

**PR Terms and Conditions for the BEL Part Numbers: 480776110168**

1. Vendor should supply the items as per the vendor reference meeting the specifications (Both Technical and Environmental at Annexure – 1) provided in the RFP.
2. **Delivery schedule** : 6 Months ARO
3. ATP should be prepared by the supplier and obtain the approval from the authorized representative from BEL within 60 days ARO by the supplier.
4. **Inspection, Testing and Acceptance**: It is the responsibility of the vendor to carry out physical inspection and Acceptance testing as per the approved ATP in the presence of Reps from BEL. Supplier should intimate to M/s BEL about the inspection schedules 30 working days in advance before delivery date. **ESS should be conducted by the supplier at their premises in the presence of representative from BEL.**
5. **Documentation**: Each item should be supplied with one set of documentation in both hard and soft (digitized) copies consisting of user hand book and Technical Manual.
6. **Support**: Supplier should provide support during system integration testing and Factory acceptance Testing (FAT).
7. **Training**: The supplier should provide both operator and maintenance training for user representatives at BEL, Hyderabad.
8. Supplier should extend support to BEL during Pre-delivery inspection of the items supplied by the supplier to the End User at BEL.
9. **Warranty**: 36 months from the date of delivery. Supplier should maintain sufficient spares to keep the down time of the system should not be more than 15 days during warranty period.
10. BEL Pat Number should be labeled on all Parts supplied by the supplier.
11. MTBF details should be provided within 60days ARO.

P@Selly  
212746.



## Technical Specifications of 19" Rack mountable foldable display KB

(BEL P/N: 480776110168)

### ELECTRICAL SPECIFICATIONS:-

| Sl.No | DESCRIPTION                   | SPECIFICATIONS   |
|-------|-------------------------------|--|
| 1.    | System Configuration          | Foldable Display with keyboard & touch pad for I/F with workstation CPU through VGA & DP   |
| 2.    | Diagonal                      | 18.5"/19" LCD with LED back light  |
| 3.    | Mounting mechanism            | 19" rack mountable with rack mounting Kit  |
| 4.    | Resolution                    | Min.1920 x 1080(16:9 Aspect Ratio)   |
| 5.    | Brightness                    | 500 cd/m <sup>2</sup>  |
| 6.    | View Angle                    | 89/89 (H) ; 89/89 (V) (Typ.)   |
| 7.    | Contrast Ratio                | 1000 : 1 (Typ.)  |
| 8.    | Display colors                | Minimum 16.2 million colors  |
| 9.    | Display Interface             | One VGA and one DP   |
| 10.   | Keyboard and Touch pad        | Rugged Keyboard with backlight silicone rubber Keys and touch pad with left right buttons. Should be compatible with workstation CPU (Intel I7 10th gen or above )   |
| 11.   | Keyboard and Touch pad layout | Minimum 87 keys with touchpad.<br>Touchpad is located at bottom middle of the keyboard.  |
| 12.   | Keyboard and Touch pad I/F    | USB  |
| 13.   | Connectors                    | <ul style="list-style-type: none"><li>➤ D38999 series Circular connectors for Power i/p.</li><li>➤ VGA &amp; DP port with locking connectors or specify any MIL grade connector.</li><li>➤ USB circular connector for keyboard and touch pad</li><li>➤ All connector should have dust caps with chain.</li></ul> |
| 14.   | Accessories                   | <ul style="list-style-type: none"><li>➤ 19" rack mounting kit with proper sliding mechanism.</li><li>➤ One set of mating connectors for all the connectors mounted on foldable display</li><li>➤ One set of mating cables (length: 1.5m) with proper back shell sleeves and dust caps for</li></ul>              |



|     |                              |  |
|-----|------------------------------|--|
|     |                              | all the connector mounted on the foldable display. |
| 15. | Power Supply                 | Single Phase AC 230V +/- 10%, 50Hz +/- 5Hz         |
| 16. | Environmental Specifications | As per Annexure -1                                 |

