allow to quote 1+1 encoder redundancy and amend the required changes in the BoM accordingly.	
			Reply	Please see amendment at sl. no. 18.	
23		Block Diagram page-2/2	DD Specs		M/s Harmonic query Sl.No. 10 through email dated 9th august 2010
			Query	Please allow to quote 1+1 encoder redundancy and amend the required changes in diagram accordingly.	
			Reply	As mentioned in the specs at Introduction clause that " A representative 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." Hence it requested that actual block diagram proposed to be provided should be submitted with offer. so no change in block diagram is required at this stage. Please refer reply at sl. no. 12 and also see amendment at sl. no. 1, 2 and 18.	
24	10	3.2.6 (b)	DD Specs	Other required features; Facility for SI/PSI insertion should be in the encoder	M/s Ericsson query Sl.No. 1 through email dated 9th august 2010
			Query	The should read as: - Facility for PSI generation should be in the encoder.	
			Reply	Please see amendment at sl. no. 6	
25	11	3.3.3(b)	DD Specs	Forward error correction and Modulation scheme as per DVB-s2 standards; Multiplex adaptation and energy Dispersal: As per ETS 300 307 (2009)	M/s Ericsson query Sl.No. 2 through email dated 9th august 2010
			Query	This should read as As per ETS 302 307 (2009)	
			Reply	Please see amendment at sl. no. 7.	
26	11	3.3.3(c)	DD Specs	Forward error correction and Modulation scheme as per DVB-s2 standards; Inner Coding: LDPC R=1/3,2/5,1/2,3/5,2/3,3/4,5/6,8/9,9/10 (for DBS-2, QPSK) R=3/5,2/3,3/4,5/6,8/9,9/10 (for DBS-2, 8PSK)	M/s Ericsson query Sl.No. 3 through email dated 9th august 2010
			Query	This may be amended to read as: R=1/2,3/5,2/3,3/4,5/6,8/9,9/10 (for DBS-2, QPSK) R=3/5,2/3,3/4,5/6,8/9,9/10 (for DBS-2, 8PSK)	
			Reply	Please see amendment at sl. no. 8.	
27	12	3.4.2	DD Specs	Required Hardware and Software: Operational Features: (e) Satellite code downloads to IRDs.	M/s Ericsson query Sl.No. 4 through email dated 9th august 2010
			Query	This requirement may please be deleted as this feature is for STBs.	
			Reply	Please see amendment at sl. no. 11.	

Sl. No.	Page No.	Point No.		Description	Ref
28	21	7.4.1(n)	DD Specs	RF parameters: Convolution Inner FEC Rates Selectable R=1/3,2/5,1/2,3/5,2/3,3/4,5/6,8/9,9/10 (for DBS-2 QPSK) R=3/5,2/3,3/4,5/6,8/9,9/10 (for DBS-2 8PSK)	M/s Ericsson query Sl.No. 5 through email dated 9th august 2010
			Query	This may be amended to read as proposed for modulator. R=1/2,3/5,2/3,3/4,5/6,8/9,9/10 (for DBS-2, QPSK) R=3/5,2/3,3/4,5/6,8/9,9/10 (for DBS-2, 8PSK)	
			Reply	Please see amendment at sl. no. 14	
29	23	7.4.5.2.1 (v)	DD Specs	Audio Performance Specification: Clipping Level: S/W selectable to be provided (demo has to be given)	M/s Falcon query sl.no.1 vide letter dated 9th august 2010
			Query	This should amended to "S/W selectable to be provided or any preset value between +18 dBu and +25 dBu"	
			Reply	Please see amendment at sl. no. 17.	
30	12	3.4.1(c)	DD Specs	(c) Provision for Seamless and linear bit rate changeover from 1 to 15 Mbps for 4:2:0 profile and 1.5 to 50 Mbps for 4:2:2 profile frame by frame basis should be available. There should be no any break in service during change of operating parameters of compression equipment.	M/s Falcon query sl.no.2 vide letter dated 9th august 2010
			Query	As the specification of Encoder says that it should support 4:2:2 profile. Whereas the application says that one service in 4:2:2 and other service in 4:2:0. please let us know if we can we provide one Encoder which support 4:2:2 for one service and other Encoder which support 4:2:0 in	
			Reply	Please refer reply at sl. no. 12.	

