भारतीय दूरसंचार विनियामक प्राधिकरण

Telecom Regulatory Authority of India

Recommendations on Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism

(Response to the Back Reference Dated 21st July 2025 Received from DoT on the TRAI's Recommendations Dated 20th July 2018)

New Delhi, India

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CHAPTER I: INTRODUCTION AND BACKGROUND

A. DoT's Reference Dated 13.07.2017

1.1 Earlier, the Department of Telecommunications (DoT), Ministry of Communications, Government of India, through its letter dated 13.07.2017 **(Annexure-I)**, sent a reference to the Telecom Regulatory Authority of India (hereinafter, also referred to as "the Authority", or "TRAI') under the terms of clause 11(1)(a) of the TRAI Act, 1997 (as amended). Through the letter, DoT requested TRAI to provide recommendations on the following aspects:

(a) Method of allocation of spectrum for PMRTS;
(b) Appropriate frequency bands for PMRTS;
(c) Block size for PMRTS;
(d) Duration/ Validity period of spectrum for PMRTS;
(e) Area of service;
(f) Reserve price and applicable SUC for PMRTS in different bands; and
(g) Applicable spectrum cap for PMRTS.

1.2 Hereinafter, the afore-mentioned letter will also be referred to as "the Reference dated 13.07.2017".

B. TRAI's Recommendations Dated 20.07.2018

1.3 With respect to the Reference dated 13.07.2017, TRAI, on 08.02.2018, issued a consultation paper on 'Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS), including auction as a transparent mechanism' for soliciting comments of stakeholders on the subject matter. After a comprehensive consultation with stakeholders, TRAI, on 20.07.2018, sent its recommendations on 'Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent

mechanism' to DoT. Hereinafter, these recommendations will also be referred to as "the Recommendations dated 20.07.2018".

C. DoT's Back-reference Dated 21.07.2025

1.4 Lately, DoT has sent a letter dated 21.07.2025 (**Annexure-II**) on the subject-Back reference on TRAI recommendations dated 20-07-2018 on "Method of Allocation of Spectrum for PMRTS including auction, as a transparent mechanism" to TRAI. Hereinafter, the letter dated 21.07.2025 will also be referred to as "the Back-Reference".

1.5 Through the Back-Reference, DoT has informed, *inter-alia*, as below:

"The undersigned is directed to refer TRAI Letter. No. D.O. No.102-5/2017-NSL-II dated 20-07-2018 vide which TRAI has provided their recommendations on "Method of Allocation of Spectrum for PMRTS including auction, as a transparent mechanism" These recommendations have been considered by the Department and the following has been decided:

(i) There is a need to seek reconsidered recommendations from TRAI in respect of some of the recommendations/ sub-sections of recommendations. Such recommendations/ sub-sections of recommendations and the issues involved therein are enclosed as Annexure-I.

(ii) Certain recommendations from TRAI have been accepted and additional related information in respect of these recommendations is being communicated to TRAI. These recommendations along with the corresponding information are enclosed as Annexure-II.

(iii) Rest of the recommendations are accepted completely.

2. In view of the above, TRAI is requested to provide reconsidered recommendations, in accordance with the provisions of Section 11 of the TRAI Act 1997, as amended in 2000, on the recommendations listed in Annexure-I."

1.6 Along with the Back-Reference, DoT has enclosed two annexures. Each of these annexures contains views of DoT on certain recommendations which were part of the Recommendations dated 20.07.2018. In respect of the recommendations listed in Annexure-I, DoT has requested TRAI to provide its reconsidered recommendations. In respect of the recommendations listed in the Annexure-II, DoT has expressed that these recommendations have been accepted and "*additional related information in respect of these recommendations is being communicated to TRAI.*"

D. The Present Response

1.7 The Authority has carefully examined the views expressed by DoT in the Back-Reference. Based on a conscientious analysis, the Authority has arrived at the present response to the Back-Reference. This chapter provides an introduction and background to the subject. Chapter II provides the issue-wise response of the Authority to the Back-Reference.

CHAPTER II: ISSUE-WISE RESPONSE TO THE BACK-REFERENCE

A. Scheme of the Chapter

2.1 Through the Annexure-I of the Back-Reference, DoT has expressed its views in respect of the recommendations No. 4.6, 4.7 and 4.10 of the Recommendations dated 20.07.2018, and has requested TRAI to provide its reconsidered recommendations in respect of such recommendations. This chapter provides the response of the Authority to the views expressed by DoT in respect of recommendations No. 4.6, 4.7 and 4.10.

2.2 In the Back-Reference, DoT has also mentioned that *"[c]ertain recommendations from TRAI have been accepted and additional related information in respect of these recommendations is being communicated to TRAI. These recommendations along with the corresponding information are enclosed as Annexure-II"*. Through the Annexure-II of the Back-Reference, DoT has expressed its views in respect of the recommendation No. 4.1, 4.2, 4.3 and 4.8 (a) to (d) of the Recommendations dated 20.07.2018. DoT has not sought TRAI's reconsidered recommendations in respect of such recommendations. The Authority has examined the views of DoT on the recommendation No. 4.1, 4.2, 4.3 and 4.8 (a) to (d) of the Recommendations dated 20.07.2018 as well. Based on the examination, the Authority has noted the views of DoT in respect of the recommendation No. 4.1, 4.2, and 4.3. Further, the Authority has observed that the views of DoT in respect of the recommendation No. 4.8 (a) to (d) are at variance to the text and intent of recommendation No. 4.8 (a) to (d). Accordingly, this chapter also provides the response of the Authority to the views expressed by DoT in respect of the recommendation No. 4.8 (a) to (d).

2.3 In this chapter, for the sake of convenience, the afore-mentioned recommendations have been taken up in the following sequence: (i) recommendation No. 4.10, (ii) recommendation No. 4.6, (iii) recommendation

No. 4.7 and (iv) recommendation No. 4.8 (a) to (d). The descriptions thereon have been organized in the following manner:

(a) First, the text of the recommendation has been reproduced.

(b) Then, the views expressed by DoT in the Back-Reference in respect of such recommendation has been reproduced.

(c) Thereafter, the response of the Authority based on its analysis of the matter has been provided.

