

**Bharat Heavy Electricals Limited**

(A Government of India Undertaking)

Electronics Division

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Tender document for supply of **PACKING MANAGEMENT SYSTEMS****R F Q Number : TRSM900039**Tender Qty : **1 Number ( Two sub systems : Project-1 & Project-2)**

Tender Due Date and Time : 28.01.2009 13.00 Hrs

Tender Opening Date and Time : 28.01.2009 13.30 Hrs

Place of opening of Tender : SA – MM Conference hall

**Scope:**Supply, Installation and Commissioning of **PACKING MANAGEMENT SYSTEMS****1. Two part Bid** - Tender shall be submitted in two parts :

- a. Part I – Techno commercial bid without prices.
- b. Part II – Price bid

Tender (quotation) shall be submitted in a sealed envelope super scribed with **RFQ NUMBER / and DUE DATE** on it and the same must reach our office on or before the due date by **13:00 hrs**. Quotation can also be dropped in the tender box placed in the Reception area with caption **“Sub Assembly”**. Late quotations are liable to be rejected.

Tender shall be addressed to **Sr.DGM / EM - Coml**, Electronics Division, Bharat Heavy Electricals Ltd., Mysore road, Bangalore 560026.

**2. Delivery Period:** Equipment shall be delivered, within 4 months from the date of placement of technically & commercially clear purchase order.

**3. Warrantee period :** Equipment shall have a comprehensive warrantee of one year from date of Commissioning.

**4. Terms and conditions:**

1. All the Bidders shall meet the **General, pre-qualification criteria** and Comply with **Technical Specification** mentioned in this specific tender.
2. Indian Bidders are required to comply with the **general terms and conditions** as per **SA – 01 ( Annexure –I)**
3. Foreign Bidders are required to comply with the **general terms and conditions** as per **SA – 02. ( Annexure –II)**

## PACKING MANAGEMENT SYSTEM

### 1. SCOPE:

This specification covers the requirement of Packing Management System using RFID / Barcode technologies and in BHEL-EDN web environment. The technical specifications for hardware and software are made separately.

### 2. SCOPE OF WORK:

Packing Manage System has TWO sub-systems

-1. Packing Management System using RFID/Barcode technology as per specifications no. EDN-A046/ANX-1/D-Y8/PMS/SYS, Rev 00 (referred as 'Project-1')

2. Packing Management System in BHEL-EDN web environment as per EDN-A046/ANX-1/D-Y8/PMS/WEB, Rev 00 (referred as 'Project-2')

The scope of work for both Project-1 and project-2 covers the supply, installations, commissioning and training of Packing Management System comprising of both hardware and software.

Parties can submit their offers for both or either Project-1 or Project-2.

However the offers for both Project-1 and Project-2 should be for complete system (both hardware and software). If their offer is NOT included any hardware/software specified in the specifications, their offer will be summarily rejected. Technical and Price evaluation will be made for the system as a whole.

### 3. Terms and conditions:

1. All the Bidders shall meet the **General requirements and pre-qualification criteria** (as in **Annexure-GP**) and Comply with **Technical Specification** mentioned for all the hardware in the system.

All Technical specifications are tabulate together at the end of this document as **Annexure-TS1** and **Annexure-TS2** for both the Projects. Bidders can use the relevant tabulations for submission purposes. Bidders **MUST** fill all the cells, as this will be used for TECHNICAL EVALUATIONS.

In order to check whether the bidder submitted the offer for all the hardware in a system, he/she has to submit the appropriate 'Un-priced Price bid' as in **Annexure- UP1** or **Annexure- UP2** or both, as the case may be.

The bidder for both the projects should submit **Annexure-GP** along with compliance table for Technical specifications of both Project-1 and Project-2.

The bidder for any ONE project should submit **Annexure-GP** along with compliance table for Technical specifications of either Project-1 or Project-2, depending on which one he/she prefers to bid.

There shall be a brief write-up on each software, (for both Project-1 and Project- 2) indicating the logic or flow chart, for which specifications provided.


**Annexure-GP**
**TABULATION OF GENERAL AND PRE-QUALIFICATION CRITERIA**

(Vendor has to Tick/fill all the rows)

Sl. No.	Description	Vendor's Offer		Remarks, If any
4. GENERAL				
1	Scope of Work	Understood	Y/N	
1.1	The offers must be for the entire System. However, Parties can submit their offers for both or either Project-1 or Project-2.	Project-1		
		Project-2		
		Both		
1.2	Project-1 (If applicable)	Complete hardware and software	Y/N	
1.3	Project-2 (If applicable)	Complete hardware and software	Y/N	
2	All Hardware that are required for this system need to be supplied by the vendor and their integration, commissioning and training for usage need to be handled by the same supplier	Understood	Y/N	
3	There are separate specifications for each hardware/software of the system	Understood	Y/N	
4	The Vendors need to meet the requirements of individual hardware of the system. The software must be flaw-less in the BHEL network environment	Understood	Y/N	
5	The necessary civil works as well as wiring job for the installation of fixed readers need to be carried-out by the vendor himself.	Understood	Y/N	
5.	Pre qualification criteria			
1	The vendor shall have supplies from an Original Equipment Manufacturer (OEM) or authorized dealers for all the hardware.			
1.1	The vendors-			
1.1.1	a. Based in India			
1.1.2	b. Foreign OEM with Authorized Indian dealer(s) / representative(s) for sales, service, installations and software integration. The authorization letter for the dealer/ representative shall be provided.			
1.1.3	c. cannot quote for the same hardware from 2 or more different OEM's			

2	The offer shall include only new hardware and not for any refurbished / used ones. A declaration to the above effect to be furnished	
3	The vendor should have installed and commissioned atleast 2 nos. of similar systems with similar hardware configuration in India and operating satisfactorily for atleast one year during the last three years. The details of the customers with contact details, hardware installed and date of installations and applications of the system developed etc. to be provided.	
4	The vendor shall be in a position to provide service and spares support for the hardware and maintenance support for software.	
5	The vendor or their authorized service representatives should have trained engineers in India for commissioning & service for the offered equipment. Certificate/Authorisation to this effect must be issued by OEM of that equipment.	
6	The vendor shall be in a position to undertake AMC for the entire system with BHEL after the expiry of the warranty/ guarantee period either directly or through their authorized agent.	
7	The vendor shall arrange for a demonstration of the similar application system operating in India, if required by BHEL.	
8	The vendor shall furnish a comprehensive warranty for all hardware for atleast 12 months from the date of commissioning or 18 months from the date of delivery, whichever is early.	
9	The vendor shall guarantee the performance of the system for atleast 12 months from the date of commissioning.	



**Annexure-UP1**  
**For PROJECT-1**

**Un-priced Price bid**  
(Vendor has to Tick all the rows)

Sl. No	Item Description	Unit	Qty	Quoted(Q)/Not Qtd(NQ)
i	Hand Held Reader as per spec. PMS/HHR, Rev 00	Nos.	5	
ii	Fixed Reader as per Spec. PMS/FXR, Rev 00	Nos.	2	
iii	Mobile Computing unit as per spec. PMS/MCU, Rev00	Nos.	2	
iv	Zonal Antenna as per spec. PMS/ZLA, Rev 00	Nos.	6	
v	Tags - Non metallic as per spec. PMS/TNM, Rev 00	Nos.	10,000	
vi	Tags - Metallic as per spec. PMS/TML, Rev00	Nos.	5,000	
vii	Thermal Transfer Printer as per spec. PMS/TTP, Rev 00	Nos.	5	
viii	Antenna Cables as per spec. PMS/ANC, Rev 00	Nos.	10	
ix	Cradle for charging/communication as per spec. PMS/CCC, Rev00	Nos.	2	
x	Spare Battery as per spec. PMS/SPB, Rev 00	Nos.	5	
xi	Access Point for Wi-Fi connectivity as per spec. PMS/ACP, Rev 00	Nos.	2	
xii	Software for system integration in network environment as per spec. PMS/SOFT/NET, Rev 00	System	1	
xiii	Application software for Despatch operations including utilities on hand held reader for scanning and other operations. PMS/SOFT/APP, Rev00	System	1	
xiv	RFID/Barcode Middleware for data synchronization as per spec. PMS/SOFT/MID, Rev00	System	1	

**Annexure-UP2**  
**For PROJECT-2**

i	Mobile Computing unit as per spec. PMS/WEB/MCU, Rev 00	Nos.	2	
ii	Packing Management System in BHEL-EDN web environment as per PMS/WEB/SYS, Rev 00	System	1	

**6. NOTE:**

1. Pre qualification will be carried out based on the details furnished by the vendor / feedback from their customers / inspection of the company / product if required by BHEL and at its sole discretion.

Software will be evaluated based on the brief write-up which should include of 'print-Screens' for different menu. Narration using different features (with 'print-screens') provided for other client/s while developing their application software can be included.

2. The General and Pre qualification criteria are mandatory requirements and the technical bids will be evaluated only when the Pre Qualification criteria are met.

**PROJECT-1****SPEC No. :** EDN-A046/ANX-1/D-Y8/PMS/SYS, Rev 00**DATE :** 04. 09. 2008**SPECIFICATION FOR PACKING MANAGEMENT SYSTEM USING RFID/BARCODE TECHNOLOGY****1. SCOPE:**

This specification covers the requirement of RFID / Barcode based Packing Management System. This system specification consists of Hardware / Software that are involved in the system.

For Scope of work, terms and condition including general and pre-qualification criteria, refer specification no. EDN-A046/ANX-1/D-Y8/PMS/GEN, Rev 00 dtd. 04. 09. 2008.

**2. APPLICATION:**

Packing Management System consist of Hardware/Software listed in para 4, below, in network environment so that Automatic identification and data capturing is possible.

**3. SCOPE OF SUPPLY:**

Supply, installation, testing, commissioning and training on usage of following hardware (Sl. no. i to xi) and integration of them as a system using following software (Sl. no. xii to xiv) in a network environment using RFID/Barcode technology.

- |       |   |               |
|-------|---|---------------|
| i.    | Hand Held Reader<br>as per spec. PMS/HHR : Rev 00         | : 5 nos.      |
| ii.   | Fixed Reader<br>as per spec. PMS/FXR : Rev 00             | : 2 nos.      |
| iii.  | Mobile Computing Unit<br>as per spec. PMS/MCU : Rev 00    | : 2 nos.      |
| iv.   | Zonal Antenna<br>as per spec. PMS/ZLA : Rev 00            | : 6 nos.      |
| v.    | Tags – Non-metallic<br>as per spec. PMS/TNM : Rev 00      | : 10,000 nos. |
| vi.   | Tags – Metallic<br>as per spec. PMS/TML : Rev 00          | : 5,000 nos.  |
| vii.  | Thermal Transfer Printer<br>as per spec. PMS/TTP : Rev 00 | : 5 nos       |
| viii. | Antenna Cable<br>as per spec. PMS/ANC : Rev 00            | : 10 nos.     |

- ix. Cradle for Charging / communication : 2 nos.  
as per spec. PMS/CCC : Rev 00
- x. Spare Battery : 5 nos.  
as per spec. PMS/SPB : Rev 00
- xi. Access point for Wi-Fi connectivity : 2 nos.  
as per spec. PMS/ACP : Rev 00
- xii. Software for system integration in network environment  
as per spec PMS/SOFT/NET : Rev 00
- xiii. Application Software for dispatch operations including utilities on hand held  
Reader for Scanning and other operations.  
as per spec. PMS/SOFT/APP : Rev 00
- xiv. RFID / Barcode Middleware for data Synchronisation.  
as per spec. PMS/ SOFT/MID : Rev 00



**SPEC. NO** : PMS/HHR, REV 00

**DATE** : 04.09.2008

**1. TITLE:**

Specification for Hand held Reader in RFID/Barcode Environment.

**2. SCOPE:**

This specification covers the requirement of Hand Held reader in RFID/Bar Code environment.

**3. APPLICATION:**

Hand Held Reader is used to read the RFID tags or Barcoded Information and transfer the captured data to the system with/without manipulation.

PMS/HHR, REV 00		Hand Held Reader	Quantity: 5 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Ergonomic	The reader must be ergonomically designed for hand operations.		
4.2	Read Range (in a closed environment)	up to 5 meters (at least) using UHF, Gen 2 Non-metal Tags. Upto 1.5 meters (at least) using UHF, Gen 2 metal tags		
4.3	Read Rate	At least 20 tags per second for Gen 2 tags.		
4.4	Protocol	ISO 18000-6C, EPC, UHF, Class1, GEN 2, Passive		
4.5	Tags to be read	Blank or programmed, any size, per 'Tag read' RSSI value.		
4.6	Frequency Range	UHF, 865-868 MHz		
4.7	Barcode scanner	1D and 2D: all Standards.		
4.8	Antenna Polarization	Vertically linear polarized or horizontally linear polarized.		
4.9	Environment	Industrial.		
4.10	Mechanical Structure	Should be a ruggedized, IP65		
4.11	User Interface-Input	QWERTY Key Board, Touch screen, Trigger Button.		
4.12	User Interface-Output	3.5" Transmissive LCD (or better)		
		320 x 240 pixels (at least)		
		LED x 2(or better)		
		Buzzer.		
4.13	Connectivity	Wi-Fi (802.11 b/g or better), USB, RS 232		
4.14	External Memory	SD Card, up to 2 Giga Byte.		

4.15	Processor and Memory	Intel/Samsung/equivalent, 400 MHz or higher.		
		128 MB (or higher) Flash, 64 MB (or higher) RAM		
4.16	Battery life	At least 1.5 hour continuous read. 20 hours stand by, easily field replaceable battery.		
4.17	Source Code Samples	Read Tag, Write Tag, Tag inventory, Tag ranging, Tag search, Tag authentication, Tag association, Tag Commissioning, Bar code scanning, data base Manipulation, Wireless network transfer, server side Driver etc.,		
<b>5 GENERAL</b>				
5.1	Antenna can be integrated or independents. However, for independent configuration while quoting for hand held reader, Antenna assembly need to be clubbed-with.			
5.2	Middleware for data Synchronisation can be pre-loaded with the OS of the reader.			
5.3	While quoting, charges towards installations, commissioning and training need to brought-out along with reader cost.			



