

#### BHARAT HEAVY ELECTRICALS LIMITED

## BAP – Ranipet, 632406 MM – PURCHASE Department (FGD)

NIT

Eng ref: Antenna and Surge board Date: 16-06-2022

BHEL Ranipet Eng for.: Antenna for NTPC Tandaand Surge board for NTPC Solapur

Sub: Supply of Antenna for NTPC Tandaand Surge board for NTPC Solapur

**Scope of supply:** As subjected above in confirmation with Quality plan. The package consists of:

SUF	GE PROTECTION BOARD AS PER TECH SPECIFICATION TEP:EM		E PROTECTION BOARD AS PER TECH SPECIFICATION TEP:EMBS:SPB-01 REV:00		
SI	Matl Code	DESCRIPTION	Qty Set	Dly Req	Quoted/ Not
1	REL20757	SURGE PROTECTION BOARD AS PER TECH SPECIFICATION TEP:EMBS:SPB-01 REV:00	1000	31-10-2022	

		WITH FLYING LEAD & UFL CONNECTOR IGBEE DONGLE REV 05 AND THE BOM DRG			
2	REL20758	Antenna as above	100	31-10-2022	
SI	Matl Code	DESCRIPTION	Qty Set	Dly Req	Quoted/ Not

Destination: Stores BHEL, BAP-Ranipet 632406

**Delivery required date**: As per above table or within 3 months from the date of manufacturing clearance, whichever is later. Bidder to quote the best possible delivery from the date of manufacturing clearance. Abnormal quoted delivery, liable for rejection of offer.

#### **Technical Pre-Qualification Requirement (PQR):**

Any manufacturer or Trader/Dealer with valid GSTIN may participate in the tender

#### **Technical requirement**

- (a). Manufacturing: Document Submission-Drawing, Data sheet and quality plan shall be submitted upon ordering for approval by BHEL. Manufacturing clearance (against each unit) will be provided upon approval of drawing with data sheet and QAP. Manufacturing shall be as per attached technical specification in the bid, Approved drawing, Quality plan and Data sheet. Inspection: as per CI (b) below stated. Dispatch Clearance: Upon submission of inspection reports along with test certificates in original and Packing list dispatch clearance will be provided by BHEL.
- **(b). Inspection**: Inspection (call to be raise by supplier at BHEL CQIR portal) before despatch at supplier's works (as per Quality terms and Quality plan) by BHEL/authorised agency (TPI-Third Party Inspection) for indigenous supplies at BHEL cost. Being category Litem, There shall be joint inspection with customer. Inspection includes for painting and packing also, as applicable. All the Test and inspection reports shall be sent to BHEL-Ranipet for review and dispatch clearance. Packing list and weighment details shall be sent for release of GMS by Engineering-BAP. Base on release of GMS, CoC No shall be issued by QC-BHEL. On receipt of CoC, and packing list, request letter from commercial-BAP to be submitted to QC-BHEL for issue of MDCC. **Note**: Cost for Inspection by approved TPI, outside India shall be borne by bidder.
- **(c). Packing requirement**: Packing shall be waterproof as per tech spec in such a way that transit damage and damage by weather may be avoided and the material code with description & Supplier name shall be marked on the packing.

**Note**: Seaworthy packing shall be ensured wherever transit thru sea.

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### BHARAT HEAVY ELECTRICALS LIMITED

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- **(d). Documents**: Accepted IR copy along with relevant test certificates (in original) before despatch to be given to BHEL. This is required for Dispatch clearance.
- (e). Reverse Auction shall be conducted.
- (f). Delivery Location: FOR destination (BHEL Stores, BAP Ranipet 632406), as per bid.

#### **Commercial terms**

- 1. Payment: 100% payment after supply and acceptance of material at site
- 2. AIA TPI applicable through cqir portal of BHEL
- 3. Warrantee/Guarantee certificate for 18 months.
- 4. Pls provide HSN code
- 5. Pls provide the contact details for techno commercial clarifications

#### <u>List of documents to be attached (signed stamped copy):</u>

- 1. Gem bid, Tech spec and Data sheet copy
- 2. Filled in annexures of Technical Specification
- 3. Filled in QAP (Sample attached) along with CQR
- 4. Filled-in Make in India declaration on Letter head (format attached), For Indian bidder only
- 5. Udyam portal registration copy if MSE bidder, if applicable, otherwise treated as Non-MSE
- 6. Quality Plan (proposed) to be submitted by Vendor