B. Issue-wise Response

2.4 **Recommendation No. 4.10:** *The Authority recommends that the validity of spectrum assignment should be for 20 years in line with the license validity, however, assignment should be co-terminus with the validity of the license (in case the validity of the license expires or surrender of the license or non-conformity to the license conditions such as rollout obligations, loading criteria).*

2.5 **DoT's Views on the Recommendation No. 4.10:** *The Department is of the view that, as per the current practice, spectrum assignment on administrative basis shall be issued for a maximum period of 5 years. The same has been incorporated in the proposed spectrum assignment rules. Further, the section 4 of The Telecommunications Act, 2023 has not yet been enacted as the rules for spectrum assignment are under preparation.*

2.6 **Response of TRAI w.r.t. DoT's Views on the Recommendation No. 4.10**

2.6.1 Before proceeding to examine the DoT's views on the Recommendation No. 4.10, it would be worthwhile to understand the context and rationale of the Recommendation No. 4.10.

2.6.2 Through the Reference dated 13.07.2017, DoT had requested TRAI to provide recommendations on, *inter-alia,* the validity period of spectrum assignment to PMRTS operators. In this regard, DoT had stated as below through the Reference dated 13.07.2017:

"7.3.1 Presently, spectrum for access services is auctioned for a validity period of 20 years. PMRT services cannot be matched with access services in terms of scale of services and revenue generation. Moreover, PMRT services are expected to be limited to few cities only.

7.3.2 TRAI may consider whether validity period for PMRT can be kept less than 20 years such as 5 years, 10 years, notwithstanding that Unified License for PMRT services is issued for 20 years period, and give recommendation accordingly."

2.6.3 In this context, TRAI, through the consultation paper on 'Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS), including auction, as a transparent mechanism' dated 08.02.2018 solicited comments form stakeholders on the following questions:

"Q16. What should be the duration/ validity of assignment of spectrum to PMRT service provider? Should it be with the same duration as that of the license (20 Years)? Please support your answer with facts.

Q17. If the duration of validity of spectrum is to be made lesser than the validity of license, should there be an option with the licensee to renew? What should be the specific conditions for such renewal?"

2.6.4 After consultation with stakeholders, TRAI sent the Recommendations dated 20.07.2018 to DoT. In these recommendations, TRAI made the following observations with respect to the validity period of spectrum assignment to PMRTS operators:

"3.91 Keeping the spectrum assignment for shorter terms e.g. 5-year, 10 year or 15 years as suggested by DoT merely add to administrative work on part of the licensee as well as licensor. There are certain license conditions already in place those would not allow a licensee hording the spectrum. The conditions e.g. roll out of network within one year and per carrier loading criteria appears to suffice the purpose.

3.92 Taking into consideration the above facts the Authority is of the view that in order to accelerate the growth of PMRTS, the validity of spectrum assignment should be for 20 years in line with the license validity, however, assignment should be co-terminus with the validity of the license (expiry, surrender or license conditions such as rollout obligations or loading criteria are not fulfilled).

2.6.5 In light of the above observations, TRAI, through the recommendation No. 4.10 of the Recommendations dated 20.07.2018, recommended that "*the validity of spectrum assignment should be for 20 years in line with the license validity, however, assignment should be co-terminus with the validity of the license (in case the validity of the license expires or surrender of the license or non-conformity to the license conditions such as rollout obligations, loading criteria).*"

2.6.6 As may be seen from the above, while making the recommendation No. 4.10, TRAI expressed that the validity period of spectrum assignment should be 20 years in line with the validity period of license to accelerate the growth of PMRTS. In respect to the recommendation No. 4.10, DoT, through the Back-Reference, has stated that as per the current practice, the spectrum assignment on administrative basis shall be issued for a maximum period of five years. DoT has also mentioned that the aspect of the spectrum assignment on administrative basis for a maximum period of five years has also been incorporated in the proposed spectrum assignment rules.

2.6.7 The Authority does not agree with the DoT's view that *spectrum assignment on administrative basis should be issued for a maximum period of 5 years* for all candidate services. The Authority is of the opinion that the maximum period of validity of spectrum assignment on administrative basis should depend upon on the type of service. Having said this, the Authority proceeds to examine the DoT's view in the present context i.e. the spectrum assignment to PMRTS operators.

2.6.8 While examining the DoT's view that the spectrum assignment to PMRTS operators should be issued for a maximum period of five years as per the extant practice, the Authority took note of the following aspects:

(a) PMRTS is used mainly for delivering critical communications. It is widely used across critical infrastructure sectors such as manufacturing, oil & gas, mining, transportation, utilities, and emergency medical services. PMRTS enables instant, coordinated communication within designated groups (talk-groups), which is crucial for timely and effective response in critical situations.

(b) At present, PMRTS in India is being provided through the legacy narrowband Land Mobile Radio (LMR) systems. Such systems primarily provide voice and sometimes low-speed data. The bandwidth of the frequency channels used in such systems is 25 KHz (paired)[1].

(c) Internationally, since the introduction of 4G and 5G technologies for IMT[2], a significant change has occurred in the manner of delivery of critical communication services. Traditionally reliant on narrowband LMR systems, critical communication services are increasingly integrating cellular mobile broadband technologies (4G and 5G) to incorporate

[1] TRAI, through the Recommendations dated 20.07.2018, recommended that *"[c]arrier size for assignment to PMRTS licensee (both for analog or digital) shall be 6.25 KHz and multiple thereof."*

[2] IMT is an acronym of International Mobile Telecommunications.

broadband capabilities. The cellular mobile broadband technologies far outweigh the capabilities of traditional mobile radio trunking technologies as they bring improved data capacity, higher voice quality, end-to-end encryption, and support for mission-critical push-to-talk (MCPTT), video, and data services. Further, the 5G technology also provides ultra-reliable low-latency communication (URLLC) enabling time-sensitive, mission-critical operations that were beyond the scope of legacy LMR systems.

(d) Internationally, at present the cellular mobile broadband technologies are being seen as complementary to existing narrowband mobile radio trunking technologies. Efforts for standardization (including 3GPP Mission-Critical Services standards) are underway, pointing towards eventual full replacement of narrowband mobile radio trunking technologies with cellular mobile broadband technologies. Public Safety (PS) networks like FirstNet in USA, and Safe-Net in South Korea have already been established by using cellular mobile broadband technologies.

