

प्रसार भारती / Prasar Bharati
(India's Public Service Broadcaster)
आकाशवाणी महानिदेशालय/ Directorate General: All India Radio
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ट्रान्समिटर डिज़ाइन/ Transmitter Design

No. 13 (17) / 2020 DRM Rec.-D (TD/MW)

Dated 08-01-2021

Subject: Draft Technical Specifications for General Purpose DRM Receiver for feedback and Budgetary Cost Estimation from Vendors/ OEMs.

Draft Technical Specification for General Purpose DRM Receiver (09 Pages) are being uploaded on Prasar Bharati website <http://prasarbharati.gov.in/> to invite comments/feedback and Budgetary Cost Estimation from the Vendors/OEMs, dealing with supply of such equipment. The interested parties are requested to provide comments/feedback on the technical specifications.

Vendors are requested to provide Budgetary Cost Estimation for the Supply of DRM receivers as per Schedule of Requirement given in the specification.

Comments/Feedback & Budgetary Cost Estimation may be provided by E-mail to pruthi@prasarbharati.gov.in latest by 29/01/2021.

Director General

Encl.: Draft Specification as above (09 Pages)

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PRASAR BHARATI / प्रसारभारती
(BROADCASTING CORPORATION OF INDIA)/ भारतीयप्रसारणनिगम
DIRECTORATE GENERAL: ALL INDIA RADIO/ आकाशवाणीमहानिदेशालय
PLANNING AND DEVELOPMENT UNIT/ योजनाएवंविकासएकक
Transmitter Design

SPECIFICATION DOCUMENT OF DRM GENERAL PURPOSE RECEIVER

SPECIFICATION NO : XME- 01/2021
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SUMMARY OF CONTENTS:

1. Section I : General conditions of Tender/contract (P. No.02-04)
2. Section II : Technical Parameters of equipments (P.No. 05-08)
3. Section III: Schedule of requirements (P.No. 09-09)

- N.B:**1. The tenderer should go through all the sections of these specifications carefully and should confirm clause-by-clause compliance of all the sections clearly. Tenders received without clause by clause compliance are liable to be rejected.
2. The tenderer should indicate the items offered as per schedule of requirements, Section-III, without cost details in technical bid to assess the completeness of offer against AIR's requirement.

(_____) _____
(TD/MW)

SECTION - I
GENERAL CONDITIONS OF TENDER / CONTRACT

1.0 GENERAL:

These specifications cover the supply of 5000 (Five Thousand) **DRM GENERAL PURPOSE RECEIVERS** for monitoring of DRM/AM/FM broadcast, respectively, in stationary as well as in mobile mode.

1.1 LANGUAGE AND SYSTEM OF MEASURES:

All information supplied by the Tenderer shall be in "English" language. All dimensions and units shall be in "Metric" Units.

1.2 DOCUMENTS TO BE SUPPLIED ALONGWITH TENDER:

The following information shall be furnished to enable AIR to adjudge the full merit of the offer.

- a. Compliance statement on each and every clause of these specifications (in the order in which they appear in these specifications) indicating clearly whether or not the equipment and accessories offered conform to these specifications. ***A tender without clause by clause compliance to these specifications is liable to be rejected.***
- b. A general undertaking to accept / furnish the guarantees, which will be required to be complied by the contractor as listed under Clause 1.7.3 of Section- I.
- c. Any other information, which the Tenderer feels relevant to his offer.

DOCUMENTS TO BE SUPPLIED AFTER PLACEMENT OF ORDER/ACCEPTANCE OF TENDER:

The following documents shall be supplied for approval within **one month** of date of acceptance of the tender to the DDG(E) (Transmitter Design Section), P&D Unit, DG: AIR, New Delhi-110001

- a. The Detailed Draft "Inspection and Acceptance Test Procedure" (ATP) as per specifications for approval by AIR. This should include environmental & ruggedness tests in addition to the technical performance parameters. An acceptance test procedure (ATP) after approved by AIR, shall be the basis for acceptance of equipment.

DELIVERY OF EQUIPMENT:

The delivery of the entire equipment at AIR site (mentioned in the schedule of requirement) shall be completed within **04(four)** months from the date of placement of order.

1.5 Free replacement of components:

The Contractor shall furnish guarantee to make good, at his own expense, any equipment which becomes defective within 12 months from the date of receipt of last consignment at AIR site.

