

No. STT/Tele/on-Board PA system /752

Dated: 9-5-2014

**NOTICE FOR EXPRESSION OF INTEREST (EOI)**

Ministry of Railways, Research Designs & Standards Organisation, LUCKNOW is interested in development of specification for “**On-Board Wireless Public Address (PA) System for Passenger Trains**”. Vendors who are ISO 9001 Certified and have expertise & experience in this field and interested for development of specification for this item may submit their proposal in prescribed Performa with technical details to Joint Director/Telecom Room No.216 Telecom Directorate Annexe-1 Building, RDSO/Lucknow on any working day before 20-6-2014. Any clarification on the subject may be obtained from undersigned at Phone No. 0522-2450388. The functional requirements of the system (FRS), format for letter of response & guidelines for short listing of the Firms are available at RDSO website [www.rdsso.indianrailways.gov.in](http://www.rdsso.indianrailways.gov.in) under the tender category.

(P. Lal)  
Joint Director/Telecom-1  
for Director General/Telecom

भारत सरकार, रेल मंत्रालय  
अनुसंधान अभिकल्प एवं मानक संगठन  
मानक नगर, लखनऊ-226011

संख्या: एसटीटी/टेली/आन बोर्ड वायरलेस पीए सिस्टम/752 दिनांक : 09/05/2014

**अभिरुचि की अभिव्यक्ति हेतु सूचना (EOI)**

रेल मंत्रालय, अनुसंधान, अभिकल्प एवं मानक संगठन ;अ.अ.मा.सं. मानक नगर, लखनऊ, पैसेंजर ट्रेन के लिए “आन बोर्ड वायरलेस पब्लिक एड्रेस सिस्टम” का स्पेशीफिकेशन विकसित करने का इच्छुक हैं।

ऐसी फर्में जो आई.एस.ओ. प्रमाणित हैं एवं जिनके पास इस क्षेत्र में कार्य करने का पर्याप्त अनुभव व क्षमता है और उपरोक्त प्रणाली का स्पेशीफिकेशन विकसित और आपूर्ति करने के इच्छुक हैं, वे अपना प्रस्ताव निर्धारित प्रारूप में तकनीकी विवरण के साथ संयुक्त निदेशक/दूरसंचार कमरा संख्या. 216 दूरसंचार निदेशालय एनेक्सी-1 अ.अ.मा.सं. मानक नगर, लखनऊ, को 20/06/2014 से पहले किसी भी कार्यदिवस में भेज सकते हैं, इस संबंध में अन्य किसी भी जानकारी के लिए अधोहस्ताक्षरी को 0522-2450388 पर संपर्क कर सकते हैं। इस विषय का विस्तृत विवरण अ.अ.मा.सं. की वेबसाइट : [www.rdsso.indianrailways.gov.in](http://www.rdsso.indianrailways.gov.in) की टेण्डर कैटेगरी में उपलब्ध है।

संयुक्त निदेशक/दूरसंचार  
कृते महानिदेशक/दूरसंचार  
अ.अ.मा.सं./लखनऊ-226011

# **“On-Board Wireless Public Address (PA) System for Passenger Trains”**

## **Existing system on-board Passenger Address System:**

Presently, the wired Public Address (PA) system has been provided in Rajdhani/Shatabdi Express Trains on Indian Railway for assistance of Passengers. The announcements & Play of music inside train coaches is being done from one coach of the train and it is broadcasted to other coaches through amplifier-speaker system using on wired network.

## **Problems with the existing system**

Due to re-shuffling of coaches for operational requirements, the wiring of Public Address (PA) system between two adjacent coaches gets disturbed and need to be re-connected at the time of rake formation of passenger trains. Several times it is observed that two adjacent coaches have incompatible interfacing units.

## **On-Board Wireless Public Address (PA) System for Passenger Trains**

A wireless based Public Address (PA system) for Passenger Trains announcement system has been conceptualized to rectify aforesaid problem without affecting other systems.

This Functional Requirement Specification (FRS) of “On-Board Wireless Public Address (PA) System for Passenger Trains” has been prepared for invitation of Expression of Interest (EoI) for development of Specification of this item.

### **Functional Requirement Specification (FRS) of**

### **“On-Board Wireless Public Address (PA) System for Passenger Trains”**

#### **1.0 SCOPE:**

This Functional Requirement Specification (FRS) covers broad Functional requirements of “On-Board Wireless Public Address (PA) System for Passenger Trains” consisting of IP based Wi-Fi equipment (working in License Free frequency Band) suitable for on-board applications and providing reliable interconnection between coaches, Microphone, Amplifier, Recorder-cum- Player suitable for Cassette, DVD & USB, Speakers and other miscellaneous items used for making announcements, playing pre-reordered messages & music inside coaches of passenger trains. The system shall have provision of emergency

communication at a nominated place inside the coaches, by which passengers shall be able to talk to Driver/Guard in emergency.