**SPEC. No.** : PMS/FXR, Rev 00

**DATE** : 04. 09. 2008

**1. TITLE :**

Specification for Fixed Reader in RFID / Bar Code Environment.

**2. SCOPE:**

This Specification covers the requirements of fixed readers connected to the Zonal antennas that are fixed at the entrance of Material Exit of Shipping section.

**3. APPLICATIONS:**

Fixed Readers in RFID / Barcode environment are basically for automatic identification and data capturing while tagged consignments moves across the set of Zonal antennas fixed at a exit.

**4. TECHNICAL SPECIFICATIONS:**

PMS/FXR, Rev 00		Fixed Reader	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Supported RFID tag protocol	EPC, Class 1, Gen 2, Passive and ISO 18000 - 6C.		
4.2	Architecture	Any branded processor like Intel / Samsung / equivalent, 64 or more MB RAM, 32 or more MB Flash, DSP and Field Programmable Analog Array (EPAA) signal processing or equivalent.		
4.3	Frequency	Suitable for Indian operations i.e., 865 - 868 MHz, UHF		
4.4	Channel	10		
4.5	Channel spacing	200 KHz		
4.6	Power	230V AC, 50 Hz		
4.7	Communication	RS 232, LAN TCP/IP, or Ethernet. A Wireless 802.11 g.		
4.8	Antenna	4 Ports for 4 read points, multistatic topology, Circular or linear Polarization. Reverse polarity TNC connection.		
4.9	General purpose input / outputs	4 inputs, 8 outputs, optically isolated.		
4.10	Read Range	Upto min. of 5 meters (with compatible Tags)		
4.11	Read Rate	More than 600 tags per sec. for Gen 2 profiles		
4.12	Protocol	ISO 18000 – 6C, EPC, UHF Class 1 Gen 2		



<b>5</b>	<b>GENERAL</b>		
5.1	All accessories other than Cables need to be included in the quotation.		
5.2	Civil works/Wiring job required for commissioning of these fixed readers need to be included as commissioning charges.		
5.3	The labours to be deployed for civil/wiring job must be regular employees of your company/contractor with ESI and PF nos.		



**SPEC. No. :** PMS/MCU, Rev 00

**DATE :** 04. 09. 2008

1. **TITLE :**  
Specification for Mobile Computing Unit
2. **SCOPE:**  
This specification covers the requirements of mobile computing unit in RFID / Barcode environment.
3. **APPLICATION:**  
Mobile Computing Unit is used for manipulation of data that are captured through hand held Reader. It is basically a hand held terminal for data manipulations in wired or wireless communication environment.
4. **TECHNICAL SPECIFICATIONS:**

PMS/MCU, Rev 00		Mobile Computing Unit	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Processor	Intel / Samsung / or equivalent 520 MHz or more.		
4.2	Operating System	Must be compatible / suitable to operate in RFID / Barcode Environment along with Hand held Reader (Passive)		
4.3	Application Software	Must be compatible to synchronize with Middleware or can be integrated.		
4.4	Memory	128 MB or more RAM, 64 MB or more SDRAM.		
4.5	Communication	Blue tooth and Wi-Fi WLAN 802.11b, Suitable for RFID/Barcode environment.		
4.6	I / O Ports	1-22 Pin connection for synchronization / charging Via connector, IrDA, USB / Serial		
4.7	Display Type	Transflective TFT QVGA color with LED backlight with power save mode.		
4.8	Battery	Removable / re-chargeable 1440 mAh(min) Lithium – Ion.		
5	<b>GENERAL</b>			
5.1	Mobile computing device should be compatible to communicate with required Hardware of RFID / Barcode Technology.			
5.2	Charges towards installation, commissioning & training need to be covered in the Quotation			
5.3	Necessary Audio outputs required for alarm and buzzing need to be available in the device			



**SPEC. No.** : PMS/ZLA, Rev 00  
**DATE** : 04. 09. 2008.

**1. TITLE:**

Specification for Zonal Antenna in RFID / Barcode Environment.

**2. SCOPE:**

This specification covers the requirement of Zonal Antennas that are connected to Fixed Reader in RFID/Barcode environments.

The Scope of work covers the supply, installation, commissioning and training on Zonal antenna.

**3. APPLICATION:**

The Zonal antennas are used with fixed reader (as per Spec. PMS / FDR. Rev 00) at portal for materials required to be packed / dispatched.

**4. TECHNICAL SPECIFICATIONS:**

PMS/ZLA, Rev 00		Zonal Antenna	Quantity: 6 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Polarisation	Circular.		
4.2	Frequency	865 – 868 MHz, UHF		
4.3	Read distances	5 Meters or More		
4.4	Operating Temperature	- 20 deg.C to 55 deg.C		
4.5	Humidity	5% to 95%		
4.6	Peak Gain	5.5 dBIL		
4.7	Input Power	10 Watt		
4.8	Impedance	Around 50 ohms.		
4.9	Beam Width	Less than 70 degree		
<b>5</b>	<b>GENERAL</b>			
5.1	Fixed Reader, Metal and Non-metal Tags and Antennas must be compatible to each other so that gain is optimized for the operations at 865 – 868 MHz frequency.			
5.2	Size in mm: (250 – 300)LGX(250 – 300)WDX(30 – 40)HT or near to this range of dimension.			
5.3	Necessary clamps, connections, hardware need to be covered in the price			
5.4	Wiring / Cabling required for continuous usage need to be covered in the price			



**SPEC. No.** : PMS/TNM, REV 00

**DATE** : 04.09.2008

1. **TITLE :**  
Specifications for Tag - Non-metallic in RFID / Barcode Environment.

2 **SCOPE:**  
This Specification covers the requirements of RFID tags, fixed or tagged on Non-metallic components.

3. **APPLICATION:**  
Tags - Non-metallic are means of reading a component on which it is Fixed / Tagged.  
The tags with adhesives will be fixed on the components. It can also be tagged on to components using tie or other means.

4. **TECHNICAL SPEC:**

PMS/TNM, REV 00		Tag - Non-metallic	Quantity: 10,000 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Integrated Circuit (IC)	EPC class of Gen 2, 96 bit (min.), ISO 18000-6C, Passive		
4.2	Free Air Frequency	865 – 868 MHz, UHF		
4.3	Dimensions (approx.)	89 LG x 22 WD x 9 THK.		
4.4	Weight (approx.) in gm	24		
4.5	Material	ABS or Equivalent		
4.6	Read Range (in closed environment)	More than 5 meters.		
4.7	Ingress Protection	Equivalent to IP 67		
4.8	Operating Temp	- 20 Deg. C to + 60 Deg.C		
4.9	Storage Temp	- 20 Deg. C to + 60 Deg.C		
<b>5 GENERAL</b>				
5.1	All the tags must be designed for 865-868 MHz, UHF			
5.2	Adhesive must have uniform adhesion through-out.			
5.3	Shelf Life of tags must be more than 2 years.			
5.4	Must be capable of both R / W.			



**SPEC. No.** : PMS/TML, Rev 00

**DATE** : 04.09.2008

**1. TITLE:**

Specification for Tag-Metallic in RFID / Barcode environment.

**2. SCOPE:**

This Specification covers the requirements of RFID tags, fixed or tagged on metallic components.

**3. APPLICATION:**

Tags – Metallic are means of reading a component on which it is fixed / tagged. The tags with adhesives will be fixed on components which it is tagged on to other components depending on the size and type of packing.

**4.0 TECHNICAL SPEC:**

PMS/TML, Rev 00		Tag-Metallic	Quantity: 5,000 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Integrated Circuit (IC)	EPC Class 1, Gen 2, 96 or more bit, Passive		
4.2	Free air frequency	865 – 868 MHz, UHF		
4.3	Dimensions (approx) in mm	150 LG x 23 WD x 18 HT		
4.4	Protection Class	IP 67		
4.5	Material	Heat-resistant plastic material.		
4.6	Mounting	Mechanical or adhesive.		
4.7	Read Range	More than 5 meters		
4.8	Operating temp	- 20 Deg.C to 185 Deg.C		
4.9	Storage Temper	- 20 Deg.C to 185 Deg.C		
<b>5 GENERAL</b>				
5.1	All the tags must be designed for 865-868 MHz, UHF			
5.2	The Tags can be mounted easily on any metallic surfaces either with industrial Adhesive applied with the tag or by fixing with the screws or tie with the help of holes provided in the tags.			
5.3	Adhesives must have uniform adhesion through-out the surface.			
5.4	Shelf life of tags must be more than 2 years.			
5.5	Must be capable of both R / W.			



**SPEC. No.** : PMS/TTP, Rev 00

**Date** : 04.09.2008

### 1.0 TITLES:

Specification for Thermal Transfer Printer for printing Barcodes/on RFID tags.

### 2.0 SCOPE:

This specification covers the requirements of Thermal transfer printer for printing various details in Barcode / RFID environment.

### 3.0 APPLICATION:

Thermal transfer printer allows labels to be printed, at the same time the RFID data are being written to the transponder. To transfer the data to the chip, the 64-bit printer needs a UHF read-write module.

### 4.0 TECHNICAL SPECIFICATIONS:

PMS/TTP, Rev 00		Thermal Transfer Printer	Quantity: 5 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	RFID Standards Support	ISO 18000-6 B, EPC Gen 2, Passive		
4.2	Printing Width (max)	104-120 mm at 300 dpi		
4.3	Printing Length (max)	1092 mm at 300 dpi		
	With standard memory			
4.4	Printing Length (max)	2730 mm at 300 dpi		
	With 16 MB SDRAM			
4.5	Print Speed	upto 76 labels per minute, 101x152 mm.		
4.6	Print Resolution	306 dpi		
<b>4.7 Tags / Labels</b>				
4.7.1	Encoding	Chips between 865-868 mm UHF		
4.7.2	Tag width	25.4 to 114.3 mm.		
4.7.3	Tag thickness	2.5 to 7 mil		
4.7.4	Tag styles	Roll fed/die-cut, continuous or fanfold Labels.		
4.7.5	Label / Tag roll max. dia	213 mm		
4.7.6	Label / Tag roll core	38 – 76 mm		
<b>4.8 Ribbon Roll</b>				
4.8.1	Ribbon Roll max. dia.	83 mm or 450 m (approx.)		
4.8.2	Ribbon Roll core	25 mm		
4.8.3	Ribbon type	Wax, Wax / resin, resin		
<b>4.9 Compatible Label Spec</b>				
4.9.1	Tag thickness	Less than 25 mil		
4.9.2	Tag insert size limits	13 x 70, 95 x 95 or more		
4.9.3	Tag placement	Between label and backing paper. Location within label customized for each application.		
4.9.4	Tag Orientation	Perpendicular to feed direction.		

<b>4.10</b>	<b>Interface Standard</b>		
4.10.1	Rs. 232, USB, Easy LAN Wireless, internal 802.11 b wireless Ethernet		
4.10.2	12C – bus for cutter		
4.10.3	Wand interface for Easy set system.		
<b>4.11</b>	<b>Software</b>		
4.11.1	Printer command Languages	IPL, Fingerprint / Direct protocol	
4.11.2	Software development kit	A custom Finger print program to interface with RFID module and host system is easily generated through the use of an application Software, a software development kit for finger Print with RFID Libraries.	
4.12	Barcode symbologies	1 – dimensional, 2 – dimensional.	
4.13	Memory	8 RAM, 16 MB, Flash 16 MB, 1 GB compact Flash memory.	
4.14	Display	Back-kit LCD for 2 x 16 characters and 3 LED Indicators.	
<b>5</b>	<b>GENERAL</b>		
5.1	The Printer should have tag verification also.		
5.2	The Printer should have – swing cutter modules, rotating cutter module, ship module and re-winder, built in LAN board, Expansion I/O, RFID kit.		



**SPEC. No.** : PMS/ANC, Rev 00

**Date** : 04.09.2008

1. **TITLE :**  
Specification for Antenna Cable in RFID / Barcode Environment.
2. **SCOPE:**  
This specification covers the requirement of Antenna Cable which runs from Antenna to fixed reader.
3. **APPLICATION:**  
Antenna Cables are media for data transmission between antenna and fixed reader. The antennas will be fixed at the portal in which materials (RFID tagged) moves in/out.

#### 4.0 TECHNICAL SPECIFICATIONS:

PMS/ANC, Rev 00		Antenna Cable	Quantity: 10 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Length	3 – 5 meters.		
4.2	Frequency range	UHF, RFID range is 865 – 868 MHz, Passive		
4.3	Type of connections	TNC Reverse polarity plug on one side; Jack on the other side.		
4.4	Operating temperature	- 20 deg. C to 55 deg. C		
4.5	Storage temperature	- 40 deg. C to 85 deg. C		
4.6	Humidity	5% to 95%, Non - condensing.		
<b>5 GENERAL</b>				
5.1	Cable must be suitable for both Antenna & fixed reader.			
5.2	Cable must be double braided.			
5.3	It should be a low loss cable.			



**SPEC. No.** : PMS/CCC, Rev 00

**Date** : 04.09.2008

1. **TITLE :**  
Specification for cradle for charging / communication of hand held reader to be used in RFID / Barcode environment.
2. **SCOPE:**  
This Specification covers the requirements of cradle for charging / communication to be used for hand held readers.
3. **APPLICATION:**  
Cradle for charging / communication is essential to charge hand-held reader and to be used in RFID / Barcode environment.
4. **TECHNICAL SPECIFICATIONS:**

PMS/CCC, Rev 00		Cradle for charging / communication	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Unit to be charged	Must be suitable for the hand held reader as per Spec. PMS/HHR: Rev.00.		
4.2	Frequency range	UHF, 865 – 868 MHz		
4.3	No. of slots for charging	4, with the open of charging battery directly.		
4.4	PC Synchronization	There should be sync button on cradle to sync. PDA with PC.		
5	<b>GENERAL</b>			
5.1	The 4 slot cradle should be compatible to the hand-held reader			
5.2	All operations required for RFID application must be available with cradle.			

