



**Government of India
Ministry of Home Affairs
Directorate of Coordination Police Wireless**

Invites

Expression of Interest

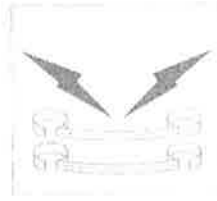
for

Integrated solutions for Radio Monitoring

M. K. Singh

Index

Table of Contents		Page No.
Part-1: General Terms		
1.	<i>Notice inviting EOI</i>	3
2.	<i>Objectives and Scope of Requirement</i>	4
3.	<i>Technical Specifications of Required Radio Monitoring Systems</i>	6
4.	<i>Schedule of Requirement</i>	9
5.	<i>Instruction to the Bidders</i>	10
6.	<i>Stages of EOI</i>	11
7.	<i>Firms'/Vendors' Pre-Proposal Meeting</i>	11
8.	<i>EOI Proposal Preparation Costs & Related Issues</i>	11
Part II: EOI SUBMISSION FORM		
9.	<i>Detailed Proposal</i>	12
10.	<i>Form 1: Covering Letter on Letterhead of the Firm/Vendor</i>	13
11.	<i>Form 2: Compliance Statement</i>	14
12.	<i>Form 3: Details of the Firm/Vendor operations & business.</i>	15
13.	<i>Form 4: Check List of Firm/Vendor</i>	16



No.C-13017/1(MNGT)/2018-IMC
Government of India
Ministry of Home Affairs
Directorate of Coordination
Police Wireless

CGO Complex, Lodhi Road
New Delhi-110003
Dated 11th August, 2021

Notice for inviting Expression of Interest (EOI)

Directorate of Coordination Police Wireless (DCPW) is in the process of establishing monitoring system for the breaches of Radio Communication Security on high frequency (HF), Very high frequency (VHF) and Ultra High Frequency (UHF) Police Radio Networks. For this purpose, this Directorate invites non-committal Expression of Interest of (EOI) from Firms/Vendors for integrated solutions for said monitoring system.

EOI can also be downloaded from the department's website <http://www.dcpw.gov.in> and also from CPP Portal (<http://www.eprocure.gov.in>). The Firms/Vendors are expected to examine all the details in the EOI documents. Interested firms/vendors may submit Integrated solutions for Radio Monitoring System of this Directorate duly signed by the authorized signatory only by online mode on procurement portal [www.http://eprocure.gov.in](http://www.eprocure.gov.in) along with all the annexure as mentioned in the EOI published. The Schedule of EOI is as under:

Last date and time for the download of EOI Documents	D + 45
Last date and time for uploading of integrated solutions by online mode	D + 45
Date and Opening of EOI	D + 46

* D stand for Date of Publish of EOI.

The Expression of Interest is being issued on **"No commitment basis"** purely for seeking the details of potential vendors interested to participate in the advertised EOI which is likely to be issued through [www.http://eprocure.gov.in](http://www.eprocure.gov.in).

DCPW reserve the right to accept or reject any or all without assigning any reason.


(Virender Chokra)
Joint Assistant Director, DCPW

श्री वीरेंद्र चोक्रा / VIRENDER CHOKRA
सुपरी वरिष्ठ निदेशक / Joint Assistant Director
निदेशक (एच एच एम) / D. C. P. W. (M. H. A.)
एच ई आर / New Delhi

OBJECTIVES AND SCOPE OF REQUIREMENT

Directorate of Coordination Police Wireless (DCPW), going to establish Radio Monitoring System to monitor the breaches of Radio Communication Security on High frequency (HF), Very high frequency (VHF) and Ultra high frequency (UHF) of Police Radio Networks. The reason behind this is that the Anti-social, Anti National elements may endanger the National Security by using this media to monitor the Police Radio transmissions for taking benefit of any vital information to indulge in anti-national and aversive activities. Thus, Police Radio Networks of States Police/UTs/CAPFs are essential to be monitored for effective cross-checking and ensuring integrity in their communication procedure.

