By Speed Post/FAX

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

F. No 14 (4) 2009-10-EI-P (TV) Dt. 01.09.2009

To

M/s ----------

Subject: SITC of 7.2 Meter Uplink PDA for Srinagar, CPC New Delhi & Panaji.

Dear Sir,

The following enclosed Clarifications / Amendments are here by authorized.

This is however without any commitment whatsoever at this stage.

Yours faithfully

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Spec: No: SATD/ 7.2 Meter Uplink Antenna C-band_May/2009

Sub: Amendment in Specifications for SITC of 7.2 meter Uplink Antenna (C-band) 3 nos.

Sl. No.	Page No.	Point No.		Description
1	4	2.1	Query	Introduction: The details of the existing HPA System have not been provided. The antenna is 4 Port, are there 2 uplink chain or just 1:1.
			Reply	**The existing HPA systems are:** **1. 400 W TWTA in 1+1 Mode for single carrier/ SCPC uplink at DDK Panaji.** **2. 2,25 KW TWTA in 1+1 mode for single carrier/ MCPC Uplink at CPC Delhi.** **3. 750 W TWTA in 1+1 mode for single carrier/ MCPC Uplink at DDK Srinagar.**
2	4	2.1.7	Query	Azimuth Travel: The Azimuth Travel in two positions with respect to 120 Deg Continuous travel is too small. For better coverage of the Indian Geo Stationary arc and the regulatory requirement it should be at least 200 Deg
			Reply	**No change in Specs.**
3	4	2.1.20	Query	Dehydrator: It should be regenerative and should be able to provide pressure from .25psig – .5 psig.
			Reply	**Please see amendment at Sl. No. 31.**
4	4	2.1.21	Query	Calibrated Graduation of Az, El and Pol should be provided.: Portable Drive Unit (PDU) has more accurate display of the azimuth, elevation and Polarization look angles than a mechanical calibration. which can undergo change and useful as the resolution is based on Resolver output.
			Reply	**Please see amenments at Sl. No. 32.**

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Sl. No.	Page No.	Point No.		Description
5	4	2.1.24		All Support structure must be galvanized.: In addition: a) The Antenna should have Ladder and Platform for easy operation in the antenna hub. b) The antenna support structure should be kingpost pedestal. c) The axis crossover should consist of rigid and flexible waveguides and should be extended till the kingpost pedestal. d) The antenna system should have hub closeout.
			Reply	**a) Please see amendment at Sl. No. 44.** **b) No change in specs.** **c) Please see amendments at Sl. No. 33.** **d) Please see amendments at Sl. No. 34.**
6	5	2.2	Query	Antenna Controller with Step Tracking Specifications.: One of the very useful specifications of the antenna controller is to provide auto pointing via manual command to any of the predefined look angles. Typically up to 50. This is a big help during operations. a) It should be of the same make as that of antenna manufacturer. b) The antenna controller should be rack mounted. c) The antenna controller should be able to track antenna on inclined orbits. d) The controller should have the feature of orbit prediction and keeping the antenna in orbit even in case of any failure of beacon signal. e) The controller should have the following control modes:- manual, step track, orbit prediction track, move to look angles etc.
			Reply	**a) Please refer DD specs at sl. No. 2.2.** **b) Please see amendments at Sl. No. 38.** **c) The application is not envisaged.** **d) The application is not envisaged.** **e) Please see amendments at Sl. No. 37.**
7	5	2.2.3	Query	Tracking Accuracy should be better than 10% of the received beam width: a) Tracking accuracy should be better than 10% of the received 3dB beam width.
			Reply	**Please see amendment at Sl. No. 36.**
8	5	2.2.6	Query	Absolute Position Encoding Accuracy 0.05 Deg: a) Front Panel display resolution should be 0.01 degrees. b) Absolute Position Encoding accuracy should be 0.02 RMS Accuracy.
			Reply	**No Change in specs.**