**SPEC. No.** : PMS/SPB, Rev 00**Date** : 04.09.2008

1. **TITLE :**  
Specification for Spare Batteries those are suitable for hand held readers to be used in RFID / Barcode environment.
2. **SCOPE:**  
This Specification covers the requirements of Spare Batteries that are suitable for hand held readers.
3. **APPLICATION:**  
Spare Batteries are power source for hand-held reader to be used in RFID / Barcode environment.
4. **TECHNICAL SPECIFICATIONS:**

PMS/SPB, Rev 00		Spare Battery	Quantity: 5 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Unit to be powered	Must be suitable for the hand held reader as per Spec. PMS/HHR: Rev.00		
4.2	Frequency range	UHF, 865 – 868 MHz		
4.3	Life	At least 1.5 hour continuous read. 20 hours or more stand by, easily field replaceable battery.		
4.4	Type	Removable / re-chargeable 1440 mAh(min) Lithium – Ion or equivalent.		
5	<b>GENERAL</b>			
5.1	The Battery should be compatible to the hand-held reader			
5.2	Maintenance and disposable methods of Battery need to provided			



**SPEC. No.** : PMS/ACP, REV 00

**Date** : 04.09.2008

**1. TITLE:**

Specification for Access Point for Wi-Fi in RFID / Barcode Environment.

**2. SCOPE:**

This Specification covers the requirement of Access point for Wi-Fi for data transmission in wireless condition within the system.

**3. APPLICATION:**

The Access point is used for data transmission between PC, Readers, mobile computing device, printers etc.

**4. TECHNICAL SPECIFICATIONS:**

PMS/ACP, REV 00		Access Point for Wi-Fi	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Uplink	2 Ports (WAN, Auto Sensing 10/100 Base-T Ethernet.		
4.2	<b>Radio Specification</b>			
4.2.1	Wireless Medium	Direct sequences spread spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM)		
4.2.2	Network Standard	802.11a, 802.11b, 802.11g and 802.3		
4.2.3	Data rates to be supported	1, 2, 5.5, 6.9, 11, 12, 18, 24, 36, 48, and 54 Mbps.		
4.2.4	Operating Channel	Suitable for Indian Regulatory rules.		
4.2.5	Available transmit Power Settings	4.20 dBm.		
4.3	Operating Bands	Must be suitable to Indian Regulatory Rules.		
4.4	<b>Regulatory</b>			
4.4.1	Standard Compliance	Wi-Fi: 802.11a/b/g, WPA2, WMM		
4.4.2	Radio approval	As per Indian Regulatory Rules.		
5	<b>GENERAL</b>			
5.1	Access point must be suitable for both hand held reader & fixed reader and establish communication with PCs in work place			
5.2	All hardware set-ups required for wireless communication using Access point need to be handled by the vendor himself			
5.3	The wireless communication need to be noise-free			



**SPEC. No.** : PMS/SOFT/NET, Rev 00

**Date** : 04.09.2008

**1. TITLE:**

Software for system integration in network environment

**2. SCOPE:**

This Specification covers the requirement of the software required for the integration of the system using RFID/Barcode technology with our network system (SAP)

**Interface with SAP**

The expected solution is a standalone system working outside core ERP system, SAP but should have regular interface with SAP for various processes. The product / item definition is maintained in SAP and continue to be the way forward including the stock and invoice related documentations. The proposed system will have to assist in giving the granular details of stock on hand and goods movement and hence need to interface with SAP offline on

- RFID Tag preparation
- Goods movement
- Reconciliation etc

The solution should be capable of handshaking with SAP system for access, reading & exchange of data depending on the business need.

Primarily, following are the transactions for which system needs interface with core ERP through BDC to SD module of ERP

- Extracting product data which are being sent from stores/PPC to shipping and associating the dispatch advise note of this transaction
- Referring to product master and dispatch advise note when goods are being received at the shipping through RFID portal
- Associating product and customer information when final packing is made at the shipping just prior to dispatches
- Extract customer information when preparing packing list
- Access to product master & stock data whenever pick list, stock audit and searching / locating for specific stock.

Wherever required, a batch mode update for both import and export with SAP should be planned.



**SPEC. No.** : PMS/SOFT/APP, Rev 00  
**Date** : 04.09.2008

1. **TITLE:**  
Application Software for dispatch operations including utilities on hand held Reader for Scanning and other operations.
2. **SCOPE:**  
This Specification covers the requirement of the application software which is standalone with roll based access and privileges built on Microsoft platform.

**Application Software:**

The software should be a browser based multi user system with role based access and privileges built in on Microsoft platform, .NET environment with MS SQL Server as the back end database. This software will be a standalone & hosted application and users will be accessing over browser within the corporate intranet. The application is expected to cover the following.

Goods will be sent from stores / PPC department in loose/bulk (in a carton) form but with identification on it to shipping department with completion card. The application should facilitate automatic receipt mechanism using RFID and reconcile with dispatch advice note. Further, once it's inside shipping, it's considered stock in hand at shipping department. The applications is expected to cater to other operations of shipping departments like

- Stock audit
- Searching
- QC prior to dispatch
- Final packing list and dispatch

Final dispatch list will be prepared after clearance from QC and hence provisions should be made to accommodate the same. Provision should be made to identify the boxes using RFID at shipping department for stocking, audit and dispatch purposes. Necessary interface with core ERP system should happen in all of these processes



**SPEC. No.** : PMS/SOFT/MID, Rev 00

**Date** : 04.09.2008

**1. TITLE:**

Middleware for data synchronization in RFID/Barcode environment.

**2. SCOPE:**

This Specification covers the requirement of the middleware for managing communications with various devices.

Vendor is expected to provide suitable middleware for managing communication with devices. BHEL may prefer to use standard middleware like Microsoft BizTalk server at a later stage and hence devices should BizTalk ready as well. Vendor provided middleware should be on industry standards like XML based APIs and should be accessible over http carrier.

Vendor should provide APIs machine level as well as high level communication. The middleware should facilitate controlling entire behavior of devices and managing the data exchange like instant mode communication, batch mode communication. Moreover, it should facilitate business needs like tag filtering, event handling by accessing devices remotely.

Following are specific functionalities with respect to the envisaged system which the middleware should facilitate.

**Infrastructure setup**

Various RFID equipments are likely to be used in the proposed system and the software should be able to provide utility for easily defining and configuring them for put to use. For example, configuring combination of readers and antennas for incoming and outgoing goods movement.

**Middleware for managing interfacing with RFID equipments**

The software should facilitate transaction management with RFID setup through its own middleware and ensure data flows seamlessly from the devices. It also should facilitate setting up ways of communication with devices for data flow and should be able to define device configuration parameters like data server & controls with respect to data exchange.

**PROJECT-2**

**Spec no.** : EDN-A046/ANX-1/D-Y8/PMS/WEB, Rev 00  
**Date** : 04.09.2008

**Title: Packing Management System in BHEL-EDN web environment****Introduction:**

Packing Management system in BHEL-EDN web environment is a web based internet/intranet application. This is used to control and monitor the supply of packing consumables (including wooden shooks) that are supplied by contractors on BHEL-EDN's demand. This also helps in processing the bills submitted by packing contractors, on consumption of their supplies at EDN.

It basically comprises of-

- i. Mobile computing units as per PMS/WEB/MCU, Rev 00 : 2 Nos.
- ii. Related software as per PMS/WEB/SYS, Rev 00

Administrator can be allowed to view the demand placed to individual contractor, their response to EDN's demand so that manipulation for the demand can be worked out. The packing contractor is allowed to view only his data like demand placed, response for the demand, revised demand (if any), quantity under preparation(WIP), quantity at EDN(stock), his percentage of commitment) and status of other consumables etc.

Main purpose of these applications is to monitor the preparation of wooden/plywood/carton planks (shookes) and consumables on web. Depending on the packing requirements, supplies can be controlled.

For Scope of work, terms and condition including general and pre-qualification criteria, refer specification no. EDN-A046/ANX-1/D-Y8/PMS/GEN, Rev 00 dtd. 04. 09. 2008.

**i. Hardware Requirements:**

**SPEC. No.** : PMS/WEB/MCU, Rev 00  
**DATE** : 04. 09. 2008

1. **TITLE :**  
Specification for Mobile Computing Unit
2. **SCOPE:**  
This specification covers the requirements of mobile computing Unit in Web environment of BHEL-EDN
3. **APPLICATION:**  
Mobile Computing Device is used for manipulation/reading of data that are on PC of a case worker/Sup-BHEL. It is basically a hand held terminal for data manipulations in wired or wire-less communication environment. Application software for BHEL-EDN Web environment must be able access through this Mobile Computing Unit.

#### 4. TECHNICAL SPECIFICATIONS:

PMS/WEB/MCU, Rev 00		Mobile Computing unit	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Processor	Intel / Samsung / or equivalent 520 MHz or more.		
4.2	Operating System	Must be compatible / suitable to operate in RFID / Barcode Environment along with Hand held Reader. It can be integrated with Packing Management system specified in PMS/WEB/SYS, Rev 00		
4.3	Application Software	Must be compatible to synchronize with Middleware or can be integrated.		
4.4	Memory	128 MB or more RAM, 64 MB or more SDRAM.		
4.5	Communication	Blue tooth and Wi-Fi WLAN 802.11b, Suitable for RFID/Barcode environment.		
4.6	I / O Ports	1-22 Pin connection for synchronization / charging Via connector, IrDA, USB / Serial		
4.7	Display Type	Transflective TFT QVGA color with LED backlight with power save mode.		
4.8	Battery	Removable / re-chargeable 1440 mAh(min) Lithium – Ion.		
<b>5 GENERAL</b>				
5.1	Mobile computing device should be compatible to communicate with required Hardware of RFID / Barcode Technology.			
5.2	Charges towards installation, commissioning & training need to be covered in the Quotation			
5.3	Necessary Audio outputs required for alarm and buzzing need to be available in the device			

**ii. System Requirements:****SPEC. No.** : PMS/WEB/SYS, Rev 00**DATE** : 04. 09. 2008

The system shall allow the administrator to create new demands, where each demand is sizes of shookes along with quantities and date of supplies and there will be provision to indicate the project name for which shookes required, as an option.

Once the demands are created, the system can assign it to the packers automatically by considering eligibility as per contract terms, availability of shookes (stock), consumables, men and also the sequence (L1 position as per contract terms). However, administrator can assign 'allot' or 'block' to a particular packer at any point of time.

The administrator shall give each packer an account, once packer 'logs in' he can view the demands and these demands are sorted according to the required data (contractor-wise, stock-wise, demand-wise etc).

The contractors can accept/reject/modify the demands. If the contractors reject/modify the demands, then this information is required to be made available to the admin (by means of a flash message) and system can re-assign it to next 'sequenced' (as per L1 order) contractor on approval by admin.

Once the contractor accepts the demand he sends the schedule for deliveries. These schedules will be the basis for the monitoring next immediate supplies. The system will provide 3 days from the date of raising demand to the contractor to respond. After 3<sup>rd</sup> day system assumes a 'rejected response' and distribution follows accordingly.

On delivery at BHEL-EDN, supervisor (Sup-Contract model) of the contractor will enter the quantity delivered (by drop-down menu) and the shop supervisor (Sup-Ship model) will concur the same, if quantity matches or overwrite the exact quantity supplied. On concurrence from the shop supervisor, the stock at EDN will be updated.

Through ERP/SAP, packing slip data will be read as excel sheet and consumption of shook and thereafter stock updation will be carried out offline. The consumption of consumables like silica gel, polythene cover will be delivered based on 'standard consumption' worked and tabulated. However admin can update stocks on physical verification manually.

The system should also generate list and no. of packing slips against each contractor between specified time duration. This is helpful in processing the bills of the contractor on submission.

**Functional Requirements:**

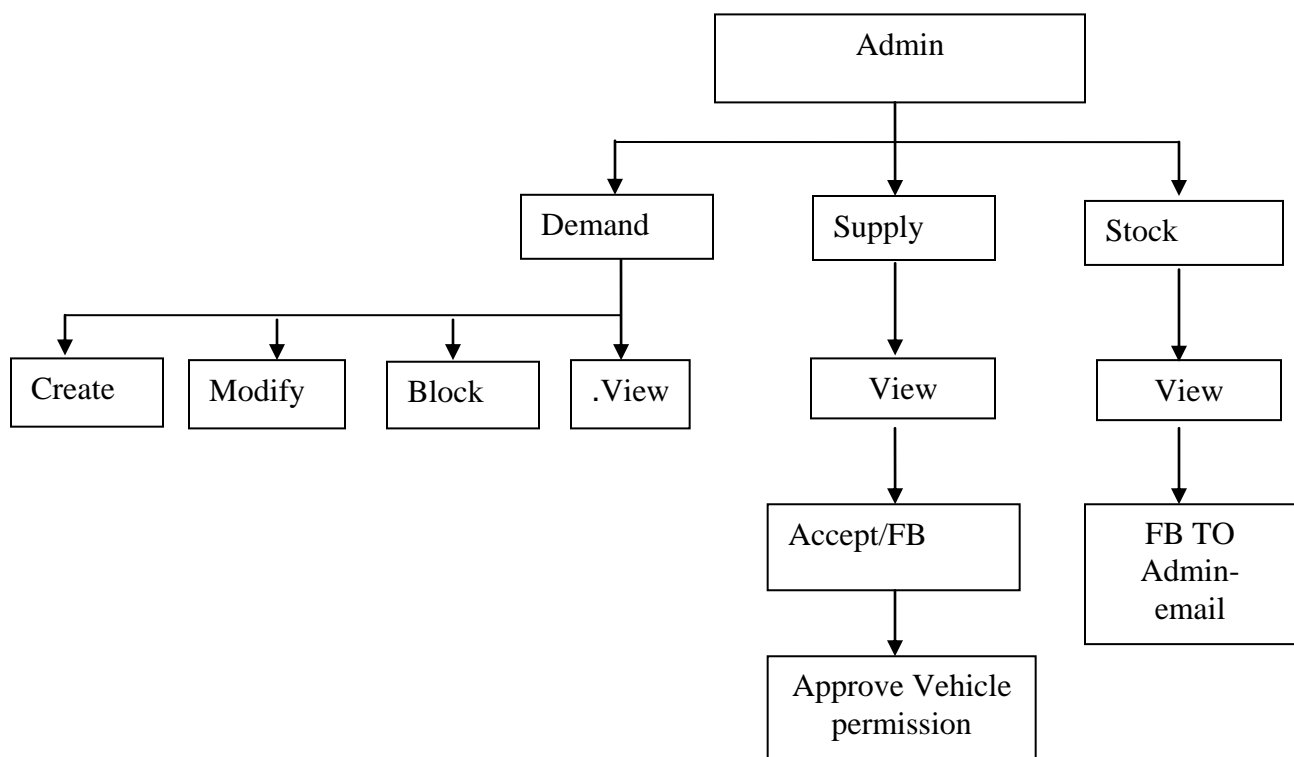
- This application utilities must be able to access through the hardware, Mobile computing unit specified in PMS/WEB/MCU, Rev 00.
- The system should allow admin/supervisor (BHEL) to create/re-create/approve re-distribution of demands by reading a Production program of a month in excel format.
- There should be provision for admin to register a contractor /contractors.