1.6 Materials & workmanship:

- (i) Should any defect be noticed in the design, material and /or workmanship of any equipment,

within a period of 12 months from the date of receipt of last consignment at site, it shall be replaced by the supplier free of cost, freight and insurance paid, to the ultimate consignee. All India Radio shall inform the supplier about any defects noticed. On receipt of such intimation, the supplier shall investigate the cause of defects and submit a report within 14 days and arrange rectification/replacement / modification of the defective equipment at AIR site without any cost to All India Radio. All such rectifications / replacements modification of the defective equipment based on report shall be done immediately, within a period not exceeding one month from the date of receipt of information by the supplier at no cost to AIR. If the supplier fails to take proper corrective action to repair/ replace the defective item/items satisfactorily within the period of one month as stated above, All India Radio shall be free to take such corrective action as may be deemed necessary, after giving notice to the supplier, at the risk and cost of the supplier.

- (ii) In case the equipment falls short of the guaranteed performance level, All India Radio will be free to either reject the equipment completely or impose penalty on the supplier so as to recover the cost of the deficiency. However this does not entitle the supplier to deliberately supply substandard equipment or conceal the defects of the equipment supplied by Firm.

1.7 INSPECTION/ ACCEPTANCE:

1.7.1 Pre-dispatch Inspection / Acceptance Tests at manufacturer's/tender's Works:

- a) AIR will depute 2(two) engineers to carry out the inspection of the equipment at Manufacturer's/ Tenderer's works, as per Acceptance Test Procedure (ATP) approved by AIR. The various tests to be performed and the measurements to be done will be to check the conformity of the equipment offered to these specifications and the various conditions of the A/T.
- b) The contractor shall give at least 2 (two) weeks' notice to AIR to carry-out the inspection, before the consignment is ready for inspection.
- c) Acceptance Test will be done on 10% selected equipment of total supply selected on random basis.

1.7.2 INSPECTION/ ACCEPTANCE TESTS AT AIR SITES

AIR shall carry-out the following inspection/ tests at AIR site in India:

- a. Physical inspection, after receipt of the equipment at AIR site, for reporting any shortages or damages for free replacements / repairs by the manufacturer/ contractor.
- b. Testing of equipment as per the ATP to confirm the performance of the equipment to Contract specifications, before finally accepting the equipment.

- c. If any equipment fails or is found defective on receipt at site, it will be supplied free of cost to AIR site by manufacturer/contractor.

1.8 AFTER-SALES SUPPORT:

The equipment manufacturer/contractor shall guarantee for the after-sales support for all the equipment offered under the contract for a minimum period of 02 years, after acceptance of the equipment. The details of the type of after-sales support in India shall be indicated in the tender.

Draft

SECTION – II
(Technical parameters of equipments)

2.0 General

The section defines the technical parameters of DRM General Purpose Receiver

A. capable of receiving:

- i. DRM digital radio in the AM bands
- ii. Analog AM and FM radio reception

B. Upgradable to receive DRM digital radio in VHF bands

This general purpose hand held/pocket all band portable radio receivers with screen & speaker (s) must fulfil at least the “DRM Minimum Receiver Requirements” specification, revision 4.1 or later, and shall support the following Key features:-

2.1. Hard ware:

S.NO.	FEATURES
2.1.1	<p><u>SCREEN:</u></p> <ol style="list-style-type: none"> a. The receiver shall have Monochrome/ Colour Display that can present at least 2 lines (of 16 characters) of text on the display screen simultaneously. The receiver should have a dot-matrix or graphics screen covering more text content simultaneously. b. The screen should be suitable for direct viewing from the front for outdoor usages. c. Unicode support: Receiver shall support rendering of text content using characters from the EBU Latin Profile; in addition it should support rendering text in Devanagari script (Hindi), and may support further Indian scripts. This requirement refers to all text content, including user interface, DRM service labels, Journaline, Text Messages.
2.1.2	<p><u>AUDIO:</u></p> <ol style="list-style-type: none"> a. The receiver shall have built-in speaker(s). b. The receiver shall have Headphone socket to provide audio in stereo format.
2.1.3	<p><u>EXTERNAL ELEMENTS</u></p> <p>The receiver shall have a provision to support following external elements:</p> <ol style="list-style-type: none"> a. Built in antenna/ antennae for all supported frequency bands. b. External Antenna connector (allowing switching between supplied antenna & external antenna feed). c. USB slot and/or other memory storage support (such as SD-card) for firmware upgrade. d. Dedicated front panel button(s) and/or knob(s) and/or touch screen for full receiver operation and to access all features of DRM transmission. An additional remote control may be provided.