2.6.9 In short, the technological landscape of critical communication services, at the global level, has changed greatly in the last seven years since 2018 when the Recommendations dated 20.07.2018 were sent to the Government. In India, in the next decade, there is good likelihood of the present-day narrowband LMR systems, requiring spectrum in small blocks such as 25 KHz, being replaced with cellular broadband systems, requiring spectrum in much larger blocks such as 5 MHz. Therefore, the assignment of spectrum to PMRTS operators for their critical communication systems is likely to require a review in the next decade.

2.6.10 Considering the possibility of a significant change in the technology for critical communication services in the near future, the Authority has reviewed the recommendation No. 4.10 and is of the view that in the changed

circumstances, it would be prudent that the validity period of spectrum assignment to PMRTS operators is not made coterminous with the validity period of PMRTS license/ authorisation (i.e. 20 years). Keeping a validity period of 20 years for the spectrum assignment [in the blocks of 6.25 KHz (paired) or 25 KHz (paired), which are used in the narrowband LMR technology] to PMRTS could prove to be counter-productive as it may bind the PMRTS operators for a long period with a narrowband LMR technology which might not necessarily have a robust demand from users and a strong eco-system of devices and network equipment in the next decade. Therefore, the Authority is of the view that, at this stage, the maximum validity period of spectrum assignment to PMRTS should be kept as five years. The Authority is also of the view that henceforth, the technological developments in the critical communication sector would need to be closely monitored. In case, based on a review after five years, it is observed that the legacy narrowband LMR systems continue to have a robust demand and a strong eco-system for devices and network equipment, the Government may consider renewing the spectrum assignment to PMRTS operators for a further period of maximum five years.

2.6.11 Accordingly, based on a careful reconsideration of the recommendation No. 4.10, **the Authority recommends that, at this stage, the maximum period of validity of spectrum assignment to PMRTS operators should be five years. Based on a review after five years, the Government may consider renewing the spectrum assignment to PMRTS operators for a further period of maximum five years.**

2.6.12 Further, as mentioned above in this section, the Authority does not agree with the DoT's view that spectrum assignment on administrative basis should be issued for a maximum period of five years for all candidate services. **The Authority recommends that the maximum period of validity of spectrum assignment on administrative basis should depend upon on the type of service.**

2.7 **Recommendation No. 4.6:** *The Authority recommends that the Royalty charges for PMRTS and the options for payment of Royalty charges shall be:*

(A) Option 1- Yearly Payment

Rs. 1200 per year per 6.25 KHz channel for link distance upto 30 Km and Rs. 2400 per year per 6.25 KHz channel for link distance upto 60 Km.

(B) Option 2- Onetime Upfront Payment

1. Onetime upfront payment of Rs. 20,000 (twenty thousand) for 6.25 KHz Spectrum for link distance upto 30 Km in the city within the same LSA for 20 years.

2. Onetime upfront payment of Rs. 40,000 (forty thousand) for 6.25 KHz Spectrum for link distance upto 60 Km in the city within the same LSA for 20 years.

2.8 **DoT's Views on the Recommendation No. 4.6:** *The Authority had recommended two options for payment of Royalty Charges for PMRTS. Option 1: Yearly Royalty payment of Rs 1200/- per year for each 6.25 kHz channel for link distances up to 30 km and Rs 2400/- per year for each 6.25 kHz channel for link distances up to 60 km.*

Option 2: One-time upfront payment of ₹20,000 (twenty thousand) or ₹40,000 (forty thousand) is applicable for 6.25 kHz spectrum with link distances of up to 30 km or 60 km respectively, within the city and the same LSA, for a period of 20 years.

The Department is of the view that option 1 may be accepted. Further with respect to option 2, currently spectrum assignment on administrative basis is issued for a maximum period of 5 years and the same provision has been incorporated in the proposed spectrum assignment rules, which are under preparation. Accordingly, TRAI is requested to consider option 2 for a period of 5 years.

2.9 **Response of TRAI w.r.t. DoT's Views on the Recommendation No. 4.6:**

2.9.1 As regards to the option 2, the Authority in the Recommendations dated 20.07.2018 had taken the view that since the license for the PMRTS is granted for 20 years but formula based Royalty charges and Licence fee is charged and collected every year in advance, an option should be provided to the PMRTS licensees to pay one time Royalty charges for entire period of 20 years besides the current practice of levying on yearly basis. This onetime upfront payment of Royalty charges for allocation of spectrum for 20 years for PMRT service shall not only incentivise the PMRTS operator but also help in reducing the administrative work of DoT for collecting payment every year form several PMRTS operators. Accordingly, option 2 of onetime upfront payment of Royalty Charges for acquisition of spectrum for 20 years was also recommended by the Authority.

2.9.2 Presently, in view of the reasons given at para No. 2.6.1 to 2.6.12 in this document, the Authority has agreed with the view of DoT that at this stage the maximum validity period of spectrum assignment for PMRTS should be five years.

2.9.3 Accordingly, in order to reflect the revised validity of spectrum assignment of five years, **the Authority is of the view that the one-time upfront payment, as given under Option-2, should be adjusted on pro-rata basis**.

2.10 **Recommendation No. 4.7:** The Authority recommends that the SUC for the *spectrum allocated to PMRTS shall be levied @ 1% of AGR and while determining the AGR for the purpose of levy of license fee and SUC, the revenue from sale of handsets (the cost of which is separately identifiable) shall be allowed as deduction from the GR of PMRTS for the purpose of levy*

of license fee. The Authority is however not making any specific recommendation on license fee of PMRT Service.

2.11 **DoT's Views on the Recommendation No. 4.7:** *The Authority recommended that the SUC for the spectrum allocated to PMRTS shall be levied @ 1% of AGR and while determining the AGR for the purpose of levy of license fee and SUC, the revenue from sale of handsets (the cost of which is separately identifiable) shall be allowed as deduction from the GR of PMRTS for the purpose of levy of license fee.*

The Department is of the view that the License Fee component of spectrum charges shall be levied at 1% of AGR. However, the revenue from the sale of handsets shall not be allowed as a deduction from Applicable Gross Revenue (ApGR) while calculating AGR. This is in line with the TRAI recommendations on the 'Framework for Service Authorization to be Granted Under the Telecommunications Act, 2023'.