- The contractor can accept/reject/modify the demand and accordingly schedule to be provided.
- It should allow supervisor (contractor) to update the supplies at EDN.
- It should allow admin, sup-BHEL, sup-contractor and contractor to view their stock at EDN as well as WIP at works (timber shop)
- It should allow viewing percentage of loading and present status of each contractor.
- It should allow to take suitable report and its printout on WIP, stock, % of commitment by contractors
- % of commitment =
 
$$\left\{ \frac{\text{Actual date of supply} - \text{scheduled date of supply}}{\text{Total shooke (or boxes) ordered}} \right\}$$
- It should allow admin to 'hold' allocation of demand and on 'concurrence' from admin allocation get placed or terminated.
- It should allow sending email to all contractors through this system.
- It should be able to get feedbacks from contractors, supervisors through email.
- It should also allow admin to block a contractor/ contractors.
- It should allow generation of report on contractor-wise, shooke/box size-wise between two specified dates.
- It should be compatible to extend the data sharing for processing of packing bills.
- Software developed should undergo verification and validation. The software process should be established and certified.
- The software developed must be compliant with ISMS BS7799 security standards.
- The old data to be archived on completion of a contract period. Provision to fresh include contractor with revised /existing rate should be made available. Period-wise contract rate should be taken for processing the packing bills.
- Provision to view and query packing bills status by contractor/admin.
- End user training must be provided on installation of system at EDN
- Operation manuals (5 copies) must be provided to user an implementation.
- Successful process cycle is necessary on installation.

## Menu of the system:

- Administrative module
- Contractor module
- Sup-BHEL module
- Sup-contract module
- Security module

### a. Administrative(admin) module



### Registration:

Registration and assigning login name and Password.

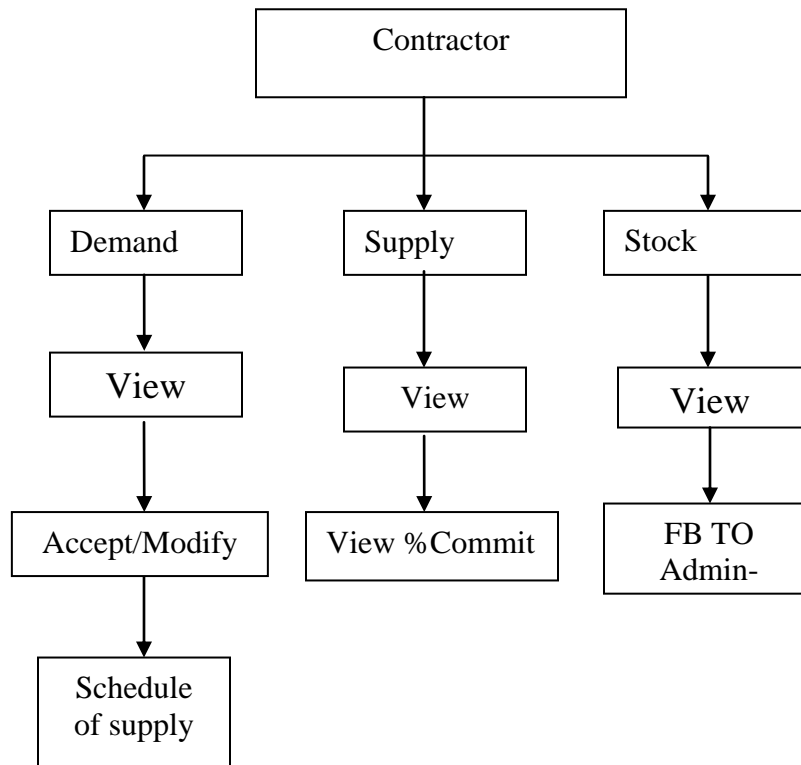
### Demand creation:

Provision to create, edit, re-create, view assign and re-assign demands. Demand is a requirement of shookes/boxes for packing during specified time duration. These demands are assigned to contractors by the system based on the percentage loading and it should be sequenced on percentage loading including max quantity that can be loaded. The input is basically an excel sheet of production program with formatted cells so that the quantity of shookes required for the particular size can be read and distributed/assigned based on percentage loading.

The admin is right to 'block' a contractor at any moment. Based on the 'concurrency' by the admin the demand can be 're-assigned' to this contractor or another, who is in next sequence.. TWO days time (excluding day of demand) will be given for the contractor to respond. There will be flashing message on the screen of the admin and contractor by THREE hours before completion of the response time.

Demand creation will be made by drop-down menu for size, quantity and date of requirement. There shall be provision for communication with contractor, sup-BHEL, sup-contractor and security any matter related to supply of packing material.

#### b. Contractor module:



#### Demand:

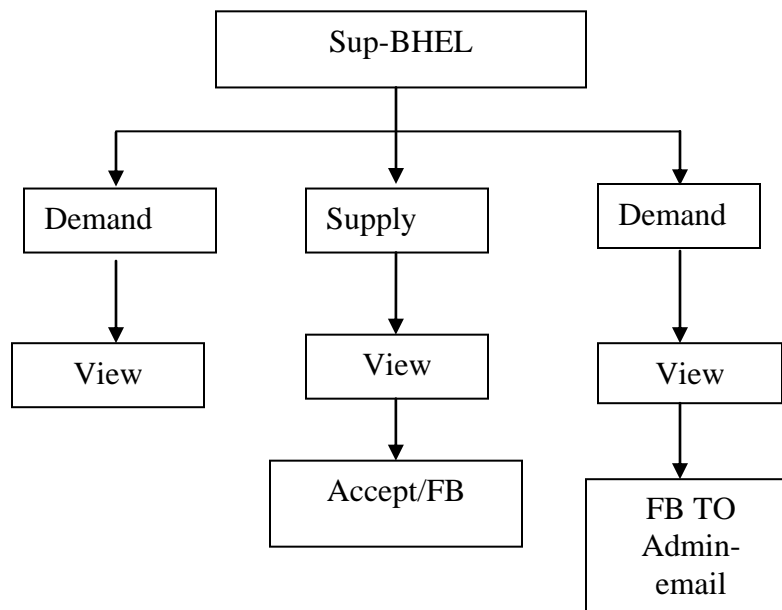
Contractor can view the demand that have been assigned to him. The contractor can accept, reject or modify the demand. However Admin has to approve his modifications.

#### Stock:

The contractor can view his stock at EDN; demand in hand (wip). The status of bills processed.

**Updation:**

Upon receiving the demand, the contractor has to accept/reject/modify the demand on acceptance he has to enter the schedule of delivery against each category of shookees/boxes/consumable while supplying the materials he has to enter the category of material and quantity along with vehicle no.

**c. Sup-BHEL module:**

**Demand:**

Sup-BHEL can view the demand which includes types/sizes of shookees/boxes. There is no authorization for sup-BHEL to create/reject/modify demands.

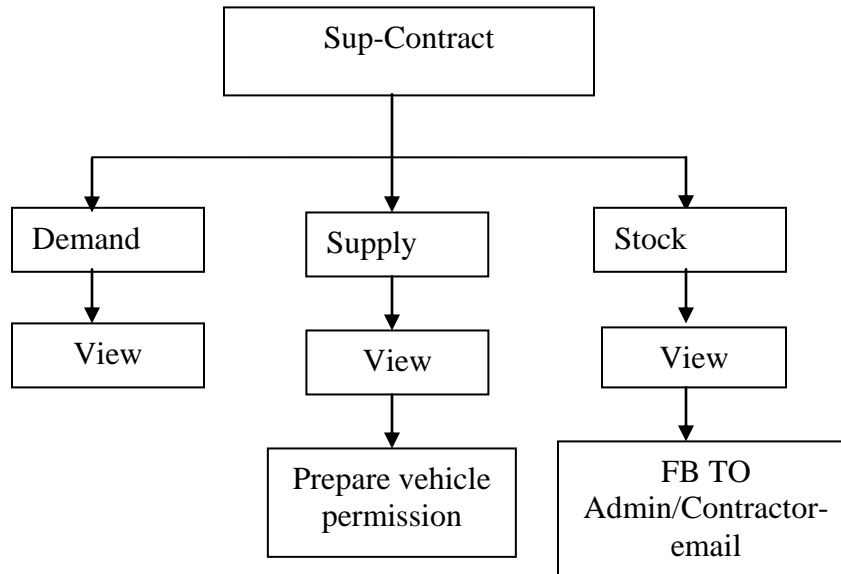
**Stock:**

Sup-BHEL can view the stock at EDN; demand in hand (WIP) and the status of bills that are being processed.

**Updation:**

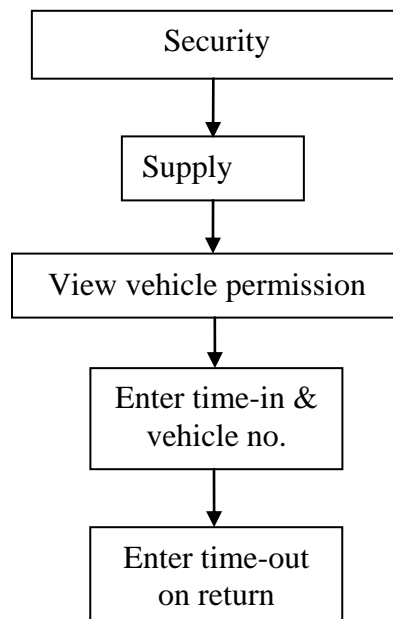
Upon receiving the packing materials at EDN, Sup-BHEL will accept the different type of materials of various quantity by clicking the suitable preference on the drop-down menu. These data will get updated as a stock.

#### d. Sup-Contractor Model:



In this model sup-contractor will be able to view the demand, supply and stock. He will not be authorized to edit any data except sending email to admin/contractor, mostly on discrepancy, about stock.

#### e. Security Model:





In this module, a security personnel at material gate will acknowledge the 'vehicle pass' prepared by sup-contract and approved by admin/sup-BHEL by entering time-in. While returning, security personnel have to enter time-out.

**REPORT GENERATION:**

There are few reports to be generated like stock available, wip, priority within wip, consumption pattern, and Supplied details with DC nos., Payment details like – Bills submitted, processed, payment made. These reports are required for Admin, contractor, Sup-BHEL models. There should be provision for print outs of these reports.

These reports must available on mobile computing unit also.

**ADDITIONS:**

There must be provision to add few additional features in each module at any point of time after/during installations.

**Annexure-GP**
**TABULATION OF GENERAL AND PRE-QUALIFICATION CRITERIA**

(Vendor has to Tick/fill all the rows)

Sl. No.	Description	Vendor's Offer		Remarks, If any
4. GENERAL				
1	Scope of Work	Understood	Y/N	
1.1	The offers must be for the entire System. However, Parties can submit their offers for both or either Project-1 or Project-2.	Project-1		
		Project-2		
		Both		
1.2	Project-1 (If applicable)	Complete hardware and software	Y/N	
1.3	Project-2 (If applicable)	Complete software	Y/N	
2	All Hardware that are required for this system need to be supplied by the vendor and their integration, commissioning and training for usage need to be handled by the same supplier	Understood	Y/N	
3	There are separate specifications for each hardware/software of the system	Understood	Y/N	
4	The Vendors need to meet the requirements of individual hardware of the system. The software must be flaw-less in the BHEL network environment	Understood	Y/N	
5	The necessary civil works as well as wiring job for the installation of fixed readers need to be carried-out by the vendor himself.	Understood	Y/N	
5.	Pre qualification criteria			
1	The vendor shall have supplies from an Original Equipment Manufacturer (OEM) or authorized dealers for all the hardware.			
1.1	The vendors-			
1.1.1	a. Based in India			
1.1.2	b. Foreign OEM with Authorized Indian dealer(s) / representative(s) for sales, service, installations and software integration. The authorization letter for the dealer/ representative shall be provided.			
1.1.3	c. cannot quote for the same hardware from 2 or more different OEM's			
2	The offer shall include only new hardware and not for any refurbished / used ones. A declaration to the above effect to be furnished			

3	The vendor should have installed and commissioned atleast 2 nos. of similar systems with similar hardware configuration in India and operating satisfactorily for atleast one year during the last three years. The details of the customers with contact details, hardware installed and date of installations and applications of the system developed etc. to be provided.	
4	The vendor shall be in a position to provide service and spares support for the hardware and maintenance support for software.	
5	The vendor or their authorized service representatives should have trained engineers in India for commissioning & service for the offered equipment. Certificate/Authorisation to this effect must be issued by OEM of that equipment.	
6	The vendor shall be in a position to undertake AMC for the entire system with BHEL after the expiry of the warranty/ guarantee period either directly or through their authorized agent.	
7	The vendor shall arrange for a demonstration of the similar application system operating in India, if required by BHEL.	
8	The vendor shall furnish a comprehensive warranty for all hardware for atleast 12 months from the date of commissioning or 18 months from the date of delivery, whichever is early.	
9	The vendor shall guarantee the performance of the system for atleast 12 months from the date of commissioning.	