In this connection, the guidelines issued by Government of India in respect of Radio Communication Security from time to time are to be strictly adhered to by all the Police Organizations to ensure breach-less communication. DCPW plan carry out the task of automatic monitoring of Police Radio Networks of States Police/UTs/CAPFs by random selection of Police Frequencies and report breaches of security, so detected, to user departments, for remedial action.

A. General Requirements:

1. The objective is to deploy receivers at 31 ISPW locations and at Delhi. These receivers should be accessible.
2. The hardware profile will essentially be based on an SDR (Software Defined Radio) architecture, which will act as the Receiver cum Signal Processing unit and work both with and without local operator.
3. The receiver should have an on-board processor to perform certain tasks such as frequency sweeps, IQ data recording, signal classification, demodulated audio recording, and logging autonomously without the need of an external processor or dedicated operator.
4. The receiver should be light-weight, rugged for outdoor deployment and easily configurable.
5. Server at ISPW Stations & Delhi should be able to perform multiple tasks such as spectrum sweeps, demodulation, recording, view spectrum, etc. simultaneously.
6. The receiver should provide single RF channel with instantaneous bandwidth of 50 MHz. The receiver should enable monitoring of multiple frequencies within the instantaneous bandwidth and outside the instantaneous bandwidth simultaneously.
7. The system should enable measurements as per ITU standards and guidelines.

B. Features required at Local Monitoring:

1. The Monitoring application software shall include a GUI which will be installed on the Data Terminal equipment (DTE) at 31 ISPW Station & Delhi location to enable scanning, monitoring and recording of multiple frequencies simultaneously.
2. The software should enable management and control of different tasks and operations.

3. Monitoring application software should be compatible with Windows OS and the license should be bound to DTE or network hardware.
4. It should be possible to save the complete working settings including open windows and modules in a configuration file and open the same as and when required.
5. Monitoring and demodulation should be performed simultaneously for all the active transmissions that have been selected by the operator for monitoring.
6. Recording of Demodulated Voice and IQ Data should be possible.
7. Operator should have the option to either initiate recording of AM/FM/USB/LSB demodulated voice or baseband IQ data, or both.
8. Software should be upgradeable and there should be interface to integrate with third party software for demodulation of Digital networks (DMR/TETRA/APCO etc.)
9. GUI should have Spectrum, Spectrogram and Oscilloscope for data visualization. Also, it should be possible to zoom in, zoom out and pan spectrum, spectrogram, and oscilloscope with mouse/track pad.
10. Software should have capability to sweep the entire frequency range of receiver and display spectrum and spectrogram.
11. It should be possible to connect to multiple receivers in the same software and perform independent operations.
12. The Sweep parameters viz frequency band, start frequency, stop frequency, step size, etc should be configurable.
13. Operator should be able to create a configurable scan profile by adding multiple frequencies for monitoring. These frequencies can be within the Instantaneous bandwidth or outside the Instantaneous bandwidth. Operator should be able to select bandwidth and demodulation type for each frequency in scan profile.
14. There should be individually configurable squelch setting for all the monitoring frequencies.
15. It should be possible to stream IQ data of individual channel/monitoring frequency to other software for integration with other tools and software.
16. Software should have provision to work with GPS receivers and use the data from GPS receivers to precisely time-tag the recorded data.
17. Software should have option to set frequency masks and trigger alarm, log files and record data upon breakage.

C. Features required ISPW Station & Delhi:

1. The server at ISPW Station and Delhi should be capable of management, control and monitoring of all the receivers deployed.
2. Software along with license to be included with receiver and should not be required to purchase separately.
3. It should generate analytics and reports from data gathered from receivers. Formats for the data logs should be in excel/doc/pdf/text format for better presentation.
4. There should be provision to generate and display a list of signals active at the time of scanning, providing information on frequency, BW, type of modulation, date/time of first seen and power.
5. Must have provision of recording the captured spectrum for later analysis.
6. Server should be capable to select the range of frequencies and there may be mapping of frequency spots with the location/organization to whom frequency is assigned.

m. webm.