## **2.0 SYSTEM REQUIREMENTS:**

- 2.1 System shall work while train is stationary as well as during the entire run from source to destination station without any loss of communication & ambiguity at any place.
- 2.2 The system shall work in client-server mode. One master system (server & device) shall be placed inside locomotive or one coach (1<sup>st</sup> AC coach or Brake Van or Pantry Car) of the train and work in broadcast/ multicast mode. Every coach shall have client system & IP based device which will use existing audio amplifier & speakers.
- 2.3 System shall use open TCP/IP suit and/or open RF protocols 802.15.4 (Zigbee) for data communication (as per system requirement).
- 2.4 Master unit shall have list of clients placed in coaches and broadcast/multicast the messages to them. Master unit shall broadcast this list of coaches (ID) along with its own ID and all coaches (which do and do not belong to the train having this broadcasting master). Coaches ID appearing in the broadcasted list will join this server & other will remain idle.
- 2.5 The on-board master and clients shall be so securely connected on private Wire- less Local Area Network ( WLAN) so that the data being streamed using multicasting through a PA system of one train should not be accessible in adjacent nearby train/s of either direction.
- 2.6 Client system should show the coach number through a suitable display unit connected to it. It must show the current state (connected/not connected). In case of connected state it must also show its master identity and train number.
- 2.7 The system shall work satisfactorily at an operating temperature of -10<sup>0</sup>C to +55<sup>0</sup>C.
- 2.8 The system shall comply the requirement of onboard application for Indian Railway i.e. IEC 60068 & IEC 61373. The system shall also comply requirements of radio interface as per IEC 60571.
- 2.9 The Server system shall broadcast the messages ensuring following:
  - (i) Broadcasted announcement message must be received by all the coaches of the train and it must be rejected by all those nearby coaches which do not belong to this train. Similarly coaches belonging to one train must also reject any announcement being broadcasted by other trains.
  - (ii) System shall be independent of coach shuffling. Any client unit shall work with any master unit.
  - (iii) A restricted microphone (by default this microphone be in off mode and will not be directly accessible to passenger) is to be provided along with all client systems. In

- case of emergency passengers can use this restricted microphone to communicate with guard/driver.
- (iv) All coaches of one train must know about its master unambiguously. Once coach know its master it must start discard messages from other masters till the train reaches at destination station and master announces (broadcast/multicast) about its end of journey.
  - (v) System must work on existing 110 V AC/DC power supply available inside the coach of the train.
  - (vi) It must use existing audio system inside train e.g. Audio Amplifier, Speakers etc.
  - (vii) There shall be provision of voice logging of all the conversations.
  - (viii) Most of the announcements will be prerecorded messages. Sometime driver/guard may announce some emergency messages using microphone.
  - (ix) In future this system must support video streaming also which will be used for advertisement purposes.
  - (x) Length of wireless antenna of master/client shall not infringe Schedule of Dimension Specified for Indian Railways.
  - (xi) At the end of journey master will broadcast/multicast similar kind of message for breaking the established master-client combination. On receiving coaches will act similarly as in point 2 and listed coaches will make themselves free from this master-client binding.

#### 2.10 Master can get this list using any of the following method.

- (a) From one central server. This will be automatic and fool proof.
- (b) Driver/Guard gets the complete rake info from railway and feed this data into master unit. There is a great chance of typing mistake. Master units will require keyboard also.
- (c) Diagnostics: A suitable display will be provided which will clearly show the list of all attached coaches. If some coach/es is/are not shown as attached, guard must check the coach/es number against any typing error and do the adequate correction if needed else it indicates a non-functional client unit in that/those inactive coach/es.
- (d) Through OCR this paper can be read by the master unit
- (e) Through station wireless master system rake info can be broadcasted for masters along with masters' ID and master with advertised ID will only use this information other masters will receive this message but they should ignore this messages. This station broadcaster unit shall be very effective and shall work only at starting & ending stations.
- (f) Two master units provided at two location of the same train shall be able to communicate in full duplex mode & can work in standalone to communicate clients independently.
- (g) Each master shall have provision to display train location to accuracy of 10 meter based on GPS data.
- (h) The master shall have provision of suitable microphone compatible with existing PA system.
- (i) It shall have provision player of playing the pre-recorded messages from Cassette, DVD & USB and it shall also be capable to record message.
- (j) IP based client/master unit shall be provided in each coach to derive existing Amplifiers and Speakers of the PA system.