2.12 **Response of TRAI w.r.t. DoT's Views on the Recommendation No. 4.7**:

2.12.1 The Authority, vide its Recommendations dated 20.07.2018, had recommended that Spectrum Usage Charges (SUC) for spectrum allocated to PMRTS be levied at 1% of Adjusted Gross Revenue (AGR). Further, while determining AGR for the purpose of levy of license fee and SUC, revenue from the sale of handsets (where the cost is separately identifiable) shall be allowed as a deduction from the Gross Revenue (GR) of PMRTS for the purpose of levy of license fee.

2.12.2 Subsequent to these recommendations, significant developments have taken place in the Indian telecom landscape since 2018, some of which are outlined below:

(a) In October 2019, the Hon'ble Supreme Court of India made its judgment and upheld the Department of Telecommunications' (DoT) definition of AGR, which included both telecom and non-telecom sources of income.

(b) In 2021, reforms in the telecom sector were brought out by Union Cabinet, consequently changing the definition of AGR. The concept of Applicable Gross Revenue (ApGR) was introduced by DoT as part of regulatory reforms. Applicable Gross Revenue (ApGR) which is arrived at by deducting certain items of Revenue from the Gross Revenue. The reason for introducing ApGR was to rationalize the definition of AGR (Adjusted Gross Revenue) and to ensure that only relevant telecom-related revenues are considered.

(c) In July 2023, DoT issued a clarification in response to the issues raised by the stakeholders regarding "revenue from operations other than telecom activities/ operations" stating that:-

"Scope of license clause in the license agreement defines services which can be offered under the license. All activities covered under scope of license will be classified as Telecom activities.

As the nature of non telecom activities will vary between different companies it is not possible to list out non telecom activities."

2.12.3 Considering the above developments, in the year 2024 the Authority vide its recommendations on 'the Framework for Service Authorisations to be granted under the Telecommunications Act, 2023' had taken a view that there is no need to issue separate definitions of telecom and non-telecom activities and accordingly recommended that the extant definitions of GR, ApGR and AGR for the existing Service Authorisations (including PMRTS service authorisation) should continue.

2.12.4 In line with the recommendations on 'the Framework for Service Authorization to be Granted Under the Telecommunications Act,2023', the Authority concurs with the view of DoT that the revenue from the sale of handsets should not

be allowed as a deduction from Applicable Gross Revenue (ApGR) while computing AGR.

2.13 **Recommendation No. 4.8 (a) to (d):** *The Authority recommends that: -*

(a) In order to make the spectrum available for BB-PPDR networks, existing PMRTS assignments in the band 814-819/859-864 MHz should be refarmed and further accommodated in the 811-814/856859 MHz band. The refarming process should be completed within a period of two years.

(b) The agencies handling PPDR networks that have been operating in the band 806-824 MHz paired with 851-869 MHz should be confined to and accommodated in the proposed PPDR network for which the assignment of spectrum is proposed in 814-824/859-869 MHz subband.

(c) Upon refarming the bands mentioned in the sub-para (a) and (b) above, the sub-band 806-811/851-856 MHz should be made available both for PMRTS and CMRTS on need and justification basis.

(d) DoT shall incorporate the necessary changes in NFAP as proposed in the Table 3.7 in Para 3.74

2.14 **DoT's Views on the Recommendation No. 4.8 (a) to (d):** *The Department is of the view that, with respect to recommendations 4.8 (a) to (d), the band plan in the spectrum band 806-824 MHZ/ 851-869 MHz as mentioned in latest NFAP-2022 issued by the Government should be followed.*

2.15 **Response of TRAI w.r.t. DoT's Views on the Recommendation No. 4.8 (a) to (d):**

2.15.1 Before proceeding to examine the DoT's views on the recommendation No. 4.8 (a) to (d), it would be worthwhile to understand the context and rationale of the recommendation No. 4.8 (a) to (d). In this regard, the following points are noteworthy:

(a) Earlier, in the National Frequency Allocation Plan (NFAP)-2011, the following frequency bands were allocated to MRTS[3]:

Frequency band (MHz)	Total Bandwidth	Uses	India remark in NFAP
Frequency Band: 300 MHz and 400 MHz			
336-338, 346-348	2x2 MHz	PMRTS and CMRTS	IND 27
338-340, 348-350	2x2 MHz		
351-356, 361-366	2x5 MHz	Digital CMRTS	IND 28
356-358, 366-368	2x2 MHz		
380-389.9, 390-399.9	2x9.9 MHz	Digital PMRTS and CMRTS	IND 29
Frequency Band: 800 MHz			
806-811, 851-856	2x5 MHz	PMRTS and CMRTS	IND 40
811-814, 856-859	2x3 MHz	Spectrally efficient digital PMRTS and CMRTS	IND 41
814-819, 859-864	2x5 MHz	CMRTS Networks (BB-PPDR)	IND 42
819-824, 864-869	2x5 MHz	CMRTS Networks (BB-PPDR)	IND 43

(b) Through the Reference dated 13.07.2017, DoT stated, *inter-alia*, that *"[r]adio trunking service on technological and regulatory landscape has undergone considerable changes since the publication of NFAP-2011, it is important to take note of these changes"*. Considering this, DoT requested TRAI to provide recommendation on appropriate frequency bands for PMRTS.

[3] Mobile Radio Trunking Service (MRTS) is a collective term for the Public Mobile Radio Trunking Service (PMRTS) and Captive Mobile Radio Trunking Service (CMRTS).

(c) After following a comprehensive consultation with stakeholders, TRAI, in the Recommendations dated 20.07.2018, made, *inter-alia*, the following observations in respect of the allocation of spectrum for PMRTS.

"3.70 Keeping in view the need to have a robust policy framework for the introduction of an advanced, reliable, robust and responsive PPDR communication system in the country, the Authority, on 9th October 2017, suo-motu issued a paper titled "Next Generation PPDR Communication Networks" for public consultation. The Authority has issued its recommendations on the same on 4th June 2018. In which it has recommended to setup a pan-India integrated Broadband PPDR (BBPPDR) communication network (to be called as "National BB-PPDR Network") based on 3GPP PS-LTE technology. Through the recommendations, the Authority has also recommended that 2x10 MHz of the dedicated spectrum, 814-824/859-869 MHz, should be assigned for nationwide BB-PPDR services as per APT Frequency Arrangement number G 3-1-4.