7. A GUI based platform should be available which can be access by the all remote locations over IP and all rights for creating/ deleting profiles/ assign passwords for 31 ISPW Station and Delhi.
8. Software should be capable to map frequencies of various Networks viz VHF/HF/UHF for various locations and accordingly logs should generate automatically.
9. Logs should generate in a manner which can clearly indicate the frequency along with respective network and location to which it belongs.
10. The up-gradation of firmware and software of all the deployed receivers must be from 31 ISPW Station and Delhi.
11. Server should be upgradeable and there should be provision to interface and integrate with third party systems.
12. The software should enable autonomous monitoring without operator intervention and provide reports regarding spectrum usage.
13. Server should be able to perform following tasks:
14. Schedule frequency sweep measurements by defining parameters such as start frequency, stop frequency, step size, etc, and the results should be available in a graphical dashboard. The server should be able to assign a flexible schedule for repetitive measurements.
15. The software should perform signal classification and alert may be generated in case of any anomaly from pre-defined data.
16. The server should be able to perform frequency occupancy measurements for a defined time period and the result should be available in a graphical dashboard.
17. Simultaneous monitoring and sweep in the complete frequency band of receivers should be possible.
18. Simultaneous monitoring and demodulation of frequencies outside the instantaneous bandwidth should be possible. The receiver should have the capability to automatically optimize the scheduling.

D. The Radio Monitoring Expandability:

1. Consequent upon setting of Static Radio Monitoring, the mobile Radio Monitoring with each geographical boundary of respective State's w.r.t concerned ISPW Station is required to be expanded, having the same equipments at ISPW Station with some modification on the Vehicle Mounted System.
2. The Proposal is also required for the same.

TECHNICAL SPECIFICATIONS OF REQUIRED RADIO MONITORING SYSTEMS

S/ No	Parameter	Requirement
Receiver (SDR) System:		
RF Specifications		
1.	Frequency Range	9 KHz to 8 GHz
2.	Receiver Channel	1 channel receiver
3.	Realtime Bandwidth	50 MHz
4.	Tuning Resolution	1 Hz
5.	Noise Figure	<13dB; for 9 KHz to 200 MHz <8dB; for 200MHz to 8 GHz

6.	Phase Noise	<-122 dBc/Hz at 20kHz offset; for input <1.5 GHz <-112 dBc/Hz at 20kHz offset; for input >1.5 GHz
7.	Frequency reference	Selectable- Internal, External or GPS
8.	Internal clock stability	< +/- 1ppm over the operational temperature range
9.	External clock input	10 MHz
10.	GPS antenna input	1 connector for passive or active GPS antenna
11.	Third Order Intercept point	+36 dBm
12.	Spur Free Dynamic Range (SFDR)	75 dBc
13.	Sweep speed	> 400 GHz /sec @ 1 MHz RBW
14.	Analog to Digital Converter (ADC) resolution	16-bit
15.	Antenna Input	SMA or N type

S/ No	Parameter	Requirement
System Specifications for receiver		
16.	Processor	On-board processor for autonomous operation
17.	Storage	250GB SSD for recording
18.	Data and Control Interface	1 Gbit ethernet IP along with provision to connect with external cellular network.
System Specifications for receiver		
19.	Power Supply	10VDC to 50VDC 100-240 VAC, 50-60 Hz Battery along with battery charger for adequate backup upto 02 Hrs or better while monitoring. Power over Ethernet (PoE)
20.	Power Consumption	<40W
21.	Operating Environment	Outdoor
22.	Ingress Protection	IP67
23.	Operating Temperature	-20 to +55 C
24.	Portability	Kg Weight
25.	Mounting capability	Should have provision to attach with Mast or Pole. Accordingly all necessary accessories (connectors, clamps etc) to be provided.
Antenna		
26.	Antenna	Omni Directional Antenna(s) with 1 dBi gain that must be capable to capture entire range of operations of frequencies. HF Operation, VHF / UHF Operation
27.	Feeder	Antenna(s) feeder must be at least of 25 Meter in length with required connectors.