**Annexure-UP1**  
**For PROJECT-1**

**Un-priced Price bid**  
(Vendor has to Tick all the rows)

Sl. No	Item Description	Unit	Qty	Quoted(Q)/Not Qtd(NQ)
i	Hand Held Reader as per spec. PMS/HHR, Rev 00	Nos.	5	
ii	Fixed Reader as per Spec. PMS/FXR, Rev 00	Nos.	2	
iii	Mobile Computing unit as per spec. PMS/MCU, Rev00	Nos.	2	
iv	Zonal Antenna as per spec. PMS/ZLA, Rev 00	Nos.	6	
v	Tags Non metallic as per spec. PMS/TNM, Rev 00	Nos.	10,000	
vi	Tags - Metallic as per spec. PMS/TML, Rev00	Nos.	5,000	
vii	Thermal Transfer Device as per spec. PMS/TTP, Rev 00	Nos.	5	
viii	Antenna Cables as per spec. PMS/ANC, Rev 00	Nos.	10	
ix	Cradle for charging/communication as per spec. PMS/CCC, Rev00	Nos.	2	
x	Spare Battery as per spec. PMS/SPB, Rev 00	Nos.	5	
xi	Access Point for Wi-Fi connectivity as per spec. PMS/ACP, Rev 00	Nos.	2	
xii	Software for system integration in network environment as per spec. PMS/SOFT/NET, Rev 00	System	1	
xiii	Application software for Despatch operations including utilities on hand held reader for scanning and other operations. PMS/SOFT/APP, Rev00	System	1	
xiv	RFID/Barcode Middleware for data synchronization as per spec. PMS/SOFT/MID, Rev00	System	1	

**Annexure-UP2**  
**For PROJECT-2**

i	Mobile Computing unit as per spec. PMS/WEB/MCU, Rev 00	Nos.	2	
ii	Packing Management System in BHEL-EDN web environment as per PMS/WEB/SYS, Rev 00	System	1	

**Annexure-TS1**  
**For PROJECT-1**

**TABULATED TECHNICAL SPECIFICATIONS FOR ALL HARDWARE**

PMS/HHR, REV 00		Hand Held Reader	Quantity: 5 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Ergonomic	The reader must be ergonomically designed for hand operations.		
4.2	Read Range (in a closed environment)	up to 5 meters (at least) using UHF, Gen 2 Non-metal Tags. Upto 1.5 meters (at least) using UHF, Gen 2 metal tags		
4.3	Read Rate	At least 20 tags per second for Gen 2 tags.		
4.4	Protocol	ISO 18000-6C, EPC, UHF, Class1, GEN 2, Passive		
4.5	Tags to be read	Blank or programmed, any size, per 'Tag read' RSSI value.		
4.6	Frequency Range	UHF, 865-868 MHz		
4.7	Barcode scanner	1D and 2D: all Standards.		
4.8	Antenna Polarization	Vertically linear polarized or horizontally linear polarized.		
4.9	Environment	Industrial.		
4.10	Mechanical Structure	Should be a ruggedized, IP65		
4.11	User Interface-Input	QWERTY Key Board, Touch screen, Trigger Button.		
4.12	User Interface-Output	3.5" Transmissive LCD (or better)		
		320 x 240 pixels (at least)		
		LED x 2(or better)		
		Buzzer.		
4.13	Connectivity	Wi-Fi (802.11 b/g or better), USB, RS 232		
4.14	External Memory	SD Card, up to 2 Giga Byte.		
4.15	Processor and Memory	Intel/Samsung/equivalent, 400 MHz or higher.		
		128 MB (or higher) Flash, 64 MB (or higher) RAM		
4.16	Battery life	At least 1.5 hour continuous read. 20 hours stand by, easily field replaceable battery.		
4.17	Source Code Samples	Read Tag, Write Tag, Tag inventory, Tag ranging, Tag search, Tag authentication, Tag association, Tag Commissioning, Bar code scanning, data base Manipulation, Wireless network transfer, server side Driver etc.,		

<b>5</b>	<b>GENERAL</b>		
5.1	Antenna can be integrated or independents. However, for independent configuration while quoting for hand held reader, Antenna assembly need to be clubbed-with.		
5.2	Middleware for data Synchronisation can be pre-loaded with the OS of the reader.		
5.3	While quoting, charges towards installations, commissioning and training need to brought-out along with reader cost.		

PMS/FXR, Rev 00		Fixed Reader	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Supported RFID tag protocol	EPC, Class 1, Gen 2, Passive and ISO 18000 - 6C.		
4.2	Architecture	Any branded processor like Intel / Samsung / equivalent, 64 or more MB RAM, 32 or more MB Flash, DSP and Field Programmable Analog Array (EPAA) signal processing or equivalent.		
4.3	Frequency	Suitable for Indian operations i.e., 865 - 868 MHz, UHF		
4.4	Channel	10		
4.5	Channel spacing	200 KHz		
4.6	Power	230V AC, 50 Hz		
4.7	Communication	RS 232, LAN TCP/IP, or Ethernet. A Wireless 802.11 g.		
4.8	Antenna	4 Ports for 4 read points, multistatic topology, Circular or linear Polarization. Reverse polarity TNC connection.		
4.9	General purpose input / outputs	4 inputs, 8 outputs, optically isolated.		
4.10	Read Range	Upto min. of 5 meters (with compatible Tags)		
4.11	Read Rate	More than 600 tags per sec. for Gen 2 profiles		
4.12	Protocol	ISO 18000 – 6C, EPC, UHF Class 1 Gen 2		
<b>5</b>	<b>GENERAL</b>			
5.1	All accessories other than Cables need to be included in the quotation.			
5.2	Civil works/Wiring job required for commissioning of these fixed readers need to be included as commissioning charges.			
5.3	The labours to be deployed for civil/wiring job must be regular employees of your company/contractor with ESI and PF nos.			

PMS/MCU, Rev 00		Mobile Computing Unit	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Processor	Intel / Samsung / or equivalent 520 MHz or more.		
4.2	Operating System	Must be compatible / suitable to operate in RFID / Barcode Environment along with Hand held Reader (Passive)		
4.3	Application Software	Must be compatible to synchronize with Middleware or can be integrated.		
4.4	Memory	128 MB or more RAM, 64 MB or more SDRAM.		
4.5	Communication	Blue tooth and Wi-Fi WLAN 802.11b, Suitable for RFID/Barcode environment.		
4.6	I / O Ports	1-22 Pin connection for synchronization / charging Via connector, IrDA, USB / Serial		
4.7	Display Type	Transflective TFT QVGA color with LED backlight with power save mode.		
4.8	Battery	Removable / re-chargeable 1440 mAh(min) Lithium – Ion.		
<b>5 GENERAL</b>				
5.1	Mobile computing device should be compatible to communicate with required Hardware of RFID / Barcode Technology.			
5.2	Charges towards installation, commissioning & training need to be covered in the Quotation			
5.3	Necessary Audio outputs required for alarm and buzzing need to be available in the device			



PMS/ZLA, Rev 00		Zonal Antenna	Quantity: 6 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Polarisation	Circular.		
4.2	Frequency	865 – 868 MHz, UHF		
4.3	Read distances	5 Meters or More		
4.4	Operating Temperature	- 20 deg.C to 55 deg.C		
4.5	Humidity	5% to 95%		
4.6	Peak Gain	5.5 dBIL		
4.7	Input Power	10 Watt		
4.8	Impedance	Around 50 ohms.		
4.9	Beam Width	Less than 70 degree		
5	<b>GENERAL</b>			
5.1	Fixed Reader, Metal and Non-metal Tags and Antennas must be compatible to each other so that gain is optimized for the operations at 865 – 868 MHz frequency.			
5.2	Size in mm: (250 – 300)LGX(250 – 300)WDX(30 – 40) HT or near to this range of dimension.			
5.3	Necessary clamps, connections, hardwares need to be covered in the price			
5.4	Wiring / Cabling required for continuous usage need to be covered in the price			

PMS/TNM, REV 00		Tag - Non-metallic	Quantity: 10,000 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Integrated Circuit (IC)	EPC class of Gen 2, 96 bit (min.), ISO 18000-6C, Passive		
4.2	Free Air Frequency	865 – 868 MHz, UHF		
4.3	Dimensions (approx.)	89 LG x 22 WD x 9 THK.		
4.4	Weight (approx.) in gm	24		
4.5	Material	ABS or Equivalent		
4.6	Read Range (in closed environment)	More than 5 meters.		
4.7	Ingress Protection	Equivalent to IP 67		
4.8	Operating Temp	- 20 Deg. C to + 60 Deg.C		
4.9	Storage Temp	- 20 Deg. C to + 60 Deg.C		
5	<b>GENERAL</b>			
5.1	All the tags must be designed for 865-868 MHz, UHF			
5.2	Adhesive must have uniform adhesion through-out.			
5.3	Shelf Life of tags must be more than 2 years.			
5.4	Must be capable of both R / W.			



PMS/TML, Rev 00		Tag-Metallic	Quantity: 5,000 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Integrated Circuit (IC)	EPC Class 1, Gen 2, 96 or more bit, Passive		
4.2	Free air frequency	865 – 868 MHz, UHF		
4.3	Dimensions (approx) in mm	150 LG x 23 WD x 18 HT		
4.4	Protection Class	IP 67		
4.5	Material	Heat-resistant plastic material.		
4.6	Mounting	Mechanical or adhesive.		
4.7	Read Range	More than 5 meters		
4.8	Operating temp	- 20 Deg.C to 185 Deg.C		
4.9	Storage Temper	- 20 Deg.C to 185 Deg.C		
<b>5 GENERAL</b>				
5.1	All the tags must be designed for 865-868 MHz, UHF			
5.2	The Tags can be mounted easily on any metallic surfaces either with industrial Adhesive applied with the tag or by fixing with the screws or tie with the help of holes provided in the tags.			
5.3	Adhesives must have uniform adhesion through-out the surface.			
5.4	Shelf life of tags must be more than 2 years.			
5.5	Must be capable of both R / W.			

PMS/TTP, Rev 00		Thermal Transfer Printer	Quantity: 5 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	RFID Standards Support	ISO 18000-6 B, EPC Gen 2, Passive		
4.2	Printing Width (max)	104-120 mm at 300 dpi		
4.3	Printing Length (max)	1092 mm at 300 dpi		
	With standard memory			
4.4	Printing Length (max)	2730 mm at 300 dpi		
	With 16 MB SDRAM			
4.5	Print Speed	upto 76 labels per minute, 101 x 152 mm.		
4.6	Print Resolution	306 dpi		
<b>4.7 Tags / Labels</b>				
4.7.1	Encoding	Chips between 865-868 mm UHF		
4.7.2	Tag width	25.4 to 114.3 mm.		
4.7.3	Tag thickness	2.5 to 7 mil		
4.7.4	Tag styles	Roll fed/die-cut, continuous or fanfold Labels.		
4.7.5	Label / Tag roll max. dia	213 mm		
4.7.6	Label / Tag roll core	38 – 76 mm		
<b>4.8 Ribbon Roll</b>				
4.8.1	Ribbon Roll max. dia.	83 mm or 450 m (approx.)		
4.8.2	Ribbon Roll core	25 mm		
4.8.3	Ribbon type	Wax, Wax / resin, resin		

<b>4.9</b>	<b>Compatible Label Spec</b>			
4.9.1	Tag thickness	Less than 25 mil		
4.9.2	Tag insert size limits	13 x 70, 95 x 95 or more		
4.9.3	Tag placement	Between label and backing paper. Location within label customized for each application.		
4.9.4	Tag Orientation	Perpendicular to feed direction.		
<b>4.10</b>	<b>Interface Standard</b>			
4.10.1	Rs. 232, USB, Easy LAN Wireless, internal 802.11 b wireless Ethernet			
4.10.2	12C – bus for cutter			
4.10.3	Wand interface for Easy set system.			
<b>4.11</b>	<b>Software</b>			
4.11.1	Printer command Languages	IPL, Fingerprint / Direct protocol		
4.11.2	Software development kit	A custom Finger print program to interface with RFID module and host system is easily generated through the use of an application Software, a software development kit for finger Print with RFID Libraries.		
4.12	Barcode symbologies	1 – dimensional, 2 – dimensional.		
4.13	Memory	8 RAM, 16 MB, Flash 16 MB, 1 GB compact Flash memory.		
4.14	Display	Back-kit LCD for 2 x 16 characters and 3 LED Indicators.		
<b>5</b>	<b>GENERAL</b>			
5.1	The Printer should have tag verification also.			
5.2	The Printer should have – swing cutter modules, rotating cutter module, ship module and re-winder, built in LAN board, Expansion I/O, RFID kit.			

PMS/ANC, Rev 00		Antenna Cable	Quantity: 10 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Length	3 – 5 meters.		
4.2	Frequency range	UHF, RFID range is 865 – 868 MHz, Passive		
4.3	Type of connections	TNC Reverse polarity plug on one side; Jack on the other side.		
4.4	Operating temperature	- 20 deg. C to 55 deg. C		
4.5	Storage temperature	- 40 deg. C to 85 deg. C		
4.6	Humidity	5% to 95%, Non - condensing.		
<b>5</b>	<b>GENERAL</b>			
5.1	Cable must be suitable for both Antenna & fixed reader.			
5.2	Cable must be double braided.			
5.3	It should be a low loss cable.			



PMS/CCC, Rev 00		Cradle for charging / communication	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Unit to be charged	Must be suitable for the hand held reader as per Spec. PMS/HHR: Rev.00.		
4.2	Frequency range	UHF, 865 – 868 MHz		
4.3	No. of slots for charging	4, with the open of charging battery directly.		
4.4	PC Synchronization	There should be sync button on cradle to sync. PDA with PC.		
<b>5 GENERAL</b>				
5.1	The 4 slot cradle should be compatible to the hand-held reader			
5.2	All operations required for RFID application must be available with cradle.			