### 3.0 GENERAL REQUIREMENTS:

- 3.1 Original Equipment Manufacturer of Public Address System shall have base and service support in India, either directly or through authorized agents/dealers/distributors.
- 3.2 Screened cable & shielded wires shall be used for signal transmission between different elements of the Public Address System to avoid effect of 25 KV, 50Hz AC traction and other type of interferences.
- 3.3 All the equipments for PA system shall be designed such that their performance is not affected by 25KA, 50 Hz traction or 1500 volts DC traction.
- 3.4 Separate standard cabinet of suitable dimension is to be provided in one of the designated coach to house all type of devices and equipments required for PA system and other accessories.



## FORMAT FOR LETTER OF RESPONSE

Respondents Ref

No.: Date:

Designation of officer to whom the respondent replies:

Joint Director/Tele-I

Room No-216,Annexe-I Building,

Research Designs & Standards Organization

ManakNagar,Lucknow,226011

Dear Sir,

**Subject: RESPONSE TO – EOI FOR PARTICIPATION \_\_\_\_\_**

1. we, the undersigned, offer the following information in response to the Expression of Interest sought by you vide your Notification No. \_\_\_\_\_ dated \_\_\_\_.
2. We are duly authorized to represent and act on behalf of \_\_\_\_\_ (hereinafter the “respondent”)
3. We have examined and have no reservations to the EOI Document including Addenda No(s) \_\_\_\_\_.
4. We are attaching with this letter, the copies of original documents defining: -
  - 4.1. The Respondent’s legal status;
  - 4.2. Its principal place of business;
  - 4.3. its place of incorporation (if respondents are corporations); or its place of registration (if respondents are cooperative institutions, partnerships or individually owned firms);
  - 4.4. Self-certified financial statements of Last three years, clearly indicating the financial turn over and net worth.
  - 4.5. Copies of any market research, business studies, feasibility reports and the like sponsored by the respondent, relevant to the item under consideration.
5. We shall assist MoR and/or its authorized representatives to obtain further clarification from us, if needed.
- 5.1. RDSO and/or its authorized representatives may contact the following nodal persons for further information on any aspects of the Response.

S. No.	Contact Name	Address	Telephone	E Mail
1				
2				

6. This application is made in the full understanding that:
- 6.1. Information furnished in response to EoI shall be used confidentially by RDSO for the purpose of development of the specification.
  - 6.2. RDSO reserves the right to reject or accept any or all applications, cancel the EoI without any obligation to inform the respondent about the grounds of same.
  - 6.3. We confirm that we are interested in participating in development of the specification.

7. We certify that our turnover and net worth in the last three years is as under:

<b>Financial Year</b>	<b>Turn over</b>	<b>Net worth</b>

8. In response to the EoI we hereby submit the following additional details annexed to this application.

- 8.1 Details of various items being manufactured/consultancy undertaken.
- 8.2 Details of customer(s) and supplies made in the field of item under EoI.
- 8.3 Experience and expertise for the items proposed in EoI.
- 8.4 Details of man-power with their qualification and experience.
- 8.5 Detailed proposal for items proposed in EoI including alternative proposal, if any.
- 8.6 Details of Intellectual Property Rights (IPR) held, patent filed/held and MoU/agreement signed.
- 8.7 Details of ISO certification.

9. The following undertakings are hereby given:

- 9.1. In regard to matters relating to the security and integrity of the country, no chargesheet has been filed by an agency of the Government / conviction by a Court of Law for an offence committed by the -----(name of the entity)or by any sister concern of the -----  
----- (name of the entity ) would result in disqualification.
- 9.2. In regard to matters other than the security and integrity of the country, ----- (name of the entity) has not been convicted by a Court of Law or indicted / passed any adverse order by a regulatory authority against it or its against any sister concern which relates to a grave offence, or would constitute disqualification. Grave offence is defined to be of such a nature that it outrages the moral sense of the community.



10. The undersigned declare that the statements made and the information provided in the duly completed application are complete, true, and correct in every detail. We also understand that in the event of any information furnished by us being found later on to be incorrect or any material information having been suppressed, RDSO may delete our name from the list of qualified Respondents. We further understand that RDSO will give first preference to the applicants considered relevant for the purpose.

11. Our response is valid till (date in figures and words):\_\_\_\_\_

Yours sincerely,

(Sign)

NAME

In the Capacity of

Duly authorized to sign  
the response for and on  
behalf of

**Method of short listing the vendors**

<b>S.No.</b>	<b>Item</b>	<b>Marks</b>	<b>Remarks</b>
1 .	Turnover of the firms during the last 3 years.	20	The firm having maximum will be given full marks & others as percentile.
2 .	Details of supplies made in the field of item under EOI	30	This is the turnover of supplies made in the field of item under EOI. The firm having maximum will be given full marks & others as percentile.
3 .	Experience and expertise for item under EOI	20	It is based on years of experience in such product. The firm having maximum will be given full marks & others as percentile.
4 .	Man power & their qualification	10	No. of persons with professional qualification on firm's direct roll and percentile.
5.	Details of patent held and MOU/agreement with OEM	20	Number of such items and piece thereof.