**For any query:** Kindly provide the "Antenna and surge" in the subject of mail.

mail: <a href="mailto:ckbharti@bhel.in">ckbharti@bhel.in</a>; tvgopal@bhel.in

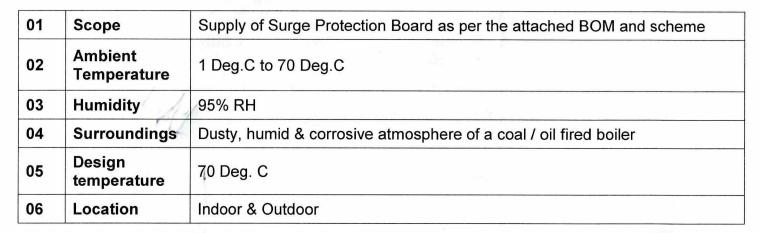
Ph: +91 9488 58 9287 / +91 7010 75 1675

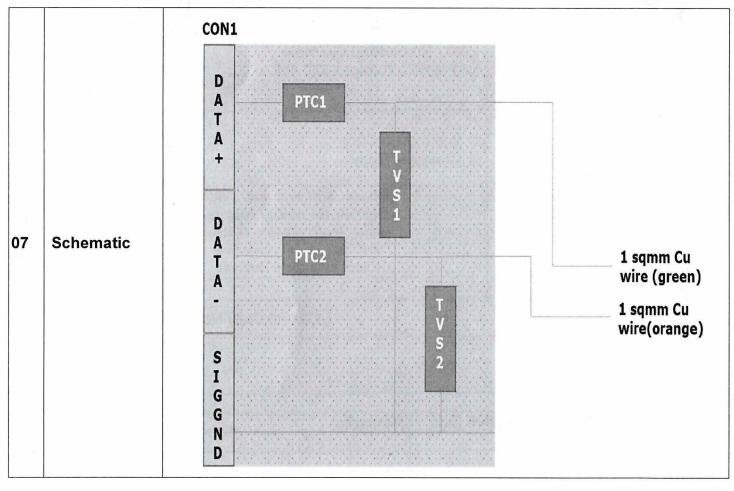


Reference No.		Rev No.	Effective Date
TEP:EMBS:SPB-001		00 06-06-2022	
TITLE	TECHNICAI PROTECTIO		TION FOR SURGE
Prepared by	S.Aravind Rajkumar / Engineer		
Reviewed by	Remya Kuk	killiya / Deput	y Manager Roy
Approved by	Divya S Pai	/ Senior Mana	ager (in)
Issued and Controlled by		edded Systen Ranipet-632	
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Records of	Revision	
Rev. No.	Effective Date	Remarks









	7	BILL	OF MATERIAL		
		SL NO:	ITEM	MAKE	PART NO:
		1	TVS DIODE (TVS1 & TVS2)	Littlefuse	P6SMB12CA
	Selection of the select	2	PTC – Resettable fuse (PTC1 & PTC2)	Littlefuse	TRF600-160
8	вом	3	PCB (APPROX SIZE - 50MM X 17.5MM)	BHEL approved makes	
	Here the	4	CONNECTOR (CON1)	Phoenix	MKDSN 2,5/3-5,08 BD:1-3
		5	1 sqmm Cu wire	BHEL approved makes	15cm (One end soldered on PCB and the other end crimped and lugged with polarity marking
		6	Heat shrinkable sleeve around the	BHEL approved	The sleeve shall enclose the complete PCB along
		The PC	PCB  CB shall be of g	makes lass epoxy	with the cable joint.  FR4 grade and solder masked prints. The
)9	PCB design	compoi	CB shall be of g nents shall be wa e neatly screen	makes lass epoxy ave soldered	with the cable joint.  FR4 grade and solder masked prints. The discomponent labeled the PCB and the PCBs shall be of 1 layers. A:555 shall be followed.
0	PCB design  Special technical requirements	1. Selement be in same of cars.  All c. 3. All c.	CB shall be of gonents shall be was neatly screen workmanship stated on the support of the support of the shall be used.  Supplier shall gonents in the Fasing, cable etc, omponents shall	makes  lass epoxy ave soldered printed on t ndard PR:Q nents for the lier makes a L. Only whe Otherwise get approva PCBs, fascia from BHEL	FR4 grade and solder masked prints. The wherever possible. The component labe he PCB and the PCBs shall be of 1 layer A:555 shall be followed.  The card shall strictly meet as per the bill of any deviation from this BOM the same shall shall be any deviation is accepted by BHEL, the the deviation will not be permitted.  If for PCB layout, General arrangement of (in case applicable), general arrangement Ranipet before start of manufacture.
	Special technical	1. Selection shall be a same same same same same same same s	CB shall be of grents shall be was neatly screen workmanship stated on the support of the support of the shall be used.  Supplier shall green shall green shall be used.  Supplier shall green shall green shall be etc, omponents shall available, comments	makes  lass epoxy ave soldered printed on t ndard PR:Q nents for the blier makes a L. Only whe Otherwise get approva PCBs, fascia from BHEL be industrial	FR4 grade and solder masked prints. The wherever possible. The component labe he PCB and the PCBs shall be of 1 layer A:555 shall be followed.  The card shall strictly meet as per the bill of any deviation from this BOM the same shall any deviation is accepted by BHEL, the deviation will not be permitted.  If for PCB layout, General arrangement of (in case applicable), general arrangement and (in case applicable), general arrangement of (in case applicable).