m. nelson

DTE for 31 ISPW Station Monitoring Site: DTE should be able to fulfil all the requirements and features mentioned in Local monitoring software and should meet following specifications:		
28.	Processor	Latest generation of Intel i7 hexa core processor or equivalent
29.	Processor Speed	2.2 GHz
30.	Hard Disk	512 GB SSD with 250 MB/sec of sustained write speed
31.	RAM	16 GB DDR4-2400 MHz
32.	OS	Windows 10 or latest home version
33.	Display	15.6-inch Full HD Display
34.	Wireless Connectivity	802.11 ac WiFi
35.	LAN	1 Gbit Ethernet
36.	USB	Minimum 2 nos. USB 3.0 ports
37.	Audio	Mic In and Speaker Out
38.	HDMI Port	01 No. Full HD

M. K. Singh

SCHDULE OF REQUIRMENTS**Annexure-A**

The list of required items for Radio Monitoring System is as under:

a. HARDWARE/SOFTWARE AT THE DELHI MONITORING SITE AT DCPW HQ NEW DELHI

Sl. No.	Items	Qty.	Units
1.	Receiver (SDR) IP 67 Compliance or latest with 1:1 Redundancy along with accessories	1	Set
2.	Antenna for High Frequency (HF) 1:1 Redundancy along with accessories	1	Set
3.	Antenna for Very High Frequency (VHF) 1:1 Redundancy along with accessories	1	Set
4.	Antenna for Ultra High Frequency (UHF) 1:1 Redundancy along with accessories	1	Set
5.	Server with 1:1 Hot Redundancy with LAN Connectivity	1	Set
6.	Licensed Software capable to cater required features and capability of scalable in future	1	Set
7.	Online UPS with 1:1 Redundancy required backup	1	Set
8.	Additional Equipment (Both Hardware & Software) for catering the user requirement	1	Set
9.	Operating Manuals	2	Sets
10.	Installation & Commissioning of the above equipments	1	Set

b. HARDWARE/SOFTWARE REQUIRED AT LOCAL MONITORING SITE AT ISPW STATIONS OF THE DIRECTORATE

11.	Receiver (SDR) IP 67 Compliance or latest along with accessories	32	Sets
12.	Antenna for High Frequency (HF) along with accessories	32	Sets
13.	Antenna for Very High Frequency (VHF) along with accessories	32	Sets
14.	Antenna for Ultra High Frequency (UHF) along with accessories	32	Sets
15.	Licensed Software capable to cater required features	32	Sets
16.	High End Data Terminal Equipment (DTE)	32	Sets
17.	Online UPS with required backup	32	Sets
18.	Additional Equipment (Both Hardware & Software) for each of 32 sites	1	Sets
19.	Operating Manuals for each of the 32 sites	3	Sets
20.	Installation & Commissioning of the above equipments for each of the 32 sites	1	Sets

1. Local Monitoring is proposed to be at 31 ISPW Stations located at State Capital of all State/UTs and one monitoring site at Delhi.
2. Firms/Vendors shall include all the software, hardware, peripherals, accessories, sub-components required for the compliance of functionality and completeness of the solutions, including devices, equipment's, accessories, patch cords (if any), cables, software, licenses, development/ testing kits, tools, etc. which may require for complete solution for the proposal.

M. N. B. S.

INSTRUCTIONS TO THE BIDDERS

The broad points covering detailed scope of requirements are as under:

1. The Firms/Vendor's will have to submit equipment layout plan for Integrated solutions for Radio Monitoring system. The layout plan shall clearly depict interconnecting cable routes between various equipments.
2. The scope will also include list of all additional equipments in terms of hardware and software required for Integrated solutions for Radio Monitoring System.
3. Firms/Vendors shall ensure that Integrated solutions for Radio Monitoring System should be supported by authenticated login and generation of logs of the activity performed on the systems.
4. Firms/Vendors shall include all the software, hardware, peripherals, accessories, sub-components required for the functionality and completeness of the solutions, including devices, equipment's, accessories, patch cords (if any), cables, software, licenses, development/ testing kits, tools, etc. which may require for complete solution for the proposal.
5. This Expression of Interest is being issued purely on "no commitment basis" for seeking the details of potential vendors interested to participate in the advertised EOI.
6. The vendors should provide an approximate estimation of cost (Applicable Taxes need to be mentioned separately) including an approximate breakdown of all the elements that need to be 2 structured into the costing of the equipment system (engineering support, spares, training, documentation, product support, etc) as per Annexure-A mentioned in the EOI.

