

East Central Railway

Office of the  
GM(S&T)/ECR/HJP

Dated:- 09.05.2024

No. ECR/S&T/Policy/2024(Comp.no.-275900)

CSTE/Con/South & North/MHX,  
Sr.DSTEs /DHN,DDU,DNR,SEE & SPJ  
Dy.CSTE/Works/DHN,DDU,DNR & HJP  
E.C.Railway

**Signal Policy No.10/2024**

**Sub:-** Structured testing of EI/PI/RRI system before commissioning.

A lot of EI systems are being commissioned/alterd in ECR for modernizing the signaling systems. It is therefore necessary that the testing of EI/PI/RRI be structured to ensure thoroughness. Accordingly, a testing guideline is enclosed for guidance of testing the EI/PI/RRI before commissioning.

Divisions and executing units are advised to follow the same. It should be noted that this is an indicative list and other testing as deemed fit may also be undertaken in the field for ensuring safety of train operation.

This is issued with the approval of PCSTE/ECR.

DA: as above.

(D.K.Chand)  
Dy.CSTE/Sig.  
for GM (S&T)/HJP

Copy to :- (i) GM/RVNL/RNC  
(II) GM/IRCON/PNBE

Testing to be done before commissioning of EI/PI/RRI

|  | Tests and check   | Method/protocol/Special instructions  | Testing certificate/ document  |
|--|---|---|--|
| <b>Common Tests for Relay room wiring in EI/PI/RRI</b> |   |   |  |
| 1  | Wire count test (IRSEM-2021 Para 19.8.5(b))   | Contact occupancy test to be done for each relay as per the contact analysis made.<br><br>To be done at SSE level.  | Blue tick mark on Approved interface wiring diagram and Bit chart.   |
| 2  | Wiring continuity & insulation Test (IRSEM-2021 Para 19.8.5(a))   | <ul style="list-style-type: none"> <li>Insulation test for all indoor wires to be done with Megger before insertion of relays &amp; EI cards.</li> <li>Wire continuity test shall be done with meter, before relay plugging.</li> </ul><br>To be done at SSE level. | Red ink tick mark for insulation test and Green tick mark for continuity test on Approved Interface Diagram and Bit Chart  |
| 3  | <b>Electronic Interlocking</b>  |   |  |
| a  | Bit chart wiring verification (Pre-commissioning checklist for EI)  | To be done by SSE, 10% test by ASTE/DSTE  | On bit chart.  |
| b  | <ul style="list-style-type: none"> <li>FAT (Factory Acceptance test) for Station specific Application Logic</li> <li>Square sheet Test</li> <li>Test should be done with simulated input for IBS/Inter cabin Slot control/Siding control/LC gate control etc.</li> <li>Negative test</li> </ul> | FAT testing may be done by ASTE/DSTE in either Factory premises or at setup in Zonal Railway or at setup in Division  | <ul style="list-style-type: none"> <li>On Approved Selection Table (ST)/Table of Control(ToC), observations recorded to be got attended by OEM</li> <li>On Approved square sheet by field executive.</li> <li>FAT Certificate should be signed along with Name &amp; Designation by the Officer conducting FAT</li> <li>Negative test to be done as per ST/ToC. Signal should be taken OFF then all other gears which do not affect the signal should be failed to check that the signal does not</li> </ul> |