2.1.4	<p><u>POWER SUPPLY:</u></p> <p>a. The receiver shall have a physical power ON/OFF switch.</p> <p>b. The receiver shall be capable of operating on AC mains 230V/50Hz & should have in built rechargeable Battery.</p> <p>c. If present, the built-in rechargeable battery should provide a backup of at least two (2) hours (When fully charged & disconnected from A.C.)</p>
2.1.5	<p><u>Environmental Conditions:</u></p> <p>a. Operating Temperature ---- 0 C to 50 C</p> <p>b. Relative Humidity ---- up to 95 %</p>

2.2 TUNING:

2.2.1	<p>The receiver shall be able to tune & receive - DRM (MW/SW), Analog-AM (MW/SW), Analog-FM (VHF band II) Services.</p> <p>The receiver should be able to tune & receive DRM services in the FM band (VHF band-II); otherwise it must be possible to add support for DRM services in the FM band through a future firmware upgrade on request.</p>
2.2.2	<p>The receiver shall support all of DRM's modulation option/configurations (spectrum occupancy, robustness mode, MSC mode, MSC protection level (EEP&UEP)& both short & long interleaving depth etc.) as applicable.</p>
2.2.3	<p>Simulcast Transmission (DRM & Analog signal side by side) configuration must be supported by at least tuning successfully either to digital or analogue signal</p>
2.2.4	<p>The receiver shall have option of manual tuning; all valid tuning frequencies for analogue and digital signals must be supported (for example, tuning to any AM frequency in 1-kHz steps). The receiver should support manually triggered automatic band scan option to detect available DRM & analogue services, resulting in a list of currently available radio services; the automatic scanning may be handled independently for various standards.</p>
2.2.5	<p>The receiver shall have dedicated front panel button(s) and/or knob(s) and/or touch screen for manual tuning to all analogue services (MW/SW/FM) and DRM service by selecting band / frequency. An additional remote control may be provided.</p>
2.2.6	<p>The DRM receiver shall indicate the signal integrity by evaluation of the signal-to-noise ratio, the bit error rate, the field strength or some other meaningful method. This indication shall help the user to optimise the radio position.</p>
2.2.7	<p>The DRM Receiver shall indicate if reception on the chosen frequency is possible after tuning or switch-on.</p>
2.2.8	<p>The receiver should have a provision of minimum 40 programmable station presets (at least 10 for each mode: DRM, AM, FM) to enable storage of favourite stations.</p>
2.2.9	<p>The receiver should resume last tuned service when switched ON.</p>
2.2.10	<p><u>DRM SERVICE SELECTION</u></p> <p>a. Every DRM Service must be accessible from full DRM Service list and/or from list of DRM services in currently tuned DRM multiplex.</p> <p>b. Every DRM service (audio/data) and every service component (if technically supported) of tuned DRM multiplex must be selectable via dedicated front panel button and/or touch screen, and may be selectable via remote (if provided).</p>

	c. The receiver shall support up to 4 DRM services per DRM Multiplex signal, each DRM Service being either a Data Service (consisting of one data service component) or an Audio Service (consisting of one audio component [optionally with DRM Text Messages] and up to 4 PAD [programme associated data] data service components).
2.2.11	The receiver should be capable of receiving signals (Analog AM & FM, DRM) up to a field strength of 45dBuV/meter.
2.2.12	Should support AFS (DRM alternative frequency signalling & switching), particularly in combination with 'warning/alert' announcements for switching to EWF emergency programmes outside current DRM multiplex.