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Tender No. 14(2)2010-11 EI(P)TV

Sub: Amendment - I Dated 13.08.2010 in Specification No. SATD/Digital U/Lchain 2 Carrier Mode at Agartala, Gangtok, Imphal, Itanagar & Kohima, April 2010

AMENDMENT - I				
S. No.	Page No.	Point No.		Description
1	3	1 Introduction	DD Specs	The digital chain consisting of Encoders (2+1), SDI Router (8 x 8) ASI Router (4 x 4), Digital Modulators (2+1) and Upconvertors 2 x (1+1), HPA (1+1), IF switch, RF splitter, RF combiner.
			Amended as	The digital chain consisting of Encoders (in 2+1 or 1+1 for 4:2:2 profile & 1+1 for 4:2:0 profile configurations), SDI Router (8 x 8) ASI Router (8 x 8), Digital Modulators (2+1) and Upconvertors 2 x (1+1), HPA (1+1), IF switch, RF splitter, RF combiner.
2	4	1.2.2	DD Specs	Basic Configuration: The basic requirement is for 2 Carrier system (with encoders in 2+1 mode, modulators (2+1) mode, up converters in 2x(1+1) redundant configuration and HPA in (1+1) redundant configuration.
			Amended as	Basic Configuration: The basic requirement is for 2 Carrier system (with encoders operating in 2+1 or 1+1 for 4:2:2 profile & 1+1 for 4:2:0 profile modes, modulators (2+1) mode, up converters in 2x(1+1) redundant configuration and HPA in (1+1) redundant configuration).
3	4	1.2.3	DD Specs	Local and Remote Control The System Control Computer for this uplink chain should be capable of controlling and monitoring all parameters of the digital video compression system through suitable hardware interface and user friendly GUI. To facilitate centralized network management operations in future, it should be possible to operate the system remotely via a suitably configured computer and modem over standard dial-up telephone lines. Apart from the control of the compression equipment the overall Control computer (NMS) should be able to control the equipment like Upconverter, HPA, UPS etc. It should be supplied with complete hardware and software to interface all the equipment proposed to be supplied for their proper control and monitoring.
			Amended as	Local and Remote Control The Compression Control Computer (NMS) should be capable of controlling and monitoring all parameters of the digital video compression system through suitable hardware interface and user friendly GUI. To facilitate centralized network management operations in future, it should be possible to operate the Compression Control Computer system remotely via a suitably configured computer and modem over standard dial-up telephone lines. It should be supplied with complete hardware and software to interface all the equipment in the chain for their proper control and monitoring. The complete compression NMS software is to be loaded on a single control computer with networking facilities. Apart from the compression NMS computer an additional Remote Control Computer is to be provided to control the equipment like Upconverter, HPA, OFC Link equipment, UPS etc. It should be supplied with complete hardware and software, to interface all the equipment proposed to be supplied in this project, for their proper control and monitoring.

Sl. No.	Page No.	Point No.		Description	Ref
4	9	3.2.3 (b)	DD Specs	Profile & Levels: MPEG-2 Main Profile & Main Level, 4:2:2MP@ML	
			Amended as	Profile & Levels: (i) MPEG-2 Main Profile & Main Level (MP@ML for Distribution Encoder) (ii) MPEG-2 4:2:2P@ML (for Contribution Encoder)	
5	9	3.2.3 (c)	DD Specs	Video Bit-rate: 1-15Mbps for 4:2:0 & 1.5 to 50 Mbps for 4:2:2 Profiles	
			Amended as	Video Bit-rate: (i) 1 to 15Mbps for 4:2:0 profiles (in Distribution Encoder) (ii) 4 to 50 Mbps for 4:2:2 Profiles (in Contribution Encoder)	
6	10	3.2.6 (b)	DD Specs	Facility for SI/PSI insertion should be in the encoder.	
			Amended as	Facility for PSI generation should be in the encoder.	
7	11	3.3.3 (b)	DD Specs	Multiplex Adaptation & Energy Dispersal: As per ETS 300 307 (2009), Should be capable of emitting signals on following modes: 1. Backward compatible Mode. 2. Constant Coding and Modulation (CCM).	
			Amended as	Multiplex Adaptation & Energy Dispersal: As per ETS 302 307 (2009), Should be capable of emitting signals on following modes: 1. Backward compatible Mode (Should be capable of operating on either DVB-S or DVB-S2 modes). 2. Constant Coding and Modulation (CCM).	
8	11	3.3.3 (c)	DD Specs	Inner Coding: LDPC R= 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 (For DVB-S- 2, QPSK), R= 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (For DVBS2, 8PSK)	
			Amended as	Inner Coding: LDPC R= 1/2, 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (For DVB-S2, QPSK), R= 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (For DVB-S2, 8PSK)	
9	11	3.3.3 (f)	DD Specs	Forward Error Correction and Modulation Scheme as per DVB-S2 standard (f) Transmission Rates: Variable, 1.0 to 35 MSPS	
			Amended as	Forward Error Correction and Modulation Scheme as per DVB-S2 standard (f) Transmission Rates: Variable 1.0 to 30 MSPS	
10	12	3.4.1 (c)	DD Specs	Provision for Seamless and linear bit rate changeover from 1 to 15 Mbps for 4:2:0 profile and 1.5 to 50 mbps for 4:2:2 profile frame by frame basis should be available. There should be no any break in service during change of operating parameters of compression equipment.	
			Amended as	Provision for Seamless and linear bit rate changeover from 1 to 15 Mbps for 4:2:0 profile and 4 to 50 Mbps for 4:2:2 profile frame by frame basis should be available. There should be no break in service during change of operating parameters of compression equipment.	
11	12	3.4.2 (e)	DD Specs	Satellite code downloads to IRDs	
			Amended as	Existing entry Deleted.	