		ROUTINE TESTS:
11	Inspection and testing	To be conducted on all boards. During or after the test, if any unit fails that particular unit will be rejected.  1) Visual check All the cards shall be checked visually for the make of the components as per the approved Bill of materials. The PCBs shall be checked as per approved Quality Procedure and also shall be checked for any soldering track damage.  2) Functional check The functional check shall be carried out as per BHEL approved test procedure in each and every stage of type test and routine test.  3) Soak test The controller shall be kept as in normal operation with power on condition for 48 hrs on ambient temperature. The performance shall be satisfactory during and after the test.  4) Burn in test The controller shall be subjected to temperature +50°C ± 2°C for 48Hrs. The rated voltage shall be supplied for 11 hrs followed by ±10 % of rated voltage for half an hrs each. This procedure shall be repeated for four such cycles. The performance of the unit during and after the test shall be satisfactory.  The controller and its accessories shall be inspected and tested based on the following documents.  a) BHEL Purchase Order. b) BHEL Approved bill of materials. d) BHEL Quality Plan.
12	Packing	Each board shall be packed separately with polythene cover/bubble sheet and thermo Cole/PUF material sheets and entire set of boards / maximum possible are to be packed in a single corrugated PVC box.  1) Packing slip shall contain the following information.  a) PO no. & date b) Project No. c) Item description & quantity  2) The packing slip shall be pasted on the top cover of each box. 3) In addition to this, material code no. shall be written on both the sides of the PVC box (Font size shall be 35mm). 4) One packet of 25 grams of Silica gel each are to be placed between the cards on both the sides, on the inner surface of each controller to avoid failure due to moisture ingress in the electronic components. 5) Shipping marks like "KEEP DRY", "FRAGILE", "HANDLE WITH CARE" and "UPRIGHT" shall be provided on the packing. In general the packing shall be done in such a way that, the Surge Protection Boards shall not be damaged during transit and storage.
13	Special instructions	1. PCB art work/PCB design files (editable format), Gerber data, film NC drill data, manufacturing schematic drawing (in ORCAD format), components layout drawing and all relevant fabrication documents shall be handed over to BHEL as part of deliverable items.

(BHEI	ECT: NTPC SOLAPUI L W.O no: R650 )	R	CONTRACT QUALITY REQUIREMENTS (CQR) for SURGE PROTECTION	DOC.NO: BAP/CQR/R650/ SPB/EMBS:01	##INDENT No: REL20757 ## Supplier Name & Address:
BHEL SUB C	- RANIPET CONTRACTOR & ADI filled by VENDOR)	DRESS:	<u>BOARD</u>	Rev NO.: 00  PAGE: Page 1 of 1  DATE: 14.06.2022	##Offer reference:  ##Date:  Contact Official Name:  Mobile no: Email id:
SI. NO.	DESCRIPTION	BHEL :	and Ultimate Customer - NTPC (Nati Corporation)., Quality Requir		##Specific confirmations by the vendor
	•	•	<b>ITEM:</b> SURGE PROTECTION	N BOARD	
01	Important Note		Iodel No. / Part no. of Serial device s Indent and specification requirement.	erver and Ether net switch	
02	Inspection Methodology	No material agency	shall be dispatched without BHEL of	r its authorized inspection	
03	For inspection call	test witnessi Proc)., Mob Zeeshan Al	pection call by BHEL/BHEL AIA insing, vendor is requested to contact Mile no: +91 9443006303., Email id: i., SE (QC-Proc)., Mobile no: +91 nel.in for inspection related activities	Ir R Kesavan., DGM (QC- kesavan@bhel.in and Mr 9443149691., Email id:	
04	Packing	requirement	acking & preservation shall also s stipulated in Engg spec / drg / data it, handling damages & storage at site	sheet to avoid any damage	