The following table enlists important schedule & deadline for submission of Expression of Interest:

SL No.	Particulars	Details
1.	Expression of Interest (EOI) No. and date	No.C-13017/1 (MNGT)/2018-IMC dated "D"
2.	Pre-Bid Conference	D + 15
3.	Last date & time for submission of written queries for clarifications.	D+21
4.	Release of response to clarifications on www.dcpw.gov.in	D+30
5.	Last date for submission of EOI Proposal	D + 45
6.	Address at which proposal in response to EOI is to be submitted	Assistant Director (CC), First Floor, DCPW, Block No.9, CGO Complex, Lodhi Road, New Delhi-110003.
7.	Opening of EOI Responses	D+46

STAGE OF EXPRESSION OF INTEREST (EOI)

There will be two stages in Expression of Interest:

In the first stage:

1. On receipt of Expression of Interest, the assessment of EOI will be done by the Directorate. The technically capable Firms/Vendors will be called for technical discussions/presentations.
2. During the technical discussions stage, this Directorate may also add those other stake holders in the discussions who could add value to the decision making on the various technical aspects and evaluation criteria.
3. Based on discussions/ presentations, one or more acceptable technical solutions may be decided upon laying down detailed technical specifications for each acceptable technical solution, quality bench marks, warranty requirements, delivery milestones etc.

In the second stage:

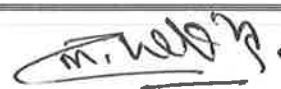
1. Thereafter in the second stage, normal OTE/GTE bidding will be done.

FIRMS/VENDORS PRE- PROPOSAL MEETING

The Directorate will host a Firm's/Vendor's Pre-Proposal in DCPW HQ New Delhi at 7th Floor, Conference Hall, DCPW HQrs, Lodhi Road, New Delhi. The meeting is tentatively scheduled as per the schedule mentioned in EOI. The representatives of the interested Firms/Vendors may attend meeting at their own cost. The purpose of the conference is to provide Firms/Vendors with any clarifications regarding the EOI. It will also provide each Firms/Vendors with an opportunity to seek clarifications regarding any aspect of the EOI and the scope of work in the EOI.

EOI PROPOSAL PREPARATION COSTS & RELATED ISSUES

1. The Firm/Vendor is responsible for all costs incurred in connection with participation in this process, including, but not limited to, costs incurred in preparation of proposal, participation in meeting/discussions.
2. DCPW in no case will be responsible or liable for these costs, regardless of the conduct or outcome of the EOI process.
3. This EOI does not commit DCPW to award a contract or to engage in negotiations. Further, no reimbursable cost may be incurred in anticipation of award or for preparing this EOI.



EOI SUBMISSION FORMS

The applicants are expected to respond to the EOI using the forms given in this section and all documents supporting EOI criteria.

Proposal application shall comprise of following forms:

1. **Form 1:** Covering Letter on Letterhead of the Firm/Vendor
2. **Detailed Proposal** for Integrated solutions for Radio Monitoring System as per schedule of requirements **at Annexure-A** mentioned in the EOI. In addition to this Firm shall also submit equipment layout plan, interfaces port details, all the software, hardware, peripherals, accessories, sub-components required for achieving the functionality and completeness of the solutions.
3. **Form 2:** Compliance Statement
4. **Form 3:** Details of the Firm/Vendor operations & business
5. **Form 4:** Check List of Firm/Vendor

FORM 1

Covering Letter on Letterhead of the Firm/Vendor

To,

Director, DCPW

Block No.9, CGO Complex,

Lodhi Road, New Delhi

Sir,

We are hereby submitting our Expression of Interest. We fully understand and agree to comply that on verification, if any of the information provided here is found to be misleading the short-listing process or unduly favors our company in the short-listing process of the contract during the project.