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|   |  |  | get put back.   |
| c | Technical System Application Approval  | Latest Rly.Board/RDSO guidelines for approval of Technical System Application to be followed   | Approval by PCSTE for new EI/alterations in existing EI up to 200 routes and by RDSO for >200 routes along with recommendations of PCSTE. |
| d | Relays and cards plugging and charging of EI.  | Relay plugging as per interface diagrams.  | Visual observations to be recorded in pre-commissioning check list format.  |
| e | Power wiring test, checking separation of dirty wires, insulation of ladder from wall, Earth, communication test etc.  | Requirements given in Technical System Application for EI  | Cable trough diagram and relay room plans submitted to be verified  |
| f | <ul style="list-style-type: none"> <li>• SAT: Application Logic software with Mock Panel/ Simulation Panel wiring &amp; VDU</li> <li>• Square sheet testing</li> <li>• Negative Testing</li> </ul> | <ul style="list-style-type: none"> <li>• At two level that is 1<sup>st</sup> level by ASTE/DSTE of Executing Agency and 2<sup>nd</sup> level by O/L ASTE/DSTE and 20% Test check by JAG of Executing Agency and in case of PSU 20% test check by JAG of O/L</li> <li>• At Officer level</li> </ul> | On HQ Approved ST/RC/ToC and Square sheet   |
| g | Bit chart correspondence test with simulation panel.   | LED indications of bit chart to be verified by break test from CT rack or observing relay status by SSE & ASTE/DSTE of Executing Agency  | Bit chart test format.  |
| h | VDU Layout Verification & commands verification.   | Embedded PC as per RDSO TAN and typical Video Layout as per approved drawing.  | Video Panel Diagram.  |
| i | Failure Functional test  | All tests related to failure functions of EI   | Format for pre-comm. Check list.  |
| j | System changeover test.  | Redundancy functionality, KLCR release functions etc. need to be checked and verified.   | To be recorded in Pre-commissioning checklist.  |
| k | Fail safe related inspection test (FCOR test)  |  | Format for pre-commissioning check list.  |

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| l                                 | Other Tests prescribed in Pre-Comm. check list.   |   | Format for prescribed by RDSO.   |
| m                                 | Any other test prescribed by OEM, RDSO or HQ or any other test deemed necessary.  |   |  |
| n                                 | Quality and integrity of the installation is complete responsibility of the OEM and OEM certificate regarding this should be taken before commissioning of any installation   |   | OEM Certificate to be handed over to O/L after commissioning of any new EI.  |
| <b>4</b>                          | <b>In case of PI/RRI</b>  |   |  |
| a                                 | <ul style="list-style-type: none"> <li>• System Testing against approved ST/LT/ToC&amp; SIP</li> <li>• Square sheet testing</li> <li>• Operating &amp; Indication Panel verification as per approved Panel Diagram</li> </ul> | 100% testing by SSE & ASTE/DSTE of the Executing Agency and 20% test check by JAG Officer of Executing Agency   | Testing as per approved ST/LT/ToC and testing recorded to be signed by Officials with their names and designations.      |
| <b>Common Tests for EI/PI/RRI</b> |   |   |  |
| 5                                 | Gear correspondence test. (system integrity test)   | All field gears to be tested for proper functioning as per SEM.<br>To be done during NI before commissioning. All points, track circuits, signal aspects, slots. LC gates, subsidiary signals etc integrity testing to be done. | Individual gear test card needs to be filled.<br><br>Reconnection of EI/gears.<br>Safety message.<br>Safety certificate. |
| 6                                 | Data logger configuration and validation test.  | Data of EI maintenance terminals and data logger should be matched.<br><br>Synchronization of clock of Data Logger, EI & VDU PC to be ensured   | Data logger validation sheets.<br>Exception logic configuration test sheet.  |

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|   |   | Relays room key locking and alarm testing. Transmission Data check inspection. Real Time synchronous check inspection.                            |   |
| 7 | Automatic Fire Detection & Alarm System and Fire extinguisher testing as per OEM's Manual | CO2 type Fire Extinguishers shall be provided by Executing Agency for Relay room, IPS room and battery room of a new EI/RRI/PI installation       | <ul style="list-style-type: none"> <li>• Testing should be done as per Pre-comm. Check list of the Equipment.</li> <li>• Aspiration type smoke detector shall be provided in air-conditioned relay room.</li> <li>• Linear Heat Sensing (LHS) cable shall be laid in cable trays, cable troughs, &amp; cable bunch etc.</li> <li>• Potential free contacts of AFDAS should be wired to interface with Data Logger.</li> </ul> |
| 8 | PCSTE's sanction for taking NI  | NI Application duly filled in by Executive In-charge with sign of Sr.DSTE of the division should be put up for PCSTE's sanction through their HoD |   |