#### Supplier signature with seal

## Necessarily to be filled up by the vendor at the time of offer itself otherwise the offer may not be considered w.r.t Quality Requirements being customer specific requirements.

# TECHNICAL SPECIFICATION FOR BOUGHT OUT ITEMS

Reference	No.	Rev No.	Effective Date
TEP:ZIGBEE D	ONGLE	05	10.06.2020
TITLE	TECHN	Company of the Control of the Contro	FICATION FOR ZIGBEE
PROJECT	GENEF	RAL & NTPC	
Prepared by	Vivek Ph	ilip John/Senior Engi	neer om
Reviewed by	Remya K	Lukkilliya/ Deputy M	anager Roman
Approved by	Divya S P	ai/Manager	Din)
Issued and Controlled by	Electron EDC / E BAP/BH	nic Shop mbedded Systems IEL/Ranipet-632	106
Document Status		against the c black colour,	ol copy only if the mark ontrol copy is other than otherwise it will be an copy. Check for current
Issued to:	e komerci i	Contr	ol Copy No:

Rev. No.	<b>Effective Date</b>	Remarks
00 01 02 03 04 05	01.10.2015 12.02.2016 21.03.2016 20.04.2016 0.08.2017 10.06.2020	Initial Release General Revision Cable Spec./ PCB revised General rev General rev/ BOM revised BOM revised and Type test requirement removed
		A for Equipment

Reference No.	Rev No.	<b>Effective Date</b>
TEP:ZIGBEE DONGLE	05	10.06.2020

01	Scope	Supply of Industrial grade ZigBee dongle and its accessories including procurement of components, fabrication, testing, packing and delivery.
02	Ambient Temperature	1 Deg.C to 70 Deg.C
03	Humidity	100% RH
04	Surroundings	Dusty, humid & corrosive atmosphere of a coal / oil fired boiler
05	Design temperature	70 Deg. C
06	Location	Outdoor
07	Components	<ul><li>i) ZigBee dongle card</li><li>ii) ZigBee dongle casing</li><li>iii) 2.4 GHz Antenna</li></ul>
08	Gerber scheme	After PO
09	вом	As per doc no: 4-00-114-32151 Rev 05 & 4-00-114-32152 Rev 05
10	PCB design	The PCB shall be of glass epoxy FR4 grade. Solder masked and the component labels shall be neatly screen printed on the PCB and the PCBs shall be of 2 layers (Main),1 layer(Piggy bag). BHEL workmanship standard PR:QA:555 shall be followed.
11	Casing design	<ol> <li>The enclosure shall be made of 5mm aluminum bezel with gasket and 1.0 mm MS back cover of either black/silver or light grey colour.</li> <li>The front fascia shall be of polyester film but not with polycarbonate and PVC film. It shall have enhanced chemical resistance and dramatically improved flex life.</li> <li>Two nos. of L-Shaped clamp shall be supplied along with each controller. The controller shall have two nos. tapped drilled hole at opposite corner on the back cover in such a way that the controller shall be able to fix in panel/cutout palate using the L- shaped clamp.</li> <li>NEOPRENE rubber gasket with shore hardness 26 shall be provided in the front part of the casing around the rear part. The class of protection shall be IP54 for front fascia.</li> <li>Provision for casing earthing shall be made at back side of controller with earth screw and two washers. Proper marking of earth symbol shall be made near the earth screw.</li> </ol>