3.71 In view of the recent recommendations by the Authority as discussed in para above, the issue of continuation of services as per existing carrier assignments and future demand for the PMRTS arises.

3.72 As per existing channelling plan of 25 KHz carrier size, there are 120 numbers of channels available for assignment in 811-814/ 856-859 MHz band at a geographical location. …, there are total 425 number of carriers assigned in 814-819/ 859-864 MHz out of which maximum number of carriers have been assigned in Delhi (90 carriers) and Mumbai (80 carriers) cities only. Also, maximum additional demand in this band is in Mumbai city (75 carriers) only.

3.73 Based on the deliberations above, it can be concluded that in order to make the spectrum available for BB-PPDR networks, existing

assignments to PMRTS in the band 814-819/ 859-864 MHz can be refarmed and further accommodated in the 811-814/ 856-859 MHz band. One time exercise of RF tuning shall be required by the service provider without any additional changes or investment in network elements.

3.74 As per the information available, there are very few assignments in some cities for CMRT services in 814-819/ 859-864 MHz band. There are certain assignments to PPDR agencies as well as other organizations/ private entities having operations of their Captive networks under CMRT service license in the band 806-811/ 851-856 MHz. In the event of implementation of the recommendations on next generation BB-PPDR, most of the existing PPDR networks operating as CMRTS licensees can also be refarmed and assigned spectrum in 814-824/ 859-869 MHz band. Refarming will pave the way to vacate certain carriers in the band 806-811/ 851-856 MHz and additional demand for PMRTS if any, can be offset by this process. In order to make the spectrum available for BB-PPDR, the refarming process should be completed within a period of two years. Keeping in view the proposals discussed above, DoT shall accordingly incorporate necessary changes in NFAP. In the proposed process, the band 806-811/ 851-856 MHz (IND 40) shall be notified both for PMRTS and CMRTS and band 811- 814/ 856-859 MHz (IND-41) should be utilised for spectrum efficient digital PMRT and CMRT services. The proposed changes to the provision as per NFAP-2011 in 800 MHz band is given in table 3.7.

Table 3.7: Proposed changes to the provision as per National Frequency Allocation Plan (NFAP)-2011 in 800 MHz frequency band

Frequency Band (MHz)	***Total Bandwidth***	***Proposed Uses***	***India Remark in NFAP***
806-811, 851-856	*2x5 MHz*	*PMRTS and CMRTS*	*IND 40*
811-814, 856-859	*2x3 MHz*	*Spectrally efficient digital PMRTS and CMRTS*	*IND 41*
814-819, 859-864	*2x5 MHz*	*CMRTS Networks (BB-PPDR)*	*IND 42*
819-824, 864-869	*2x5 MHz*	*CMRTS Networks (BB-PPDR)*	*IND 43*

(d) Based on the above observations, through the recommendation No. 4.8 of the Recommendations dated 20.07.2018, TRAI recommended as below:

"(a) In order to make the spectrum available for BB-PPDR networks, existing PMRTS assignments in the band 814-819/ 859-864 MHz should be refarmed and further accommodated in the 811-814/ 856-859 MHz band. The refarming process should be completed within a period of two years.

(b) The agencies handling PPDR networks that have been operating in the band 806-824 MHz paired with 851-869 MHz should be confined to and accommodated in the proposed PPDR network for which the assignment of spectrum is proposed in 814-824/859-869 MHz sub-band.

(c) Upon refarming the bands mentioned in the sub-para (a) and (b) above, the sub-band 806-811/851-856 MHz should be made available both for PMRTS and CMRTS on need and justification basis.

(d) DoT shall incorporate the necessary changes in NFAP as proposed.

(e) Allocations of the frequencies in the sub-band 338-340/348-350 MHz shall be predominantly considered for PMRTS. Provisions for allocation

in sub-band 351-358/361-368 MHz and 380-389.9/390- 399.9 MHz shall remain unchanged."

2.15.2 At this stage, it is important to note that TRAI, through the recommendation No. 4.12(a) of the Recommendation on 'Next Generation Public Protection and Disaster Relief (PPDR) Communication Networks' dated 04.06.2018 had recommended that "*2x10 MHz of the dedicated spectrum 814-824/ 859-869 MHz, should be assigned for nationwide BB-PPDR services as per APT Frequency Arrangement number G 3-1-4. Necessary Amendments may be made in the NFAP accordingly*."

2.15.3 Considering this aspect, TRAI, through the recommendation No. 4.8 (a) to (d) of the Recommendations dated 20.07.2018, had recommended that for PMRTS, the spectrum in the 806-814/ 851-859 MHz range should be allocated; for PPDR, the spectrum in 814-824/ 859-869 MHz range should be allocated.

2.15.4 The Authority notes that despite these recommendations given through the Recommendations dated 20.07.2018, DoT did not incorporate the necessary changes in the updated National Frequency Allocation Plan (NFAP) 2018, which was issued in October 2018. For a ready reference, the relevant extract from IND 18 of the NFAP-2018 is reproduced below:

S. No.	***Frequency (MHz)***	***Paired Frequency (MHz)***	***Proposed Applications/ paired frequency (MHz)***	
1	*336-338*	*346-348*	*PMRT*	
2	*338-340*	*348-350*	*PMRT*	
3	*351-356*	*361-366*	*CMRT*	
4	*356-358*	*366-368*	*CMRT*	
5	*380-389.9*	*390-399.9*	*380-387.5 (PPDR)*	*390- 397.5 (PPDR)*
			387.5-390 (CMRT)	*397.5- 400 (CMRT)*
6	*410-420*	*420-430*	*410-417.5 (PPDR)*	*420- 427.5 (PPDR)*
			417.5-420 (CMRT)	*427.5- 430 (CMRT)*
7	*440-470*	*-*	*Part of 440-470 MHz may be considered for PPDR.*	
8	*806-811*	*851-856*	*PPDR*	
9	*811-814*	*856-859*	*PMRT*	
10	*814-819*	*859-864*	*PMRT*	
11	*819-824*	*864-869*	*PMRT*	
12	*4940-4990*	*-*	*PPDR*	

Abbreviations: PMRT: Public Mobile Radio Trunking, CMRT: Captive Mobile Radio Trunking, PPDR: Public Protection and Disaster Relief

2.15.5 Importantly, through the NFAP-2018, DoT allocated the spectrum in the 806-811/ 851-856 MHz range for PPDR, and the 811-824/ 856-869 MHz range to PMRTS. In effect, despite the TRAI's express recommendations for allocating 10 MHz (paired) spectrum in the 814-824/ 859-869 MHz range to PPDR, DoT allocated only 5 MHz (paired) spectrum-that too in a different block viz. 806-811/ 851-856 MHz.