Sl. No.	Page No.	Point No.		Description
9	5	2.3.1	Query	Specifications of Beacon Receiver
			Reply	**No Comments.**
10	5	2.3.1.2	Query	Beacon Receiver I/P Level: -60 to -80 dBm: The dynamic range specified is only 20 dB. 45 dB dynamic range is standard. 90 dB is available as option.
			Reply	**No change in specs.**
11	5	2.3.1.1	Query	Frequency 3.7 to 4.2 G Hz with a step size of 10 KHz.: Beacon signal is a quite narrow band signal. It is because of this that the beacon receivers with 1 K Hz step sizes are available.
			Reply	**No change in specs.**
12	5	New	Query	Beacon Receiver Specifications: a) It should be of the same make as that of antenna and antenna controller. b) Beacon Receiver should have spectral display to show the beacon signal.
			Reply	**a) Please see amendment at Sl. No. 39.** **b) No change in specs.**
13	7	3.1	Query	C - Band LNA Specifications One Low loss cable of suitable length should be provided. The LNA output should be available in the earth station room away at about 75 Meters.: 1. The specifications are silent on the qty of the LNAs required for each antenna. For a 4P antenna, it is expected that there will be two up and down chains. Neither there is any mention of a switching system. That is whether a non redundant, 1:1 redundancy or a 2:1 redundancy switch is required. 2. The description indicates that the IFL required is of 75 M long. For such a large distance, rigid wave guide will provide better solution as compared to running a low loss cable at 4 G Hz.
			Reply	**Please see amendments at Sl. No. 40.** **1) Please refer DD BOM (Equipment list) at Sl. No. 1.d and amendment at Sl. No.46.** **2) Please see amendments at Sl. No. 43.**
14	7	3.2.New	Query	Max Out put power level of the LNA: 20 dBm
			Reply	**No change in specs.**
15	8	3.2	Query	Specifications for Down Converters.
			Reply	**No Comments.**

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Sl. No.	Page No.	Point No.		Description
16	8	3.2	Query	Specifications for Down Converters.: The specifications do not provide required frequency Step size. GDST can offer 1 K Hz as well as 125 K Hz step sizes for the synthesized down converters.
			Reply	**The down converter is to be used for conversion of C-band D/L frequency coming from LNA to L-band frequency for feeding it to IRDs. Hence care may be taken that output of Down converter should be able to feed IRDs.**
17	8	3.2.2	Query	Output Frequency band: Standard C band Down converters have 70/140 M Hz out put frequency. Can we offer the BDC solution to provide the L Band out put directly. This will also solve the long IFL issue as at L Band the loss of 75 M long IFL is going to be within the acceptable range.
			Reply	**No change in specs.**
18	9	4.2.c	Query	Storage Temperature. -20 to 80 Deg. C: This temp range is too high. Most manufacturers offer -30 to 70 Deg C.
			Reply	**Please see Amendment at Sl. No. 41.**
19	13	BOM. New	Query	40 Db Cross Guide coupler for ease of monitoring
			Reply	**Please see Amendment at Sl. No. 45.**
20	Nil	Nil	Query	Kindly forward the electronic copy of Bill of material for the Subject tender to apdmktg@ecil.co.in
			Reply	**Noted.**
21			Query	As per clause no.1 Introduction of specs for 7.2 meter Uplink Antenna, A representative block diagram is provided to give general idea about the intended configuration. We did not find any such Block Schematic. The same may please be provided
			Reply	**Please see amendments at Sl. No. 29.**
22			Query	We are enclosing herewith the proposed System block diagram, prepared by us. Please confirm whether the same is acceptable.
			Reply	**Please refer reply at Sl. No. 21.**
23			Query	As per equipment list of the tender, for 1 station 40 M of low loss RF cable is projected, hence we are considering 20 M for each LNA. As per Page 7 of 14 of technical specs document of tender, 75 meter length Cable to be provided from LNA Please clarify the length of cable.
			Reply	**Please refer amendments at Sl. Nos. 40 and 43.**

Sl. No.	Page No.	Point No.		Description
24			Query	As per equipment List of the tender, for 1 station 30 M of Semi-Rigid Wave guide is projected, hence we are considering 15 m for each LNA.
			Reply	**Semi Rigid Wave guide is to be used for uplinking Port i.e. from HPA to one Uplink Port. Hence the quantity shown in BOM is for one Uplink port. Other port is to be kept sealed.**
25			Query	Based on the above, we are considering end connector's requirements.
			Reply	**No Comments.**
26			Query	RF splitter Output availability is 4 in nos.. 2 nos. of outputs are utilised for the proposed systems as shown. Kindly confirm whether 2 more Down converters are require to be supplied? Please confirm.
			Reply	**Please refer BOM at Sl. No. 2.e and 2.f, 2 nos of 1:2 RF splitter for LNAs (one for each LNA) is to be used and 1 Down converter will be connected to Actual Downlink Port LNA through Low loss RF cable and RF Splitter.**
27			Query	It is proposed to put Individual Power Supply unit for each LNA inside the Hub. The 1 Phase power supply will be provided for the above & will be distributed within the Hub.
			Reply	**No Comments.**
28			Query	Please confirm the length of cables required from ACU to Antenna as it is mentioned in page no 5 of specs of technical specs Doc of tender a 100M & Mentioned differently in Equipment list.
			Reply	**Please refer amendment at Sl. No. 42 and amendment at Sl. No. 35.**
29	3	1	**Existing**	**INTRODUCTION:** **The offer including supply, installation and commissioning of the setup should be 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 implementation should be supplied along with the quote.**
			Amended	**The offer including supply, installation and commissioning of the setup should be complete in all respects.**
30	4	2.1.15	**Existing**	**Power handling capacity for feed: 3KW continuous (for each Up-link Port)**
			Amended	**Power handling capacity for feed: 2.5KW continuous (for each Up-link Port)**