We agree to abide by the conditions set forth in this EOI. We hereby declare that our proposal submitted in response to this EOI is made good faith and the information contained is true and correct to the best of our knowledge and belief.

Yours Sincerely,

(Name with seal)

(Address and Contact number)



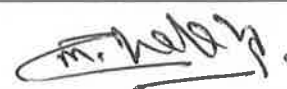
FORM 2

COMPLIANCE STATEMENT

1. The Objective and Scope of requirement as mentioned in EOI shall be converted into a tabular format given below so as to ensure that no parameter is left out by Firm/Vendor.
2. Firm/Vendor is required to comply for each parameter as per under mentioned tabular format.

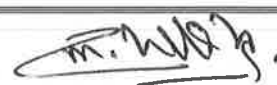
SL No.	Parameter	Compliance (Yes/No)	Suggestions if any
1	General Requirements from SL. No. 1 to 7.		
2	Features required of Local Monitoring from SL. No.1 to 17.		
3	Features required of Delhi Server from SL No.1 to 18.		
4	Technical Specifications of Required Radio Monitoring Systems from SL. No.1 to 38		

The Firm/Vendor may add extra sheet to furnish the details of better and economical solutions if deemed so.



FORM 3**DETAILS OF THE FIRM/VENDOR OPERATIONS & BUSINESS**

SL No.	Particulars	Details
1.	Name of the Vendor/Company/Firm (Company profile, in brief, to be attached)	
2.	Type (Tick the relevant category) a) Original Equipment Manufacturer (OEM) b) Government Sponsored Export Agency (Details of registration be provided)	
	c) Authorized Vendor of Foreign Firm	
	d) Other (Give Specific details)	
3.	Contact Details Postal Address, Fax, Email, Website, Details of contact person	
4.	Local Branch/liaison office in India (if any) Name and Address	
5.	Annual Turnover for Last Three Financial Years	
6.	Details of earlier Contact with any Central/State/PSU/Private Agency	
7.	Details of Manufacturing infrastructure available in India	
8.	Details of Service infrastructure available in India	
9.	Details of Spare parts available in India	
10.	Details duration of Technical Support that company can provide at user premises in India	
11.	Whether training can be provided regarding testing/evaluation of communication equipment mentioned in table No.1 of EOI at user Premises	



FORM 4

Check List of Firm/Vendor

1. The bidder should ensure that all documents and papers in this EOI are fully authenticated by the authorized signatory under his signature with official seal wherever applicable.
2. Every additional document submitted and every page of the EOI document shall be duly signed by the authorized signatory as a token of compliance to all terms and conditions.
3. No overwriting/changes is allowed in submitted EOI documents.
4. The following documents form part of the EOI and should be submitted with EOI.

SL. No.	Documents to be submitted	Documents to be submitted	
		Yes/No	Page No. at which document attached
1.	All pages of this EOI document, duly signed by the authorized signatory in a token of acceptance of all term and conditions by the bidder. Any other document submitted by the bidder should also be signed by authorized signatory.		
2.	Authorization Certificate/ Ownership Certificate		
3.	Details of GST registration		
4.	Attested copy of similar project executed		
5.	Experience details of similar project suitability for the		
6.	Written statement about suitability for the		
7.	Past experience of the firm/vendor in similar project has been enclosed		
8.	Financial strength of the vendor -Turnover figures of the last three years has been enclosed		
9.	Manufacturing capabilities/tie-ups has been enclosed		
10.	Details about after-sales support infrastructure has been enclosed		
11.	Whether Firm/Vendor is Class-I local supplier		
12.	Whether Firm/Vendor is Class-II local supplier		



13.	Whether self-certification regarding Class-I local supplier & Class-II local supplier has been enclosed.		
14.	Whether details of their location(s) at which the local addition is made in case of Class-I local supplier & Class-II local supplier has been enclosed.		

End of Document

M. V. S. S.



10/10/10