



भारत सरकार Government of India
रेल मंत्रालय Ministry of Railways
रेलवे बोर्ड (Railway Board)



No. 2020/TeleDev/Implementation of LTE

Dated: 15-02-2023

**Director General,
RDSO, Manak Nagar,
Lucknow.**

Sub: Trials of 4G LTE-R systems in 500RKM in SCR

- Board (MI, MF and CEO&CRB) have approved a Trial of 4G LTE-R system on 500RKM in SCR against the itemized works sanctioned under umbrella work appearing at item 589 of SCR Pink Book 2023-24 to be done by RDSO with support from CDoT and SCR.
- Sections where trials are to be planned in full or in-part are given as below.

SCR Book (2023-24)	Pink Item	Kms	Section covered	Provided with Kavach of make
589		163.32	Secunderabad-Vikarabad-Bidar	HBL
		240.51	Bidar-Parbhani	KERNEX
		188.22	Secunderabad-Gadwal	MEDHA
		112	Vikarabad -WADI	MEDHA
		94	Secunderabad - Raghunathpalli	Kavach of Quadrant and GGTronics under installation.

- Following are the terms and conditions for the trial:
 - The system and features should conform to relevant requirements of IR as per 3GPP standards release 14/15.
 - CDoT CORE to be used for the PoC trial as is being done now in the SC – LPI section.
 - Mission Critical Application (Voice, Video and Data) (MCX), Kavach application server (KAS), Loco Exchange Server (LEX), Centralized Network Monitoring System (e-NMS to be made part of CNMS) to be part of CORE offering from CDoT.
 - e-NodeBs of different OEMs, both established and new, like Tejas, CDoT, Lekha, Signaltron, Resonous, Ericsson, Nokia etc. may be tried in the trials section. OEMs of e-NodeBs who propose to partner in PoC trials shall get their equipment tested as per RDSO/CoE specifications and plans.
 - RDSO shall decide the section to be allotted to an OEM for RAN.
 - One make of eNodeB shall be used to cover about 30-50km continuous stretch so that performance of a particular make is established in terms of coverage, cell-edge throughput, call handing over to same as well as other makes of eNodeBs, interoperability, checking call handing over at maximum permissible speed on IR.
 - Considering migration to 5G in future, Railways may specify procurement of 4G equipment which could be upgraded to 5G with minimal change. The PoC Test/Trials should therefore include testing of not only 4G RANs but also 4G upgradable to 5G RANs as per railways' requirements.

2020/TeleDev/ImplementationofLTE

- 1/3061269/2023.8 Necessary requisite test and measurement equipment for the survey, drive test and functional testing of the system may also be procured that can later be used in the COE for training purpose.
- 3.9 Functional Requirements Specifications of LTE for Proof of Concept for Indian Railways issued vide RDSO-TELE-LKO(Tech)/3/2019-0/o ED/Tele-1/ RDSO Date: 01.06.2022 with latest amendments be used for the Trials. Supplementary FRS and Test Plans for 4G upgradable to 5G equipment may be issued by RDSO in due course.
4. Expected Outcome of the Trial are as under but not limited to
- 4.1 Firming up the FRS for 4G LTE-R 4G along with the system configuration to be deployed on IR.
- 4.2 Enabling Indian manufacturers of eNodeBs to test and fine tune their equipment with CDoT CORE, MCX applications and Kavach.
- 4.3 Helping Indian manufacturers to match their systems with the benchmarked performance of already established vendors in the field.
- 4.4 Encouraging Indian manufacturers of eNodeBs (including CDoT) to develop upgraded version of eNodeBs which can work on 5G with minimal change.
- 4.5 Development of multiple port LTE Router suitable to be deployed on Locomotives along with antenna for use in Loco/EMU/Train Set and Cab Communications System.
- 4.6 Development of hardware and software for MCX applications for Railways as per FRS for MCX client for Railways.
- 4.7 As the purpose of the PoC is to enable Indian manufacturers test the available 4G LTE products for Railway specific needs, especially with respect to RAN and MCX equipment; their compatibility with CDoT CORE, the section shall also work as a Test bed for field testing.
- 4.8 Establish test bed and labs to test/develop improvements, new features and versions for LTE-R(4G)/5G.
- 4.9 Undertake small developmental works/projects like IoT Sensors, Central Data Bank for recording and retrieving Sensor Data using LTE-R.

RDSO is requested to kindly take up trial at the earliest & submit the progress every fortnight.

(राकेश रंजन)
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