Sl. No.	Page No.	Point No.		Description
31	4	2.1.20	Existing	A de-hydrating arrangement should be offered with the antenna system.
			Amended	A de-hydrating arrangement should be offered with the antenna system. Dehydrator should be regenerative and should be able to provide suitable pressure to Waveguide Run.
32	4	2.1.21	Existing	A calibrated graduation of Azimuth, Elevation and Polarization Offset should be provided in the Antenna.
			Amended	A calibrated graduation of Azimuth, Elevation and Polarization Offset should be provided along-with Antenna Control Unit.
33	4	New 2.1.25	Existing	No Entry.
			Amended	Suitable axis Crossover kit should be provided with antenna system.
34	4	New 2.1.26	Existing	No Entry.
			Amended	Antenna system should have hub closeout/ covers.
35	5	2.2.2	Existing	The antenna controller unit shall be kept at a distance of approx 100 meters away from the antenna. Necessary cabling etc. is to be provided.
			Amended	The antenna controller unit shall be kept at a distance of approx 50 meters away from the antenna. Necessary cabling etc. is to be provided.
36	5	2.2.3	Existing	Tracking accuracy should be better than 10% of the received beam width.
			Amended	Tracking accuracy should be better than 10% of the receive 3dB beam width.
37	5	New 2.2.9	Existing	No Entry.
			Amended	The controller should have the following control modes:- Manual, Step track, Program track, move to look angles etc.
38	5	New 2.2.10	Existing	No Entry.
			Amended	The antenna controller should be rack mount type.
39	5	New 2.3.10	Existing	No Entry.
			Amended	Beacon receiver should be of the same make as the antenna or approved by Antenna OEM (a certificate from Antenna OEM in this regard should be submitted with the offer).
40	7	3.1	Existing	This LNA is for C Band operation and is to be mounted directly to the feed with transmit reject filter. A standard specification is given below. One low loss cable of suitable length (as per site requirement) should be provided with connectors with LNA. The LNA output should be available in the earth station room away at about 75 meters.
			Amended	This LNA is for C Band operation and is to be mounted directly to the feed with transmit reject filter. A standard specification is given below. One low loss cable of suitable length (as per site requirement) should be provided with connectors with LNA.

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Sl. No.	Page No.	Point No.		Description
41	9	4.2.c	Existing	Storage Temperature. -20 to 80 Deg. C
			Amended	Storage Temperature. -20 to 70 Deg. C
42	13	BOM 1.e	Existing	Automatic antenna control unit for quick orientation of the above Uplink PDA: 1 no. (Quantity Each site) : 3 nos. (Total Quantity)
			Amended	Automatic antenna control unit along-with 50 M control cable for quick orientation of the above Uplink PDA: 1set (Quantity Each site) : 3 sets (Total Quantity)
43	13	BOM 1.g	Existing	Low loss RF cable 40 meters for each port LNA (To Connect LNA to Down converter) (As per site requirement) Per meter rate may be quoted: 40 meters (Quantity Each site) : 120 meters (Total Quantity)
			Amended	Low loss RF cable (To Connect LNA to Down converter) (As per site requirement) Per meter rate may be quoted: 40 x 2 = 80 meters (Quantity Each site) : 240 meters (Total Quantity)
44	13	New in BOM 1.j	Existing	No Entry.
			Amended	Suitable Ladder and platform should be provided for ease of operation in the offered antenna system.
45	13	New in BOM 1.k	Existing	No Entry.
			Amended	40 dB Cross guide coupler for ease of Operation: 1 set (quantity for each site) : 3 sets (Total Quantity)
46	13	New in BOM 1.l	Existing	No Entry.
			Amended	Additional C-band LNA (to be kept as shelf spare): 1 no. (quantity for each site) : 3 nos. (Total Quantity)

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