2.15.6 Later in October 2022, DoT issued an updated frequency allocation plan namely, National Frequency Allocation Plan–2022 (NFAP-2022). A relevant extract from IND 18 of the NFAP-2022 is reproduced below:

Sl. No.	Frequency (MHz)	Paired Frequency (MHz)	Proposed Applications/ paired frequency (MHz)	
1	336-338	346-348	PMRT	
2	338-340	348-350	PMRT	
3	351-356	361-366	CMRT	
4	356-358	366-368	CMRT	
5	380-389.9	390-399.9	380-387.5 (PPDR)	390-397.5 (PPDR)
			387.5-389.9 (CMRT)	397.5-399.9 (CMRT)
6	410-420	420-430	410-417.5 (PPDR)	420-427.5 (PPDR)
			417.5-420 (CMRT)	427.5-430 (CMRT)
7	440-470	-	Part of 440-470 MHz may be considered for PPDR	
8	806-811	851-856	PPDR	
9	811-814	856-859	PMRT	
10	814-819	859-864	PMRT	
11	819-824	864-869	PMRT/CMRT	
12	4940-4990	-	PPDR	

2.15.7 Clearly, through the NFAP-2018 and NFAP-2022, DoT has not implemented the recommendation No. 4.8 (a) to (d) of the Recommendations dated 20.07.2018. Through the Back-Reference, DoT has expressed that *"[t]he Department is of the view that, with respect to recommendations 4.8 (a) to (d), the band plan in the spectrum band 806-824 MHz/ 851-869 MHz as mentioned in latest NFAP-2022 issued by the Government should be followed."* At this stage, it is worthwhile to mention that TRAI had issued the recommendation No. 4.8 (a) to (d) of the Recommendations dated 20.07.2018 and the recommendation No. 4.12 (a) of the Recommendation on 'Next Generation Public Protection and Disaster Relief (PPDR) Communication Networks' dated 04.06.2018 after comprehensive consultations with stakeholders. However, DoT has not provided any reasons for not accepting these recommendations.

2.15.8 In absence of any basis/ reasons for not accepting the recommendation No. 4.8 (a) to (d), the Authority is unable to examine the merits of the case. Accordingly, **the Authority is constrained to reiterate the recommendation No. 4.8 (a) to (d).**

ANNEXURES

ANNEXURE – I: DoT's Reference dated 13.07.2017

Government of India
Ministry of Communications & Information Technology
Department of Telecommunications
Wireless Planning & Coordination Wing

6th floor, Sanchar Bhawan,
20, Ashoka Road, New Delhi-110001.

No.: L-14027/08/2016-NTG Date: 13.07.2017

To,

The Secretary
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan, Jawahar Lal Nehru Marg (Old Minto Road)
New Delhi-110002.

Subject: **TRAI recommendations on method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS), including auction, as a transparent mechanism.**

Sir,

Mobile Radio Trunking Service has been growing steadily since its introduction in India over two decades ago. As a result, Commercial Mobile Trunking Radio Service Providers has been asking for more spectrum to cater to their growing subscriber base. In addition, they are also asking spectrum for new cities/locations (mining area, power plant and refinery etc.). The growth pattern of Captive (non-commercial) Mobile Radio Trunking Services (CMRTS) as used by Police Organization and public Sector Units (PSUs) etc. is also following the same trend.

2. Distinct sub-bands have been identified for Radio Trunking Services in National Frequency Allocation Plan – 2011, and there is no strict demarcation in those sub-bands between the usage by commercial and non-commercial radio trunking services. As of now, the sub-bands for Mobile Radio Trunking Service and their usage pattern is given in table 1 below:

Table 1

S. No.	Frequency Band (in MHz)	Total Bandwidth	India remark in NFAP-2011	Applicability
1	336 – 338 / 346 – 348	2.0 MHz	IND27	For both PMRTS and CMRTS
2	338 - 340 / 348 – 350	2.0 MHz		
3	351 – 356 / 361 – 366	5.0 MHz	IND28	Digital CMRTS
4	356 – 358 / 366 - 368	2.0 MHz		
5	380 – 389.9 / 390 – 399.9	9.9 MHz	IND29	Digital PMRTS and CMRTS
6	806 - 811 / 851 - 856	5.0 MHz	IND40	Predominantly for CMRTS
7	811 - 814 / 856 - 859	3.0 MHz	IND41	For spectrum efficient digital PMRTS and CMRTS
8	814 - 819 / 859 - 864	5.0 MHz	IND42	Predominantly for PMRTS
9	819 - 824 / 864 - 869	5.0 MHz	IND43	For both PMRTS and CMRTS

Relevant India remarks in NFAP-2011, as mentioned above, are at Annexure-I.

3. Prior to Unified License (UL) regime, RF spectrum was allotted administratively city wise to the PMRTS licensees, having valid license agreement for providing PMRT Services in a that particular city. Under the Unified License regime, UL agreement is granted with authorization for providing PMRT Services on service area basis instead of earlier practice of city wise. However, spectrum is still allotted administratively for PMRT services on city basis. With such allotment of spectrum, service provider shall provide services only in the cities of the service area for which spectrum has been assigned.