PMS/SPB, Rev 00		Spare Battery	Quantity: 5 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Unit to be powered	Must be suitable for the hand held reader as per Spec. PMS/HHR: Rev.00		
4.2	Frequency range	UHF, 865 – 868 MHz		
4.3	Life	At least 1.5 hour continuous read. 20 hours or more stand by, easily field replaceable battery.		
4.4	Type	Removable / re-chargeable 1440 mAh(min) Lithium – Ion or equivalent.		
<b>5 GENERAL</b>				
5.1	The Battery should be compatible to the hand-held reader			
5.2	Maintenance and disposable methods of Battery need to provided			

PMS/ACP, REV 00		Access Print for Wi-Fi	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Uplink	2 Ports (WAN, Auto Sensing 10/100 Base-T Ethernet.		
4.2	<b>Radio Specification</b>			
4.2.1	Wireless Medium	Direct sequences spread spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM)		
4.2.2	Network Standard	802.11a, 802.11b, 802.11g and 802.3		

4.2.3	Data rates to be supported	1, 2, 5.5, 6.9, 11, 12, 18, 24, 36, 48, and 54 Mbps.		
4.2.4	Operating Channel	Suitable for Indian Regulatory rules.		
4.2.5	Available transmit Power Settings	4.20 dBm.		
4.3	Operating Bands	Must be suitable to Indian Regulatory Rules.		
<b>4.4</b>	<b>Regulatory</b>			
4.4.1	Standard Compliance	Wi-Fi: 802.11a/b/g, WPA2, WMM		
4.4.2	Radio approval	As per Indian Regulatory Rules.		
<b>5</b>	<b>GENERAL</b>			
5.1	Access point must be suitable for both hand held reader & fixed reader and establish communication with PCs in work place			
5.2	All hardware set-ups required for wireless communication using Access point need to be handled by the vendor himself			
5.3	The wireless communication need to be noise-free			



**Annexure-TS2**  
**For PROJECT-2**

**TABULATED TECHNICAL SPECIFICATIONS FOR THE HARDWARE**

PMS/WEB/MCU, Rev 00		Mobile Computing unit	Quantity: 2 Nos.	
Sl. No.	Description	BHEL's Requirements	Vendor's Offer	
			Comply (Y/N)	Remarks
4.1	Processor	Intel / Samsung / or equivalent 520 MHz or more.		
4.2	Operating System	Must be compatible / suitable to operate in RFID / Barcode Environment along with Hand held Reader. It can be integrated with Packing Management system specified in PMS/WEB/SYS, Rev 00		
4.3	Application Software	Must be compatible to synchronize with Middleware or can be integrated.		
4.4	Memory	128 MB or more RAM, 64 MB or more SDRAM.		
4.5	Communication	Blue tooth and Wi-Fi WLAN 802.11b, Suitable for RFID/Barcode environment.		
4.6	I / O Ports	1-22 Pin connection for synchronization / charging Via connector, IrDA, USB / Serial		
4.7	Display Type	Transflective TFT QVGA color with LED backlight with power save mode.		
4.8	Battery	Removable / re-chargeable 1440 mAh(min) Lithium – Ion.		
<b>5</b>	<b>GENERAL</b>			
5.1	Mobile computing device should be compatible to communicate with required Hardware of RFID / Barcode Technology.			
5.2	Charges towards installation, commissioning & training need to be covered in the Quotation			
5.3	Necessary Audio outputs required for alarm and buzzing need to be available in the device			

**General Terms and conditions for supply of Capital items : (indigenous -Two part bid)****SA-01**

Bidders are required to read the general terms & conditions carefully and submit their quotation covering all the points. Any order resulting from this enquiry shall be governed by the general terms and conditions listed below.

1. **TWO PART BID:** Quotation shall be submitted in two part bid.

**(a) Techno-commercial i.e., un priced Bid:** Techno-commercial bid shall be submitted with complete description of the equipment, specification compliances to the enquired specification and all the commercial terms & conditions indicated in the **QUOTATION FORMAT** (Annexure I (b)) preferably in the same format. Samples if asked and any other enclosures, which the supplier wish to submit like product catalogue etc., in a sealed envelope super scribed clearly as **“TECHNO-COMMERCIAL BID” with RFQ No. and DUE DATE.**

Un priced copy of price bid shall be enclosed with the techno-commercial bid. Deviations to the specification / item description, if any shall be brought out clearly indicating **“DEVIATION TO BHEL SPECIFICATION”** without fail as a part of technical offer. Compliance / comments on all the clauses is essential.

Compliance to pre qualification criteria shall be part of Techno-commercial bid.

Manufacturer's name, their trade mark and brand if any should be invariably mentioned in the tender and illustrative leaflets giving technical particulars etc., are to be attached to the tender to facilitate consideration of the offer.

**(b) Price Bid:** Price bid should contain basic prices, discount if any, applicable taxes & duties, packing & forwarding charges (if applicable), Freight & insurances (if applicable) etc., in a sealed envelope super scribed clearly as **“PRICE BID” with RFQ No. and DUE DATE.** Erection and commissioning charges if any shall be included in the price bid.

Please indicate the rates in both figures and words. However in case of difference, the lowest of the two rates will be considered as correct.

Both these envelopes [(a) Techno-commercial & (b) Price Bid] shall be kept in a single sealed envelope and super scribed clearly with **RFQ No. and DUE DATE.**

2. Tender (quotation) shall be submitted in a sealed envelope super scribed with **RFQ NUMBER / and DUE DATE** on it and the same must reach our office on or before the due date by **13:00 hrs.** Quotation can also be dropped in the tender box **“Sub Assembly”**. Late quotations are liable to be rejected.

Tender shall be addressed to **Sr.DGM / EM - ComI**, Electronics Division, Bharat Heavy Electricals Ltd., Mysore road, Bangalore 560026.

3. The rates quoted against each item shall be in the same units stated in the enquiry. If the quotations are submitted in any other unit than specified, relationship between two sets of units must be furnished in the offer.
4. As far as possible, the quotations shall be free from corrections / overwriting. Corrections if any should be initialed with your seal and signature. Any typographical errors, totaling mistakes, currency mistakes, multiplication mistakes, summary mistakes observed in your priced bids, BHEL may consider whichever is beneficial to BHEL for evaluating of the lowest quote.

5. Please sign the offers. Unsigned bids/offers are liable for rejection.
6. All the bidders or their authorized representatives can witness opening of techno-commercial bid on the due date.
7. After evaluation of techno-commercial bids, price bids of only those who are technically accepted will be opened on a subsequent date, which will be intimated to the concerned in advance for witnessing of price bid opening.
8. The quantities in each item to be purchased may vary from quantities enquired according to the actual requirement at the time of placing the purchase order. Quantity discount if any should be mentioned in your offer.
9. BIDDERS shall indicate clearly Excise duty, Education cess, Sales Tax/VAT, Octroi, Entry tax, Service Tax as applicable for the quoted items. In the absence of clarity of these, any claim at a later date will not be entertained. Any changes in Taxes and duties after award of the contract will not be considered except such of those, which are imposed by Govt., notification within the contractual delivery. Seeking price amendments for change in Excise duty due to crossing of turnover limits will not be considered under any circumstances.

**10. TOTAL COST TO BHEL: Lowest Bid (L1)** is determined on the basis of the total cost to BHEL. Total cost to BHEL = Total basic value + Packing & forwarding charges + Excise duty + Education cess + sales Tax/VAT + Octroi / Entry tax+ Freight + Insurance (as per BHEL Insurance premium) + Service Tax (as applicable) + Loading factors for deviations to commercial terms & conditions.

Purchase order will be placed on Lowest bidder (L1) only.

11. **FIRM PRICE:** Rates quoted should be firm and no enhancement in the rates and changes in the techno-commercial terms will be allowed once the quotation is accepted and order placed. If Erection & Commissioning is in supplier's scope, then the price shall remain FIRM till commissioning & handing over of the complete system. PVC clause is not acceptable.
12. **TERMS OF PAYMENT:** The terms of payments are as follows.
  - (a) 90% within 30 days from the date of acceptance of equipments & balance 10% against submission of PBG.
  - (b) In case where 90 % & 10% payment terms are opted instead of PBG, 90 % Payment will be released within 30 days of acceptance. Balance 10% payment will be paid against submission of supplementary invoice after 12 months of warranty period + 6 months claim period.
13. **ADVANCE PAYMENT:** Quotations with payment terms of “Advance” or “Inland letter of credit” will not be considered and such offers are liable for rejection commercially.
14. **PENALTY:** Failure to supply the item within the delivery date specified in the purchase order will make the supplier liable to an unconditional penalty of ½% (One half percent) of the value (basic material cost) of the goods in arrears per week subject to a maximum of 10%. If pre-shipment inspection is involved, date of issue of pre-shipment call by the vendor along with test certificates / test reports / certificate of conformance / calibration reports as proof of completion will be treated as date of dispatch for penalty calculation. In the absence of reports stated above, actual date of inspection will be considered as date of dispatch for penalty calculation.
15. **PBG:** Performance Bank Guarantee (PBG) to be submitted as per the BHEL prescribed format (Annexure I (c) ) for 10% of the basic equipment value obtained from any BHEL member banks. PBG shall be valid for 12 months + 6 months claim period (totally 18 months) from the date of dispatch.



16. **WARRANTY:** Goods dispatched shall have warranty period of 18 months from the date of dispatch or 12 months from date of commissioning, whichever is earlier.
17. **TERMS OF DELIVERY:**  
For Vendors in Bangalore jurisdiction : Equipment shall be delivered free at EDN / BHEL, Bangalore, inclusive of packing & forwarding charges.  
All other vendors : 1. Packing shall be Road / Air / Rail worthy, to take care of any transit damages.  
2. Dispatch the consignments through EDN/BHEL approved transporters ( Annexure I (a) )  
3. Small consignments can be dispatched through M/S First Flight Couriers Ltd or any other carrier approved by BHEL.
18. **DELIVERY PERIOD:** Equipment shall be delivered as per the requirement of specific R F Q / tender. Offers such as ex-stock subject to prior sale or delivery at the earliest will not be entertained.  
15 days time will be granted for giving order acknowledgement beyond which it will be treated as delay and considered as penalty zone if overall delivery does not take place in agreed delivery period.
19. **VALIDITY:** Quotation should remain valid for a period of **90 days** from the due date of tender.
20. **RISK PURCHASE:** The purchaser at his discretion may also make purchase of the materials **NOT** supplied in time at the **RISK & COST** of the supplier. In this event, it will be obligatory on the part of the supplier who fails to supply the goods in time to make good to BHEL any loss due to such risk purchase.
21. BHEL reserves the right to RE-FLOAT/REJECT/CANCEL this TENDER ENQUIRY (RFQ) without assigning any reason or cause thereof. Quotes received against this TENDER ENQUIRY are subject to and governed by all these terms and conditions. BHEL's decision will be final in awarding of the contract and binding on all vendors.
22. **REVERSE AUCTION** : BHEL reserves the right to go for reverse auction at any point of time before opening of price bid.
23. BHEL reserves the right to Accept / Reject the offer in full or part there off depending on BHEL's requirement.
24. **POST ORDER REQUISITS:**  
(a) Pre-shipment inspection at your works, if required, will be done by BHEL. Required assistance to be provided at the time of pre-shipment inspection.  
(b) Test certificates and warranty certificates as stipulated at the time of ordering shall be furnished.  
(c) Items shall be dispatched with road/air/sea worthy packing. Any rejection due to poor packing shall be to supplier's account.  
(d) Any rejection should be made good or replaced immediately without any extra cost to BHEL.  
(e) Wherever commissioning is involved, it shall be carried out on a turnkey/supervisory basis. Scope of work includes design, fabrication, supply, installation, commissioning and trial run till satisfactory performance level is reached as certified by the user department.  
(f) Copies of operation & instruction manuals to be supplied along with the equipment or before as per specification.



(g) BHEL will not be responsible for any loss, damage or injuries to staffs sustained during erection/commissioning. Supplier shall ensure compliance with all statutory requisites as laid down by local bodies, state & Central Government.

(h) Original invoice (2 copies) to be submitted at the office of DGM / EM -Coml for arranging payment.

(i) As BHEL is also making payment through EFT, banker details in the prescribed format to be submitted.

(j) Performance Bank Guarantee to be executed on Rs.100/- non-judicial stamp paper as per BHEL prescribed format ( Annexure –I ( c ) ).

25. **PAST SUPPLIES / PERFORMANCE:** Detailed list of past supplies of quoted equipments for the last three years shall be enclosed along with the bid indicating customer, quantity supplied and year of supply. Performance certificate issued by customers may also be enclosed along with the bid.

26 Any dispute arising out of this shall be referred to the sole arbitration of Head of Materials Management, SA - EDN, Bangalore or any other officer nominated by him and his decision shall be final and binding on the parties. The venue of the arbitration in all cases shall be Bangalore.

27. All suits in respect of this lie in the court of Bangalore only.

**28. LOADING FACTORS:**

Loading factors as detailed below will be added to the quoted price (basic) to evaluate the lowest quote for non compliance of BHEL standard commercial terms.