Reference No.	Rev No.	Effective Date
TEP:ZIGBEE DONGLE	05	10.06.2020

	Interfacing cable  Inspection and testing	1100V multi-strand 0.5-1C PVC insulated copper wires with ISI approved makes. The cable shall meet requirements of VDE 0207 Part 5.	
		Mutual Capacitance at 0.8KHz (max)	100nF/KM
		Conductor Resistance (max)	73.4 ohms / KM
12		Insulation Resistance	100Mohms
		Cross talk figure at 0.8KHz	60dB
		Characteristics Impedance	320 ohms
		Attenuation figure at 1KHz	1.2dB/KM
13		ROUTINE TESTS:  To be conducted on all controllers. During or after the test, if any unit fails that particular unit will be rejected.  1) Visual check All the cards shall be checked visually for the make of the components as per the approved Bill of materials. The PCBs shall be checked as per approved Quality Procedure and also shall be checked for any soldering track damage.  2) Functional check The functional check shall be carried out as per BHEL approved test procedure in each and every stage of type test and routine test.  3) Soak test The controller shall be kept as in normal operation with power on condition for 48 hrs on ambient temperature. The performance shall be satisfactory during and after the test.  4) Burn In test The controller shall be subjected to temperature +50°C ± 2°C for 48Hrs. The rated voltage shall be supplied for 11 hrs followed by ±10 % of rated voltage for half an hrs each. This procedure shall be repeated for four such cycles. The performance of the unit during and after the test shall be satisfactory.  The controller and its accessories shall be inspected and tested based on the following documents.  a) BHEL Purchase Order.  b) BHEL Technical Specification.  c) BHEL Approved bill of materials.  d) BHEL Quality Plan.  Each ZigBee dongle and its accessories shall be packed separately with polythene cover/bubble sheet and thermocole/PUF material sheets and entire	

Reference No.	Rev No.	<b>Effective Date</b>
TEP:ZIGBEE DONGLE	05	10.06.2020

	The state of the state of	1) Packing slip shall contain the following information.
14	Packing	a) PO no. & date
		b) Project No.
	THE STATE OF THE S	c) Dongle SI. no.
	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	d) Item description & quantity
	100 40-45	2) The packing slip shall be pasted on the top cover of each box.
	-	3) In addition to this, material code no. shall be written on both the sides of
		the PVC box (Font size shall be 35mm).
	Table:	4) In the case of controllers inspected by NTPC, "NTPC INSPECTED"
	and other	sticker shall be pasted on the controller outer surface near sl. No. marking
		and on all four sides of PVC box to avoid the mixing up of NTPC & Non-
		NTPC controllers.
		5) One packet of 25 grams of Silica gel each are to be placed between the cards on both the sides, on the inner surface of each controller to avoid failure due to moisture ingress in the electronic components.
		6) Shipping marks like "KEEP DRY, FRAGILE, HANDLE WITH CARE
		and UPRIGHT" shall be provided on the packing.
		In general the packing shall be done in such a way that, the ZigBee dongle and its accessories shall not be damaged during transit and storage.

MAIN BHEL SUB C	ECT: NTPC SOLAPUI L W.O no: R674)  CONTRACTOR: - RANIPET CONTRACTOR & ADD filled by VENDOR)		CONTRACT QUALITY REQUIREMENTS (CQR) for 2.4 G HZ ANTENNA WITH CONNECTOR	DOC.NO: BAP/CQR/R674/ANT/EMB S:01  Rev NO.: 00  PAGE: Page 1 of 1  DATE: 14.06.2022	##INDENT No: REL20758  ## Supplier Name & Address:  ##Offer reference:  ##Date:  Contact Official Name:  Mobile no: Email id:
SI. NO.	DESCRIPTION	BHEL :	and Ultimate Customer - NTPC (National Thermal Power Corporation)., Quality Requirements		##Specific confirmations by the vendor
	1	<u> </u>	EM: 2.4 GHZ ANTENNA WITH	CONNECTOR	
01	Important Note	This item to	This item to be manufactured as per Indent and specification requirement.		
02	Inspection Methodology	No material shall be dispatched without BHEL or its authorized inspection agency			
03	For inspection call	To raise inspection call by BHEL/BHEL AIA inspection including for type test witnessing, vendor is requested to contact Mr R Kesavan., DGM (QC-Proc)., Mobile no: +91 9443006303., Email id: <a href="mailto:kesavan@bhel.in">kesavan@bhel.in</a> and Mr Zeeshan Ali., SE (QC-Proc)., Mobile no: +91 9443149691., Email id: <a href="mailto:zeeshan@bhel.in">zeeshan@bhel.in</a> for inspection related activities for immediate response / resolutio			
04	Packing	Required Packing & preservation shall also to be ensured as per requirements stipulated in Engg spec / drg / data sheet to avoid any damage during transit, handling damages & storage at site.			