4. Presently, a total of 8 service providers are providing PMRT service in 34 cities which fall in 11 Licensed Service Areas (the LSAs being the same as in cellular mobile service). A summary of the existing assignments made to PMRTS networks in various cities is enclosed as per Annexure II. Further, requests from these service providers for allotment of initial spectrum in 28 new cities as well as for allotment of additional spectrum for expansion of existing PMRTS networks have also been received. Spectrum for these new requests has not yet been allotted. Ifthe existing network and the proposed new network in different cities are taken together, the number of such cities will become 62 which fall in 16 LSAs. Service area and city wise detailed information for demand of spectrum for PMRT services is at Annexure III.

5. All RF assignments made to existing PMRTS networks are conditional and made under the provisions of the Office Memorandums (O.M.s) issued from time to time in this regard with the following undertaking from the service providers:

i. The allotment of spectrum is provisional and subject to Government's decision on allotment and pricing of spectrum;

ii. In the event of final decision to allot spectrum through auction process, the provisional allotment of spectrum shall be withdrawn;

iii. In case the provisional allotment of spectrum is withdrawn, payment made towards spectrum charges or part thereof shall not be refunded;

iv. In case the provisional allotment of spectrum is withdrawn, respective wireless users would obtain Non Dealer Possession License (NDPL) for possessing the wireless equipment or return the equipment to a Dealer Possession License (DPL) holder or shall be disposed off as per procedure.

v. Licensees would pay the revised spectrum charges, as finally determined through market related mechanism or otherwise, as may be applicable, from the date of LoI for provisional allotment of spectrum.

5.2 In this context, it may be mentioned that spectrum allotted to PMRT service providers is provisional and can be taken back before the assignment of spectrum through auction.

6. At present, spectrum charges for PMRT service are levied on formula basis which include the number of assigned RF channels, the number of radio stations (base and mobile stations) and coverage radius in kilometers (kms) for the purpose of calculation. The latest spectrum charging order applicable for PMRT services is at Annexure-IV.

7. Issues to be addressed:

7.1 Preferable frequency bands for PMRT services:

7.1.1 Radio trunking service on technological and regulatory landscape has undergone considerably changes since the publication of NFAP – 2011, it is therefore, important to take note of these changes. Further, steady efforts at the international fora to harmonise the spectrum bands for radio trunking service has necessitated that a holistic view of PMRTS and CMRTS should be taken in respect of their spectrum requirements.

7.1.2 In view of the preceding paras, it would be preferable to consider the bands for PMRT services in the following order of priority:

S. No.	Frequency Band (in MHz)	Total Bandwidth
1	816 - 819 / 861 - 864	3.0 MHz
2	819 - 824 / 864 - 869	5.0 MHz
3	336 – 340 / 346 – 350	4.0 MHz
	Total	**12.0 MHz**

7.1.3 TRAI may consider and give recommendation on appropriate frequency bands for PMRT services.

7.2 Block Size:

7.2.1 In past few years, different technologies have evolved and are available in market such as TETRA (Terrestrial Trunked Radio), APCO25 (Association of Public safety Communications Officials International Inc.), iDEN (Integrated Digital Enhanced Network), dPMR (Digital PMR and Go Ta CDMA (Global open Trunking Architecture CDMA), etc. These technologies demand varying emission bandwidths of 25 kHz, 12.5 kHz and 6.25 kHz.

7.2.2 In order to have flexibility with allotment of spectrum, it would be preferable to consider block size of 6.25 KHz. With this block size future growth plan for PMR services can also be met easily. It may also be ensured that user may bid for even number of blocks.

7.2.3 TRAI may consider and give recommendation on block size for PMRT service.

7.3 Duration/Validity Period:

7.3.1 Presently, spectrum for access services is auctioned for a validity period of 20 years. PMRT services cannot be matched with access services in terms of scale of services and revenue generation. Moreover, PMRT services are expected to be limited to few cities only.

7.3.2 TRAI may consider whether validity period for PMRT can be kept less than 20 years such as 5 years, 10 years, notwithstanding that Unified License for PMRT services is issued for 20 years period, and give recommendation accordingly.

7.4 Area of service:

7.4.1 At present, PMRT services are being provided over a city, even though UL agreement authorizes service providers for providing services in entire service area. Auctioning spectrum on service area basis may not be financially viable considering the scale of PMRT services and it

would also not lead to efficient spectrum utilization as PMRT services are unlikely to be deployed over the entire service area.

7.4.2 TRAI may consider exploring the feasibility for allotment of spectrum for PMRTS on city basis unlike service area basis as for cellular mobile services and give recommendation accordingly.

7.5 Reserve Price and Spectrum Usage Charges (SUC):

7.5.1 At present, assignment of spectrum for PMRTS is done on administrative basis and no upfront payment is charged. PMRT service providers are paying License Fee on percentage of AGR basis and spectrum usage charges on formula basis which include the number of assigned RF channels, the number of radio stations (base and mobile stations) and coverage radius in kilometers (kms) for the purpose of calculation. The latest spectrum charging order applicable for PMRT services is at Annexure-IV.

7.5.2 It may be noted that there is no strict distinction between CMRT and PMRT services except that the latter is a commercial service whereas CMRT services are non commercial and its area of operation is normally limited to mining area or factory premises.

7.5.3 TRAI may consider and give recommendation on reserve price and applicable SUC for PMRT services in different bands.

7.6 Spectrum Cap:

7.6.1 At present, allotment to spectrum for providing PMRT Services is done on administrative basis and there is no provision for spectrum cap. However, spectrum cap may be fixed so as to prevent market dominance by one operator.

7.6.2 TRAI may consider and give recommendation on applicable spectrum cap for PMRT services.

8. Besides above issues, any other issue which TRAI may think appropriate in respect of auction of spectrum for PMRT services may be included.

9. TRAI is, therefore, requested to:

9.1 Provide recommendations on applicable reserve price, and other associated conditions for auction of spectrum for PMRT services under the terms of clause 11 (1)(a) of TRAI Act, 1997 as amended by TRAI Amendment Act 2000.

9.2 Any other recommendations deemed fit for the purpose of auction of spectrum for PMRT services.

This issues with the approval of the competent authority.

(R. B. Prasad)
Joint Wireless Adviser

India Remarks in the National Frequency Allocation Table

10.1.2007 and GSR 532 (E) dated 12.8.2005

IND20 The requirement of onsite radio paging systems and talkback facility will be considered in the frequency band 150.05-151.5 MHz. The frequency spots 150.3, 150.9 and 151.07 MHz are earmarked for onsite paging and 151.15, 151.55 and 150.6 MHz for talkback facility for such systems.