2.3 SERVICE LAYER FUNCTIONALITY:--

2.3.1	<p><u>DRM AUDIO</u></p> <p>a. The receiver shall support all standardized DRM audio codecs (xHE-AAC and HE-AACv2) & conform to all configuration options for each codec as specified in latest release DRM system specifications.</p> <p>b. The receiver should have decoding capacity for mono and stereo.</p> <p>c. For audio services signalled as supporting MPEG Surround, at least the core mono/stereo content must be decoded.</p>
2.3.2	<p><u>DRM SERVICE INFORMATION:</u></p> <p>The receiver shall be capable of displaying following DRM Service information:</p> <p>a) Full DRM Service label (up to 16 characters, up to 64 bytes);</p> <p>b) All DRM Service-related signalling information (language, country of origin, audio programme type, etc.)</p> <p>In addition, the following DRM Service related features must be supported:</p> <p>a) The receiver shall support all standardized announcement types and support switching to another DRM Service within the same DRM multiplex once an announcement is triggered; it should also support switching to services outside the current DRM Multiplex as per AFS information.</p> <p>b) The services and service components signalled as encrypted by Conditional Access must be ignored by receiver or presented to user as un- available (unless the indicated CA mechanism is supported.)</p>
2.3.3	<p><u>DRM DATA APPLICATION</u></p> <p>a. The receiver shall support DRM packet mode decoding & enhanced packet mode decoding.</p> <p>b. The receiver shall support DRM Text messages</p> <p>c. The receiver shall support Journaline feature of DRM.</p>
2.3.4	<p><u>DRM EMERGENCY WARNING FUNCTIONALITY (EWF):</u></p> <p>a. The receiver shall support DRM EWF feature, including announcements type 'warning/alert'.</p> <p>b. For announcement types other than 'warning/alert' should allow user to configure whether automatic switching to target service shall be carried out if required.</p>

	<p>c. In case ‘warning/alert’ announcement is triggered for current DRM Service, receiver shall switch automatically to and start presenting target DRM Service (EWF emergency programme), i.e. automatically play audio and present EWF Journaline component for immediate access by user.</p> <p>d. In case ‘warning/alert’ announcement is triggered for current DRM Service, receiver should give a visual indication of an active alert/alarm & automatically increase audio volume (and restore original volume with first user interaction).</p> <p>e. In case ‘warning/alert’ announcement is triggered for current DRM Service, a receiver in standby mode should automatically wake up and start presenting target DRM Service (EWF emergency programme)</p> <p>f. While presenting EWF emergency programme, receiver shall automatically return to previously tuned DRM Service when ‘warning/alert’ announcement trigger signal is discontinued</p> <p>g. While presenting EWF emergency programme, receiver shall allow user to manually change volume or interrupt presentation and switch back to original service (even if ‘emergency/alert’ condition continues to be triggered)</p>
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2.4 GENERAL

2.4.1	<p><u>CLOCK:</u> The receiver should have a built in Real time clock with on screen display of date & time. If supported, the clock shall support configuration of time & date manually or automatic update from DRM transmissions.</p>
2.4.2	<p><u>MP3 File Player</u> The receiver may have at least 512 MB of in-built memory with facility to load and search about six (06) Hrs audio content in MP3 and/or AAC-family format, or may playback such audio files from external memory device.</p>
2.4.3	<p><u>DRM Recording</u> The receiver should support recording of a full DRM Multiplex signal in MDI or RSCI format (including DCP file framing layer) to internal or external memory storage (with the option to transfer internally stored data to an external storage device).</p>
2.4.4	<p>The software of radio receiver (firmware, app, etc.) shall be upgradeable (for example via external memory)</p>
2.4.5	<p>The initial DRM functionality of receiver shall be compliant to DRM System Specification ETSI ES 201 98 latest version, DRM Data Application Directory ETSI TS 101 968 latest version, Journaline functionality ETSI TS 102 979 latest version; DRM EWF functionality shall be compliant to latest version as maintained by DRM Consortium (www.drm.org), DRM Minimum Receiver Requirements latest version is maintained by DRM Consortium (www.drm.org).</p> <p>If updated versions of any of ETSI standards and specification documents mentioned above are published by ETSI or DRM Consortium within 18 months after initial delivery of receivers, manufacturer shall make available requisite updates of receiver software to AIR within 6 months, covering any essential changes introduced by the new release of the respective specification (particularly with regards to audio codecs and the DRM Service structure)</p>

SECTION-III

SCHEDULE OF REQUIREMENTS:AIR REQUIRES THE FOLLOWING EQUIPMENTS AS PER TECHNICAL SPECIFICATION DETAILED UNDER SECTION I & II

Item	Detailed Schedule of Material	Quantity
3.0	Supply of General purpose DRM Receivers along with standard accessories as per clause 2.1 of section II. The receivers shall be supplied to AIR Kurseong Station in West Bengal.	5,000 Nos