#### **MECHANICAL SPECIFICATIONS:-**

| S.NO | DESCRIPTION                  | SPECIFICATIONS  |
|------|------------------------------|---|
| 1.   | Size                         | 19" rack mountable  |
| 2.   | Height                       | Standard 2U (Max)   |
| 3.   | Slides                       | Provision for fixing Slides to be provided  |
| 4.   | Keyboard and Touch pad panel | <ul style="list-style-type: none"> <li>➤ Minimum 87 keys with touchpad. Touchpad is located at bottom middle of the keyboard.</li> <li>➤ Keyboard with touch pad panel should be detachable and replaceable for maintenance purpose if in case of failure.</li> </ul> |
| 5.   | Color                        | RAL7035(Light grey), Mat Finish   |

*P. Chakraborty*  
21/2/16



## 5.0 ENVIRONMENTAL SPECIFICATIONS (QT & ESS):-

### 5.1 QUALIFICATION SPECIFICATIONS: (AS PER JSS 55555)

| SL.NO | TYPE OF TEST                   | REFERENCE   | SPECIFICATIONS  | REMARKS   |
|-------|--------------------------------|---|---|---|
| 1     | Vibration (Endurance)          | Ref. JSS-55555:2002<br>Test No. 28<br>Table No. 4.28.2<br>SI. No. 1b  | Sinusoidal sweep vibration:<br>5 to 8 Hz : $\pm 6$ mm constant displacement.<br>8 to 500 Hz : $\pm 1.5g$ constant acceleration.<br>Sweep rate : 1 oct/min<br>Equipment will be in ON condition.<br>Test duration : 1 hour in each X,Y & Z axis.   | Carry PC at the end of testing on each axis   |
| 2     | High Temperature (Operational) | Ref. JSS-55555:2002<br>Test No. 17<br>Procedure 6                     | Test condition K,<br>Temp : $+55^{\circ}\text{C} \pm 3^{\circ}\text{C}$ .<br>Test duration : 16 hours.  | PC during last 30 minutes.  |
| 3     | High Temperature (Storage)     | Ref. JSS-55555:2002<br>Test No. 17<br>Procedure 6                     | Test condition K,<br>Temp : $+70^{\circ}\text{C} \pm 3^{\circ}\text{C}$ .<br>Test duration : 16 hours   | PC after 2-4 hours recovery at the room temperature   |
| 4     | Damp Heat                      | Ref. JSS-55555:2002<br>Test No. 10                                    | $+40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , 95 $\pm 5\%$ RH<br>Test duration : 16 hours   | PC during last 30 minutes.  |
| 5     | Low Temperature (Operational)  | Ref. JSS-55555:2002<br>Test No. 20<br>Procedure 4                     | Test condition H,<br>Temp : $-10^{\circ}\text{C} \pm 3^{\circ}\text{C}$ .<br>Test duration : 16 hours   | PC during last 30 minutes.  |
| 6     | Low Temperature (Storage)      | Ref. JSS-55555:2002<br>Test No. 20<br>Procedure 4                     | Test condition J,<br>Temp : $-20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ .<br>Test duration : 16 hours   | PC after 2-4 hours recovery at the room temperature   |
| 7     | Altitude                       | Ref. JSS-55555:2002<br>Test No. 3<br>Table No. 4.3.1<br>Procedure 1   | Temp : $-10^{\circ}\text{C} \pm 3^{\circ}\text{C}$ .<br>Altitude : 5000 meters for 16 hrs   | PC during last 30 minutes.  |
| 8     | Rapid Temperature Cycling      | Ref. JSS-55555:2002<br>Test No. 22<br>Table No. 4.22.1<br>Procedure 2 | $-10^{\circ}\text{C} \pm 3^{\circ}\text{C}$ for 3hrs,<br>$+40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , RH 95% for 3 hrs.<br>Transfer Time: Not exceeding 15 minutes.<br>Number of Cycle: 04   | PC during last half an hour of each low and high temperature dwell. Performance check after 2-4 Hrs recovery at room temperature. |
| 9     | Corrosion (Salt)               | Ref. JSS-55555:2002<br>Test No. 9                                     | Sodium Chloride (NaCl) and other chemicals composition as given in JSS.<br>Volume of spray: one percent per hour of the volume of chamber Exposure at temp of $35^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and RH of 90 to 95 percent.<br>Spraying for 2 Hrs and exposure for a period of 22 hours.3 cycles.  | May be done on separate sample/ equipment.  |
| 10    | Tropical exposure              | Ref. JSS-55555:2002<br>Test No. 12                                    | Test condition B<br>From $+20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ to $+35^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and RH 95% in 03 Hrs.<br>At $35^{\circ}\text{C}$ and 95% RH for 12 Hrs. Lower the temp from $35^{\circ}\text{C}$ RH 95% to $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ in 03 Hrs. At $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 06 Hrs.<br>Total 24 Hrs one cycle.14 cycles. | May be done on separate equipment (Representative UUT).   |
| 11    | Mould growth test              | Ref. JSS-55555:2002<br>Test No. 21                                    | Prepare the cultures, mould suspensions, control strips. Wet the entire surface with mixed spore suspensions for 15 minutes.<br>Incubate at $29^{\circ}\text{C}$ , 90%RH $\pm 100\%$ .<br>28 days incubation.   | May be done on separate sample/ equipment.  |