Sl. No.	Page No.	Point No.		Description	Ref
12	13	3.6	DD Specs	BISS-E Encryption facility The compression system should have facility to support BISS-E encryption mode. All the Hardware and Software required for encryption should be provided in 2 encoders. BISS –E facility should be mentioned separate entity in BOM (with separate pricing)	
			Amended as	BISS-E Encryption facility The compression system should have facility to support BISS-E encryption mode. All the Hardware and Software required for encryption should be provided in 2 encoders operating on 4:2:2 profiles. BISS –E facility should be mentioned separate entity in BOM (with separate pricing)	
13	21	7.4	DD Specs	The IRD should have a front panel display and one should be able to enter or edit all the parameters for a perfect reception of the signals. There should be provision for observing the BER of the signal and signal level on the front panel. IRD should be able to descramble BISS Mode 1 and BISS-E signals. Also the IRD should be able to store at least 20 channels in memory.	
			Amended as	The IRD should have a front panel display and one should be able to enter or edit all the parameters for a perfect reception of the signals. There should be provision for observing the BER of the signal and signal level on the front panel. IRD should be able to descramble BISS Mode 1 and BISS-E signals. Also the IRD should be able to store at least 10 channels in memory.	
14	21	7.4.1 (n)	DD Specs	Convolutional Inner FEC Rates selectable: R= 1/2, 2/3, 3/4, 5/6, 7/8(DVB-S option QPSK) R= 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 (DVB-S- 2, QPSK), R= 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (For DVBS2, 8PSK)	
			Amended as	Convolutional Inner FEC Rates selectable: R= 1/2, 2/3, 3/4, 5/6, 7/8(DVB-S option QPSK) R= 1/2, 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (DVB-S- 2, QPSK), R= 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (For DVBS2, 8PSK)	
15	21	7.4.2 (b)	DD Specs	Video Decompression Type: MP@ L3, 422P @ ML & MP@ML (H.264 Part 10)	
			Amended as	Video Decompression Type: 422P @ ML & MP@ML	
16	21	7.4.2 (d)	DD Specs	Audio Decompression Type: MPEG-1 Layer-II audio (Stereo/ Musicam, i.e. Single Mono, Stereo, and joint Stereo) Digital AAC (HE, LE Mode) AC-3 passes through	
			Amended as	Audio Decompression Type: MPEG-1 Layer-II audio (Stereo/ Musicam, i.e. Single Mono, Stereo, and joint Stereo)	







Sl. No.	Page No.	Point No.		Description	Ref
17	23	7.4.5.2.1 (b)	DD Specs	Clipping Level: S/W Selectable to be provided (demo has to be given)	
			Amended as	Clipping Level: S/W Selectable to be provided or any preset value between +18 dBu to +25 dBu	
18	32	BOM- Sl. no. 4	DD Specs	Encoders (in 2+1 configuration) consisting of:	
			Amended as	Encoders (in 2+1 or 1+1 for 4:2:2 profile & 1+1 for 4:2:0 profile configurations) consisting of:	
19	34	BOM- Sl. no. 11 (a,b and c)	DD Specs	Overall NMS Hardware and Software consisting of: a) Overall NMS control computer system Software (including necessary interfaces required for full automation of the complete earth station setup using suitable GUI based latest version software through LAN upto 100m remote location) b) Overall NMS control computer system Hardware (with Pentium IV processor, 2 GHz or more and minimum of 512 MB cache, 128 MB DDR RAM, 80 GB HDD, 52X CD R/W, LAN card, USB port minimum 2 nos., 1 AGP, 3 PCI slot, integrated audio with internal speakers, Keyboard etc.) c) Colour monitor for NMS system (15 inches) TFT type	
			Amended as	Remote Control Computer System Hardware and Software consisting of: a) Remote Control Computer System Software (including necessary interfaces required for full automation of the complete earth station setup using suitable GUI based latest version software through LAN up to 100m remote location) b) Remote Control Computer System Hardware (with Pentium IV processor, 2 GHz or more and minimum of 512 MB cache, 128 MB DDR RAM, 80 GB HDD, 52X CD R/W, LAN card, USB port minimum 2 nos., 1 AGP, 3 PCI slot, integrated audio with internal speakers, Keyboard etc.) c) Colour monitor for Remote Control Computer System (15 inches) TFT type	

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