**A. For non compliance of BHEL standard Terms of payment:**

Sl. No.	BHEL standard term	If you quote	Loading factor in % for non-compliance
1	100% within 30 days from the date of acceptance (credit payment)	Payment through bank	2 %
		Payment against proforma invoice	1.25 %
2	90% within 30 days from the date of acceptance + 10% against PBG (wherever PBG is involved)	Payment through bank	2 %
		Payment against proforma invoice	1.25 %
		100% within 30 days from the date of acceptance & PBG	Nil

**B. For non compliance of Penalty clause:**

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	Penalty of 0.5% per week subject to max. of 10% on the value of the items not supplied / delayed	Not agreed	10 %
		5% max., agreed	5%
		Other than the above	10% - agreed max. %

**C. For non compliance of Performance Bank Guarantee (PBG):**

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	PBG for 10% of the basic material cost shall be furnished in the BHEL prescribed format	Not agreed	10 %
		5% agreed	5 %
		Other than the above	10% - (minus) agreed max. %

**D.Non conformance to delivery requirement of BHEL**

BHEL requires the delivery of items within 4 months from the date of commercially clear PO. Delivery quoted more than 4 months will be subjected to a loading factor of 0.5 % per week as under:

Sl. No.	BHEL standard term	If you quote	Loading factor in % for non-compliance
1	4 months form date of PO	5 months	2 %

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**Annexure – I(a)**

**BHEL / EDN, BANGALORE APPROVED TRANSPORTERS**

1. M/s Awagaman Road Carriers Ltd., Bangalore. (AWG)
2. M/s BLR India pvt., Ltd., Bangalore. (BLR)
3. M/s Delhi Assam Roadways corporation Ltd., Bangalore. (DRL)
4. M/s Indo Arya Central transport Ltd., Bangalore. (IACT)
5. M/s Prakash parcel Services, Bangalore. (PPS)
6. M/s Road Carrier of India, Bangalore. (RCI)
7. M/s Union Roadways Ltd., Bangalore. (URL)


**Annexure – I(b)**
**QUOTATION FORMAT PART – A TECHNICAL BID (INDIGENOUS)**

Sl. No.	Particulars	Bidder's confirmation
1	Price basis: Firm i.e., from the date of PO to completion of supply (Price Variation Clause not acceptable)	Acceptable / Not acceptable
2	Excise duty & Education cess: If applicable indicate %.	Applicable / Not applicable ED: _____ % Edu. Cess _____ %
3	Sale tax: If applicable indicate %	Applicable / Not applicable (a) VAT _____ % (b) CST _____ % against form C
4	Payment terms: (a) 90 % basic + 100% taxes, duties & freight charges within 30 days from the date of acceptance of equipment & balance 10% against submission of PBG.  (b) Deviation if any please specify Note: As per clause 12	(a) Acceptable / Not acceptable  (b)
5	BHEL's penalty clause: (a) Delay in delivery as per PO delivery date will result in penalty of 0.5 % per week subject to maximum of 10% on the value of the items not supplied/delayed. (b) Deviation if any Please specify Note: As per clause 14	(a) Acceptable / Not acceptable  (b)
6	Performance Bank guarantee (PBG): PBG for 10% of the basic material cost shall be furnished in the BHEL prescribed format as per clause 15.	Yes / No
7	Terms of delivery: (a) Ex EDN / BHEL, Bangalore (Free delivery to EDN/BHEL Bangalore including packing & forwarding charges) (b) Deviation if any Please specify Note: As per clause 17	(a) Acceptable / Not acceptable  (b)
8	Warranty: (a) 18 months from the date of delivery or 12 months from date of acceptance /commissioning, which ever is earlier (b) Deviation if any Please specify	(a) Acceptable / Not acceptable (b)
9	Delivery period: Indicate number of weeks from the date of issue of Purchase order	_____ Weeks
10	Validity: (a) Quotation should remain valid for a period of 90 days from the due date (b) Deviation if any Please specify	(a) Acceptable / Not acceptable  (b)

Signature of tenderer / with stamp



**PERFORMANCE BANK GUARANTEE**  
**( FOR INDIGENOUS PURCHASE ORDERS)**

**ANNEXURE-I(c)**

- Note: 1) To be executed in Rs 100/- Non-Judicial stamp paper.  
2) To be submitted to purchase Dept. directly.  
3) Do not enclose with Bank document.

**PERFORMANCE GUARANTEE**  
**( PROFORMA OF BANK GUARANTEE )**

THIS DEED OF GUARANTEE made and executed on the \_\_\_\_\_ day of \_\_\_\_\_ (year), by the \_\_\_\_\_ (Bank), registered under the Companies Act 1956/Nationalised Bank constituted under the Banking Companies (acquisition and transfer of undertakings) Act constituted under the State Bank of India Act / Subsidiary Banks Act, having its registered / head office at \_\_\_\_\_ represented herein by its Branch Manager / authorised representative Sri. \_\_\_\_\_ & Sri. \_\_\_\_\_ (Hereinafter called 'guarantor' which term shall mean and include its successors and assigns)

**IN FAVOUR OF BHARAT HEAVY ELECTRICALS LIMITED**

\_\_\_\_\_ (Buyer's Name), a company registered under the companies Act, 1956 having its registered office at BHEL House at Siri Fort , New Delhi-100 049 and its Electronics Division at Mysore road, Bangalore-26 (hereinafter referred to as the 'Company' Which term shall include its successors and assigns):

Whereas the company has placed an order on \_\_\_\_\_ (State the name of the company / firm and its address) (hereinafter referred to as the 'Supplier' which term shall mean and include its liquidators, successors and assign) for the supply of system under order / Contract No \_\_\_\_\_ Dt \_\_\_\_\_.

AND WHEREAS the supplier has agreed to supply the materials and carryout the works as detailed and in accordance with the terms set out in the said order/contract.

AND WHEREAS the company is not required to pay to the supplier a sum of Rupees \_\_\_\_\_ being the 10% of the value of the goods supplied / Works performed / Services rendered under the said order / contract between the supplier and the company, till the company is satisfied with the mechanical Warranties and the performance standards stipulated in the said order / contract between the company and the supplier has been duly fulfilled, except against a Bank Guarantee for the said sum of Rs \_\_\_\_\_ in favour of the company by reputed Bank, in which case the company has agreed to make payment to the supplier of the said sum of Rupees \_\_\_\_\_ being ( ...% ) of the value of the goods supplied / Works performed / Services rendered under the agreement between the supplier and the company and the Guarantor has at the request of the supplier, agreed to furnish this Guarantee subject to the terms and conditions stated below:

NOW THIS DEED WITNESSES THAT IN pursuance of the above said agreement, the guarantor hereby agrees and covenants With company is as follows :-



- 1) That during the period this contract of Guarantee remains effectual, the guarantor shall be liable in respect of the amount due and owing to the company in respect of the payments to the extent of Rs \_\_\_\_\_ (in words) \_\_\_\_\_ against any loss or damage caused to or suffered by the company by reasons of any breach of the terms of the said order / contract / Agreement by the supplier.
- 2) The Guarantor hereby undertakes to pay the amounts due and payable under this guarantee without any demur, merely on demand from the company intimating that the amount claimed is due by way of loss or damage caused to or suffered or would be caused or suffered by the supplier of any terms contained in the said order / contract. Any such demand made on the guarantor shall be conclusive as regards the amount due and payable by the Guarantor irrespective of the fact whether the Contractor / supplier admits or denies.
- 3) The Guarantor further agrees that the agreement herein contained shall remain in force and effect till all the supplies to be made / Works to be performed / Services to be rendered under the said order / contract / agreement are completed to the entire satisfaction of the company or till company certifies that the terms and conditions of the said order / contract / agreement have been fully and properly carried out by the said supplier and accordingly discharges the Guarantee. Unless a demand or claim under this guarantee is made on the guarantor in writing on or before the expiry of claim period indicated in clause 6 below , the guarantor shall be discharged from all the liability under this guarantee thereafter.
- 4) The guarantor further agrees with the company that the company shall have the fullest liberty without the consent of the guarantor and without effecting in any manner the obligations of the guarantor hereunder to vary any of the terms of the said order / contract / agreement or extend the time of performance by the said supplier from time to time or refrain from exercising the power exercisable by the company against the said supplier or to forebear or omit to enforce any of the terms and conditions relating to the said order / contract / agreement, and the guarantor shall not be relieved of its liability in whole or in part , by reason of any act, commission or forbearance on the part of the company or by reason of any such variation, or extension being granted to the said supplier or by reason of any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving the guarantor.
- 5) The guarantor undertakes not to revoke this guarantee during its currency except with the previous consent of the company in writing.
- 6) Notwithstanding anything herein above contained, the liability of the guarantor under these presents is restricted to Rs \_\_\_\_\_. The guarantee shall be in force till its expiry on \_\_\_\_\_ unless a demand is made on the guarantor within SIX months from the date of expiry, all the liability of the guarantor under this guarantee shall stand fully discharged. The decision of the claimant in regard to breach of contract is final and binding on the Bank.

IN WITNESS whereof, the guarantor, acting through its authorised representative has executed this deed of Guarantee on the day, month and year first above written.

(Seal of the Bank to be affixed )

WITNESS

- 1.
- 2.

**Annexure - II****General terms and conditions for the supply of Capital items (Imported – Two part bid)****SA-02**

Bidders are required to read the general terms & conditions carefully and submit their quotation covering all the points. Any order resulting from this enquiry shall be governed by the general terms and conditions listed below.

1. **TWO PART BID:** Quotation shall be submitted in two part bid.

**(b) Techno-commercial i.e., un priced Bid:** Techno-commercial bid shall be submitted with complete description of the equipment, specification compliances to the enquired specification and all the commercial terms & conditions indicated in the **QUOTATION FORMAT** (Annexure II (b)) preferably in the same format. Samples if asked and any other enclosures, which the supplier wish to submit like product catalogue etc., in a sealed envelope super scribed clearly as **“TECHNO-COMMERCIAL BID” with RFQ No. and DUE DATE.**

Un priced copy of price bid shall be enclosed with the techno-commercial bid  
Deviations to the specification / item description, if any shall be brought out clearly indicating **“DEVIATION TO BHEL SPECIFICATION”** without fail as a part of technical offer.

Compliance to pre qualification criteria shall be part of Techno-commercial bid.

Manufacturers name, their trade mark and brand if any should be invariably mentioned in the tender and illustrative leaflets giving technical particulars etc., are to be attached to the tender to facilitate consideration of the offer.

- (b) Price Bid:** Price bid should contain basic prices, discount if any, applicable taxes & duties, packing & forwarding charges (if applicable), Freight & insurances (if applicable) etc., in a sealed envelope super scribed clearly as **“PRICE BID” with RFQ No. and DUE DATE.** Erection and commissioning charges if any shall be included in the price bid.

Please indicate the rates in both figures and words. However in case of difference, the lowest of the two rates will be considered as correct.

Both these envelopes [(a) Techno-commercial i.e., un-priced BID (b) Price Bid] shall be kept in a single sealed envelope and super scribed clearly with **RFQ No. and DUE DATE.**

2. Tender (quotation) shall be submitted in a sealed envelope super scribed with **RFQ NUMBER / and DUE DATE** on it and the same must reach our office on or before the due date by **13:00 hrs.** Quotation can also be dropped in the tender box **“Sub Assembly ”**. Late quotations are liable to be rejected.

Tender shall be addressed to Sr.DGM / EM - ComI, Electronics Division, Bharat Heavy Electricals Ltd., Mysore road, Bangalore 560026.

3. The rates quoted against each item shall be in the same units stated in the enquiry. If the quotations are submitted in any other unit than specified, relationship between two sets of units must be furnished in the offer.
4. As far as possible, the quotations shall be free from corrections / overwriting. Corrections if any should be initialed with your seal and signature. Any typographical errors, totaling mistakes, currency mistakes, multiplication mistakes, summary mistakes observed in your priced bids, BHEL may consider whichever is beneficial to BHEL for evaluating of the lowest quote.
5. Please sign the offers. Unsigned bids/offers are liable for rejection.

6. All the bidders or their authorized representatives can witness opening of techno-commercial bid on the due date.
7. After evaluation of techno-commercial bids, price bids of only those who are technically accepted will be opened on a subsequent date, which will be intimated to the concerned in advance for witnessing of price bid opening.
8. The quantities in each item to be purchased may vary from quantities enquired according to the actual requirement at the time of placing the purchase order. Quantity discount if any should be mentioned in your offer.
9. BIDDERS shall indicate clearly Excise duty, Education cess, Sales Tax/VAT, Octroi, Entry tax, Service Tax as applicable for the quoted items. In the absence of clarity of these, any claim at a later date will not be entertained. Any changes in Taxes and duties after award of the contract will not be considered except such are those, which are imposed by Govt., notification within the contractual delivery. Seeking price amendments for change in Excise duty due to crossing of turnover limits will not be considered under any circumstances.
10. **TOTAL COST TO BHEL:** For imported scope of supply, **lowest Bid (L1)** is determined on the basis of the total cost to BHEL.  
Total cost to BHEL = Total basic value in foreign currency + FOB charges if any + Packing & Forwarding charges if any + Cost Insurance Freight (CIF) + Basic Custom Duty (BCD) + Counter Veiling Duty (CVD) + Educational Cess + Special Additional Duty (SAD) + Entry Tax + Loading factors for deviations to commercial terms & conditions.  
Purchase order will be placed on lowest bidder (L1) only.  
Note: Exchange rate ruling on the date of Tender opening (Techno-commercial / un-priced Bid) will be considered for converting foreign currency to Indian currency. Exchange rates published in Economic Times (TT selling) will be considered.
11. **FIRM PRICE:** Rates quoted should be firm and no enhancement in the rates and changes in the techno-commercial terms will be allowed once the quotation is accepted and order placed. If Erection & Commissioning is in supplier's scope, then the price shall remain FIRM till commissioning & handing over of the complete system. PVC clause is not acceptable.
12. **TERMS OF PAYMENT:** Payment will be made against “**SIGHT DRAFT**” on presentation of documents to our bankers. Payment through LC is also made subject to loading factors as per clause 28 (a).  
The payment terms are as follows.  
(a) 90% within 30 days from the date of acceptance of equipments & balance 10% against submission of PBG.  
  
(b) In case where 90 % & 10% payment terms are opted instead of PBG, 90 % Payment will be released within 30 days of acceptance. Balance 10% payment will be paid against submission of supplementary invoice after 12 months of warranty period + 6 months claim period.
13. **ADVANCE PAYMENT:** Quotations with payment terms of “**Advance**” will not be considered and such offers are liable for rejection commercially.
14. **PENALTY:** Failure to supply the item within the delivery date specified in the purchase order will make the supplier liable to an unconditional penalty of ½% (One half percent) of the value (basic material cost) of the goods in arrears per week subject to a maximum of 10%.  
If pre-shipment inspection is involved, date of issue of pre-shipment call by the vendor along with test certificates / test reports / certificate of conformance / calibration reports as proof of completion will be treated as date of dispatch for penalty calculation.  
In the absence of reports stated above, actual date of inspection will be considered as date of dispatch for penalty calculation.