| SL.NO | TYPE OF TEST       | REFERENCE  | SPECIFICATIONS                                    | REMARKS  |
|-------|--------------------|--|---|--|
| 12    | Roadability / Bump | Ref. JSS-55555:2002<br>Test No. 5<br>Table No. 4.5.1 | 25g, 6 ms pulse duration for 4000 $\pm 10$ bumps. | EUT shall be unpacked and switched OFF condition shall be fastened to the bump machine either directly or by mean of fixture |

### 5.2 ESS SPECIFICATIONS :

| SL.NO | PARAMETER                             | SPECIFICATIONS/ TEST CONDITION TEST DURATION   | REMARKS                       |
|-------|---------------------------------------|--|-------------------------------|
| 1     | Random vibration-Pre Thermal cycling  | 20Hz-80Hz, sloping at +3dB/octave;<br>80Hz to 350Hz, 0.04 g <sup>2</sup> /Hz PSD. 350-2000 Hz, sloping at -3 dB/octave.<br>5min. per axis on all three axes.   | Eqpt.will be ON and carry PC. |
| 2     | Thermal cycling.                      | $-10^{\circ}\text{C}$ to $+55^{\circ}\text{C}$<br>Dwell AT $-10^{\circ}\text{C}$ and $+55^{\circ}\text{C}$ for 90mins.<br>No. of cycles: 10<br>Rate of cooling/heating : $5^{\circ}\text{C}/\text{minute}$ | Eqpt.will be ON and carry PC. |
| 3     | Random vibration-Post Thermal cycling | 20Hz-80Hz, sloping at +3dB/octave;<br>80Hz to 350Hz, 0.04 g <sup>2</sup> /Hz PSD. 350-2000 Hz, sloping at -3 dB/octave.<br>5min. per axis on all three axes.   | Eqpt.will be ON and carry PC. |

### 5.3 EMI/EMC SPECIFICATIONS: AS PER MIL STD - 461E/F

CE102, RE102, CS101, CS114, CS115, CS116, RS103.

PART NO. -- XXXX XXX XXX XX

|            |  |            |  |              |          |                    |      |               |        |               |     |
|------------|--|------------|--|--------------|----------|--------------------|------|---------------|--------|---------------|-----|
| ISS NO.    |  | CN NO.     |  | DATE         | CHANGE   | DO                 | ENGR | APVD          | NUMBER | ITEM          | QTY |
| 00         |  | -          |  | 20.06.21     | ORIGINAL |                    |      |               |        |               |     |
| MATERIAL   |  | FINISH     |  | PROJECTION   |          | DIMMS IN MM        |      | NEXT ASSEMBLY |        | HELD IN       |     |
| DRAWN      |  | CHECKED    |  | ENGINEER     | SCALE    | TITLE              |      |               |        |               |     |
|            |  |            |  | SHARAN KUMAR | NTS      | INTERNAL EQUIPMENT |      |               |        |               |     |
| DT20.06.21 |  | DT20.06.21 |  | DT20.06.21   | DOC CODE | NUMBER             |      | SHEET         |        | ISSUE         |     |
|            |  |            |  |              | PP       | XXXX XXX X         |      | 001           |        | 00            |     |
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