#### Supplier signature with seal

## Necessarily to be filled up by the vendor at the time of offer itself otherwise the offer may not be considered w.r.t Quality Requirements being customer specific requirements.



# **Form - 1**

Subject: Public Procurement (Preference to Make In india)

References:
1.P-45021/2/2017-B.E-II dated. 15 <sup>th</sup> June-2017,
2.P-45021/2/2017-PP(BE-II) dated. 28 <sup>th</sup> May-2018 ,
3.P-45021/2/2017-PP(BE-II) dated. 29 <sup>th</sup> May-2019.
4.P-45021/2/2017-PP(BE-II) dated. 4 <sup>th</sup> June-2020
We hereby declare with reference to above subject and references that M/s(Tick
whichever is applicable as below)
"Class-I local supplier" meeting the requirement of minimum local content equal to 50% (fifty percent)
or more defined in the above government notification for the goods and services
(or)
"Class-II local Supplier" meeting the requirement of local content 20% to less than 50% (fifty percent)
defined in the above government notification for the goods and services
Please mention the details against the following:
Enquiry no: dated
Type of Supplier (Class-I/Class-II)
Type of Supplier (class I)
Product:
Project:
rioject
Details of location at which local value addition will be made is as follows:
We also understand that the false declarations will be in breach of the code of Integrity under rule
175(1)(i)(h) of the General financial rules for which a bidder or its successors can be debarred for up
to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may
be permissible under law.
be permissible under law.
Authorized Signature M/s
(Signature and seal)
Place:
Date:
Erom
From.
M/s
Address:

**Note:** For offer value INR 10 crores or more, shall be vetted/endorsed by statutory auditor or cost auditor, for the declared local content.

\*(To be submitted In the company letter head by supplier)

# **Form – 2**

I/we are bidder from \_\_\_\_\_ (Address with country). We do not belong to any of the below category mentioned.

- 1. Any of entity/office/workshop of your organisation/incorporation, established in a country sharing land border with India, If yes, provide the full address of all such locations.
- 2. Any of subsidiary of your organisation/incorporation, established in a country sharing land border with India, If yes, provide the full address of all such locations.
- 3. Any of entity/office/workshop of your organisation/incorporation, controlled in a country sharing land border with India, If yes, provide the full address of all such locations.
- 4. Any of entity whose beneficial owner is situated in a country sharing land border with India, If yes, provide the full name, address of all such locations.
- 5. Any Indian Agent available, If so, Provide details of address and contacts.
- 6. Any employee/directors who is/are citizen of country sharing land border with India, If yes, provide the full name, employee code and address of all such locations.
- 7. Any of consortium/joint venture of your organisation/incorporation, established in a country sharing land border with India, If yes, provide the full address of all such locations.

#### Meaning of beneficial owner

1) In case of a company or limited liability partnership, beneficial owner is the natural person, who, whether acting alone or together, or through one or more judicial person, has a controlling ownership interest or who exercises control through other means.

#### **Explanation**

- a) Controlling ownership interest means ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the company.
- b) "control" shall include the right to appoint majority of the directors or to control the management rights or shareholder's agreement or voting agreement.
- 2) In case or a partnership firm the beneficial owner is the natural person (s) who whether acting alone or together or through one or more judicial person, has ownership of the entitlement to more than fifteen percent of capital or profits of the partnership.
- 3) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together or through one or more judicial person, has ownership of the entitlement to more than fifteen percent of the property or capital or [profits of such association or body of individual.
- 4) Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official.
- 5) In case of a trust, the identification of beneficial owner (s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust and any other

#### \*(To be submitted In the company letter head by supplier)

natural person exercising the ultimate effective control over the trust through a chain of control of ownership.

6) An agent is a person employed to do any act for another, or to represent another in dealing with third person.

We have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India, we hereby declare that we do not belongs to any such country and are eligible to be considered.

In case, any of information is found to be false, even after bid acceptance, immediate termination may happen and action will be taken as per law.

Format is being filled without altering any of the clause mentioned in the given format\*\*

Dated	:	
A	Authorised Sign and stamp_	