15. **PBG:** Performance Bank Guarantee (PBG) to be submitted as per the BHEL prescribed format (Annexure-II c) for 10% of the basic equipment value obtained from any BHEL member banks.  
PBG shall be valid for 12 months + 6 months claim period (totally 18 months) from the date of dispatch.
16. **WARRANTY:** Goods dispatched shall have warranty period of 18 months from the date of dispatch or 12 months from date of commissioning, whichever is earlier.
17. **TERMS OF DELIVERY:** Price offered shall be for goods packed and delivered **F.O.B.** (named international Airport/Seaport) including packing, forwarding, Handling, Ancillary charges like processing of Sight Draft, Letter of credit (L/C), negotiation of bank documents, Export declaration, Certificate of origin etc.  
Packing shall be Airworthy/Seaworthy, best suitable for transshipment and to take care of transit damages.
- Indicate name of International Airport/Seaport
- Note: Name of Airport to be selected from any one of the ports indicated in Annexure-IIa, which are acceptable BHEL ports.  
BHEL will do customs clearance after payment of customs duty as applicable at the time of customs clearance.
18. **DELIVERY PERIOD:** Equipment shall be delivered, as per the requirement of the specific R F Q / tender. Offers such as ex-stock subject to prior sale or delivery at the earliest will not be entertained.  
In case of PO involving LC, 15 days will be granted for giving order acknowledgement beyond which it will be treated as delay and considered as penalty zone if overall delivery does not take place in agreed delivery period.  
Delivery will be reckoned from the date of acknowledgement from freight forwarder after receipt of goods / AWB
19. **VALIDITY:** Quotation should remain valid for a period of **90 days** from the due date.
20. **RISK PURCHASE:** The purchaser at his discretion may also make purchase of the materials **NOT** supplied in time at the **RISK & COST** of the supplier. In this event, it will be obligatory on the part of the supplier who fails to supply the goods in time to make good to BHEL any loss due to such risk purchase.
21. BHEL reserves the right to RE-FLOAT/REJECT/CANCEL this TENDER ENQUIRY (RFQ) without assigning any reason or cause thereof. Quotes received against this TENDER ENQUIRY are subject to and governed by all these terms and conditions. BHEL's decision will be final in awarding of the contract and binding on all vendors.
22. **REVERSE AUCTION** : BHEL reserves the right to go for reverse auction at any point of time before opening of price bid.
23. BHEL reserves the right to Accept / Reject the offer in full or part there off depending on BHEL's requirement.
24. **POST ORDER REQUISITS:**  
(a) Pre-shipment inspection at your works, if required, will be done by BHEL. Required assistance to be provided at the time of pre-shipment inspection.  
(b) Test certificates and warranty certificates as stipulated at the time of ordering shall be furnished.



- (c) Items shall be dispatched with road/air/sea worthy packing. Any rejection due to poor packing shall be to supplier's account.
- (d) Any rejection should be made good or replaced immediately without any extra cost to BHEL.
- (e) Wherever commissioning is involved, it shall be carried out on a turnkey/supervisory basis. Scope of work includes design, fabrication, supply, installation, commissioning and trial run till satisfactory performance level is reached as certified by the user department.
- (f) Copies of operation & instruction manuals to be supplied along with the equipment or before as per specification.
- (g) BHEL will not be responsible for any loss, damage or injuries to staffs sustained during erection/commissioning. Supplier shall ensure compliance with all statutory requisites as laid down by local bodies, state & Central Government.
- (h) Original invoice (2 copies) to be submitted at the office of DGM / EM -Coml for arranging payment.
- (i) As BHEL is also making payment through EFT, banker details in the prescribed format to be submitted.
- (j) Performance Bank Guarantee to be executed on Rs.100/- non-judicial stamp paper as per BHEL prescribed format ( copy attached).

25. **PAST SUPPLIES / PERFORMANCE:** Detailed list of past supplies of quoted equipments for the last three years shall be enclosed along with the bid indicating customer, quantity supplied and year of supply. Performance certificate issued by customers may also be enclosed along with the bid.
26. Any dispute arising out of this shall be referred to the sole arbitration of Head of Materials Management, SA - EDN, Bangalore or any other officer nominated by him and his decision shall be final and binding on the parties. The venue of the arbitration in all cases shall be Bangalore.
27. All suits in respect of this lie in the court of Bangalore only.

**28. LOADING FACTORS:**

Loading factors as detailed below will be added to the quoted price (basic) to evaluate the lowest quote for non compliance of BHEL standard commercial terms.

**A. For non compliance of BHEL standard Terms of payment:**

Sl. No.	BHEL standard term	If you quote	Loading factor in % for non-compliance
1	100% against "SIGHT DRAFT" on presentation of dispatch documents to our Bankers and issue of PBG.	(a) 100% Through Letter of Credit (LC) & issue of PBG	(a) 3.5 %
2	90% against "SIGHT DRAFT" + Balance 10% (wherever PBG is not accepted) in lieu of PBG	(b) 90% Through Letter of Credit (LC)	(b) 2.25 %

**B. For non compliance of Penalty clause:**

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	Penalty of 0.5% per week subject to max. of 10% on the value of the items not supplied / delayed	Not agreed	10 %
		5% max., agreed	5%
		Other than the above	10% - agreed max. %

**C. For non compliance of Performance Bank Guarantee (PBG):**

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	PBG for 10% of the basic material cost shall be furnished in the BHEL prescribed format	Not agreed	10 %
		5% agreed	5 %
		Other than the above	10% - (minus) agreed max. %

**D. For Non conformance to delivery requirement of BHEL**

BHEL requires the delivery of items within 4 months from the date of commercially clear PO. Delivery quoted more than 4 months will be subjected to a loading factor of 0.5 % per week as under:

Sl. No.	BHEL standard term	If you quote	Loading factor in % for non-compliance
1	4 months form date of PO	5 months	2 %

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**ANNEXURE-II(a)**
**LIST OF INTERNATIONAL AIRPORTS**

Sl. No	Country	Air Ports
1	Austria	Vienna, Linz, Graz
2	Australia	Sydney, Melbourne, Perth
3	Belgium	Antwerp, Brussels
4	Canada	Toronto, Montreal
5	China	Shangai
6	Cyprus	Lamaca
7	Czech Republic	Prague (Via Frankfurt)
8	Denmark	Copenhagen
9	Egypt	Cairo
10	Finland	Helsinki
11	France	Paris (Rossy), Lyon
12	Germany	Darmstadt, Manihem, Nurnberg, Hamburg, Stuttgart, Munich, Koln, Dusseldorf & Hannover, Frankfurt, Berlin
13	Hongkong	Hongkong
14	Italy	Rome, Milan, Turin, Bologna, Florence
15	Ireland	Dublin
16	Isrel	Telaviv
17	Japan	Tokyo, Osaka
18	Malaysia	Kaulalampur, Penang
19	Neatherlands	Amsterdam, Rotterdam
20	Newzealand	Auckland
21	Norway	Oslo
22	Oman	Muscat
23	Philiphines	Manila
24	Romania	Bucharest
25	Russia	Moscow
26	Saudi Arabia	Riyad
27	Singapore	Singapore
28	Slovakia	Bartislawa
29	South Africa	Johannesburg, Durban
30	South korea	Kimpo
31	Spain	Barcelona
32	Sweden	Stockholm, Gothenburg, Milano
33	Switzerland	Basle, Zurich, Geneva
34	Taiwan	Taipei
35	U.A.E.	Dubai
36	U.K.	Landon (Heathrow), Newcastle, Oxford, Cheltham, Bristol, Wellingborough, Birmingham, East Midland, Manchester, Leeds, Glasgow.
37	U.S.A.	Newyork, Chicago, Sanfrancisco, Los Angeles, Atlanta
38	Ukraine	Kiev

## Annexure II(b)

**QUOTATION FORMAT PART – A TECHNICAL BID (IMPORTED)**

Sl. No.	Particulars	Bidder's confirmation
1	Price basis: Firm i.e., from the date of PO to completion of supply [Price Variation Clause (PVC) not acceptable]	Acceptable / Not acceptable
2	Terms of Payment: Against “ <b>SIGHT DRAFT</b> ” on presentation of documents to our bankers. (a) 90 % is payable on negotiation of complete set of original documents on receipt and acceptance of equipment & balance 10% against submission of PBG  (b) Deviation if any please specify Note: as per clause 12	(a) Acceptable / Not acceptable  (b)
3	BHEL's penalty clause: (a) Delay in delivery as per PO delivery date will result in penalty of 0.5 % per week subject to maximum of 10% on the value of the items not supplied/delayed.  (b) Deviation if any Please specify Note: as per clause 14	(a) Acceptable / Not acceptable  (b)
4	Performance Bank guarantee: PBG for 10% of the basic material cost shall be furnished in the BHEL prescribed format as detailed in clause 15.	Yes / No
5	Terms of delivery: (a) F.O.B international Airport/Seaport as per clause 17 Indicate name of International Airport/Seaport  (b) Deviation if any Please specify	(a)Acceptable / Not acceptable  (b)
6	Warranty: (a) 18 months from date of delivery or 12 months from date of acceptance / commissioning, which ever is earlier.  (b) Deviation if any Please specify	(a)Acceptable / Not acceptable  (b)
7	Delivery period: Indicate number of weeks from the date of issue of Purchase order	_____Weeks
8	Validity: (a) Quotation should remain valid for a period of 90 days from the due date (b) Deviation if any Please specify	(a) Acceptable / Not acceptable  (b)

Signature of tenderer / with stamp



**PERFORMANCE BANK GUARANTEE**  
**(FOR FOREIGN PURCHASE ORDERS)**

ANNEXURE-II ( c )

BANK NAME AND ADDRESS

Electronics Division  
Bharat Heavy Electricals Limited ,( B.H.E.L.)  
Mysore Road, P.B.No. 2606  
BANGALORE- 560 026  
INDIA

Dear Sirs,

**Ref: CONTRACT PERFORMANCE GUARANTEE.**

WHEREAS you have entered into a contract reference No PO NO. \_\_\_\_\_ with M/s \_\_\_\_\_ having its registered office at \_\_\_\_\_ for the supply of \_\_\_\_\_ as detailed in your purchase order No. \_\_\_\_\_ which is hereinafter referred to as "the said contract" and WHEREAS M/s \_\_\_\_\_ has undertaken to produce a Bank Guarantee for 10% ( Ten Percent ) of \_\_\_\_\_ the contract price amounting to \_\_\_\_\_ ( \_\_\_\_\_ ) to secure its obligations to Electronics Division, BHEL having its registered office at New Delhi for the performance of the contract including the warranty of the equipment supplied, We \_\_\_\_\_ Bank , \_\_\_\_\_ hereby expressly, irrevocably and unreservedly undertake and guarantee as principal obligors on behalf of M/s \_\_\_\_\_ that in the event Bharat Heavy Electricals Ltd. (B.H.E.L.) declares to us in writing that M/s \_\_\_\_\_ has not fulfilled any obligation according to the contractual obligation of the said contract, to pay you on demand and without demur to Bharat Heavy Electricals Ltd., Electronics Division , Mysore Road, P.B.No. 2606, Bangalore-560 026, India an amount of \_\_\_\_\_ (in words \_\_\_\_\_ ) subject to as may be determined below:

- 1) Notwithstanding any right M/s. \_\_\_\_\_ may have directly against you or any disputes raised by M/s \_\_\_\_\_, Your written demand shall be conclusive evidence to us that repayment is due under the terms of the said contract and shall be binding on us.
- 2) We shall not be discharged or released from this undertaking and Guarantee by any arrangements, variations made between you and M/s. \_\_\_\_\_ with or without our consent and Knowledge or by any alterations in the obligations of M/s. \_\_\_\_\_ by any forbearance whether as to payment, time, performance or otherwise.
- 3) This guarantee shall remain valid until the end of twenty-four weeks after the close of the warranty period or until the same is reported by BHEL to us whichever is earlier.
- 4) We agree and undertake not to revoke this guarantee during its validity unless discharged in writing by you subject to the provision of clause (7) below.



- 5) This guarantee shall be a continuing guarantee subject to the foregoing and shall not be discharged by any change in the constitution of the Bank or M/s. \_\_\_\_\_.
- 6) This guarantee shall be governed by and constructed in accordance with the Laws of India.
- 7) At any time \_\_\_\_\_ Bank may render this guarantee null and void by paying to Bharat Heavy Electricals Ltd. the full amount being \_\_\_\_\_ (in words \_\_\_\_\_ )

For and on behalf of Bank  
by its Authorised Signatory.



Annexure - II (d)

BHEL MEMBER BANKS

PBG SHALL BE ISSUED FROM THE FOLLOWING BANKS OR THEIR BRANCH OFFICES ONLY

State Bank of India, CAG Branch 10 <sup>th</sup> Floor, Vijaya Building Barakamba Road, NEW DELHI - 110 001	Deutsche Bank, Tolstoy Marg, NEW DELHI - 110 001
Canara Bank, 74, Janpath, NEW DELHI - 110 001	HDFC Bank Ltd, 5 <sup>TH</sup> floor, H T House, K G Marg, ,NEW DELHI - 110 001
Punjab National Bank, 74 Janpath, NEW DELHI - 110 001	CITI Bank NA, Jeevan Vihar Building, Sansad Marg NEW DELHI - 110 001
Bank of Baroda, Corporation Banking Branch, 11 <sup>th</sup> Floor, BOB Building, Sansad Marg, NEW DELHI - 110 001	Standard Chartered Bank, H2, Block Connaught Place NEW DELHI - 110 001
State Bank of Hyderabad, Surya Kiran Building, K G Marg, NEW DELHI - 110 001	ICICI Bank Ltd, ICICI Tower, Bisham Pitamah Marg, Pragati Vihar, NEW DELHI - 110 003
State \Bank of Mysore, Antrikash Bhawan, K G Marg, NEW DELHI - 110 001	IDBI Bank Ltd, 19 K G Marg, Surya Kiran Building, NEW DELHI - 110 001
State Bank of Mysore, Industrial Finance Branch, 18, Ramanashree Arcade,, M G Road, BANGALORE 0 560 001	HSBC Ltd, ECE House, 28K G Marg, NEW DELHI -110 001
State Bank of Travancore, Travancore House, IF Branch, NEW DELHI - 110 001	