IND21 The frequency spots 150.525, 151.250 and 166.950 MHz are earmarked for purposes such as O.B. Vans & film shooting.

IND22 Requirement of fixed and mobile services including those of wireless telemetry seismic systems will be considered in the frequency band 174-230 MHz on a case-by-case basis. Specific requirement of wind profiler radars in the frequency band 200-220 MHz may also be coordinated on a case-by-case basis.

IND23 Digital Audio Broadcasting (DAB) may be considered in the frequency band 174-230 MHz initially in the four Metro cities and further introduction of DAB could be considered on a case-by-case basis taking into account interference potentiality aspects.

IND24 Protection requirements of radio astronomy service in the frequency band 230-235 MHz within the appropriate coordination zone around GMRT, Pune may be borne in mind while considering spot frequencies for other services.

IND25 The requirement for wide area Radio Paging systems, two way radio systems including voice paging systems may be considered in the frequency band 276-280 MHz with talk back in the frequency band 917-921 MHz up to a maximum of 1 MHz in each band.

IND26 The requirement of short-range radio may be considered in the frequency band 350-351 MHz.
The frequency spots 350.1625, 350.1750, 350.1875, 350.2000, 350.2125, 350.2250, 350.2375, 350.2500, 350.2625, 350.2750, 350.2875, 350.3000, 350.3125, 350.3250, 350.3375, 350.3500, 350.3625, 350.3750, 350.3875, 350.4000, 350.4125, 350.4250, 350.4375, 350.45, 350.4625, 350.4750, 350.4875, 350.5000, 350.5125, 350.5250 and 350.5375 MHz are earmarked for this purpose

IND27 Requirements of public mobile radio trunked systems (PMRTS) and Captive mobile radio trunked systems will be considered in the frequency band 338-340 MHz paired with 348-350 MHz and its additional requirements may be considered in the frequency bands 336-338 MHz paired with 346-348 MHz on a case-by-case basis.

IND28 The requirement of digital radio trunked service for captive networks will also be considered in the frequency band 351-356 MHz paired with 361-366 MHz and 356-358 MHz paired with 366-368 MHz on case-by-case basis.

IND29 Requirements for digital radio trunked systems may be considered in the frequency bands 380-389.9 MHz paired with 390-399.9 MHz as also in 410-430

	MHz on a case-by-case basis.
IND30	Requirement of rural communications may be considered for coordination in the frequency band 368-380 MHz on case-by-case basis.
IND31	Use of very low power remote cardiac monitoring RF wireless medical devices, medical implant communication/ telemetry systems and other such medical RF wireless devices in frequency band 402-405 MHz using a maximum radiated power of 25 micro watt or less with channel emission band width with in 300 kHz has been exempted from licensing requirement. (See also GSR no 673 (E) dated 23.9.2008)
IND32	Requirements of digital seismic telemetry upto 1.5 MHz bandwidth may be met in the frequency band 406.1-450 MHz on case-by-case basis.
IND33	Low power short range devices may be considered in the frequency band 433-434 MHz with a power output of 10 mW with a channel bandwidth of 10 kHz on non-interference, non protection and non- exclusive basis.
IND34	The frequency spots 441.6 and 466.8 MHz may be considered for Anti Collision Device (ACD) applications on case-by-case basis.
IND35	The requirement of IMT applications in the frequency band 450.5-457.5 MHz paired with 460.5-467.5 MHz may be considered for coordination on a case-by-case basis subject to its availability.
IND36	Requirements of fixed and mobile services will be considered in the frequency band 470-520 MHz and 520-585 MHz on case-by-case basis.
IND37	The requirement of Digital Broadcasting Services including Mobile TV may be considered in the frequency band 585-698 MHz subject to coordination on case-by-case basis.
IND38	The requirement for IMT and Broadband Wireless Access may be considered in the frequency band 698-806 MHz subject to coordination on a case-by-case basis.
IND39	Requirements of broadcasting and mobile satellite services except aeronautical mobile satellite(R) service in the frequency band 806-890 MHz may be considered for co-ordination on case-by-case basis.
IND40	Frequency band 806-811 MHz paired with 851-856 MHz has been earmarked for mobile trunked radio system to be used predominantly for captive networks. The requirements for public mobile radio trunked systems (PMRTS), which cannot be met in other bands, may also be considered in this band.
IND41	Frequency bands 811-814 MHz paired with 856-859 MHz has been earmarked for spectrum efficient digital public mobile radio trunked systems (PMRTS) and captive mobile radio trunked systems.
IND42	Frequency band 814-819 MHz paired with 859-864 MHz has been earmarked

	for mobile radio trunked systems to be used predominantly for public mobile radio trunked systems (PMRTS).
IND43	Requirement of public mobile radio trunked systems (PMRTS) and captive mobile radio trunked systems may also be considered, as appropriate, in the frequency bands 819-824 MHz paired with 864-869 MHz.
IND44	Use of low power RFID equipments or any other low power wireless devises or equipments in the frequency band 865-867 MHz with a maximum transmitter power of 1 Watt (4 Watts Effective Radiated Power) with 200 kHz carrier band width has been exempted from licensing requirement. (see also GSR 564 (E) dated 30 July 2008)
IND45	Frequency spots 849.0125/933.0125, 849.0250/933.0250, 849.0375/933.0375, 849.0500/933.0500, 849.0625/933.0625, 849.0750/933.0750, 849.0875/933.0875, 849.1000/933.1000, 849.1125/933.1125, 849.1250/933.1250 MHz have been earmarked for supervisory control and data acquisition system (SCADA) except in a few specific locations.
IND46	Frequency band 824-844 MHz paired with 869-889 MHz has been earmarked for cellular telecommunication systems, including WLL
IND47	Frequency band 890-902.5MHz paired with 935-947.5MHz has been earmarked for cellular telecom systems.
IND48	Additional requirements for cellular telecom systems in the frequency band 902.5-915 MHz paired with 947.5-960 MHz may be coordinated on case-by-case basis.
IND49	Certain frequency spots in the frequency bands 902.5-915 MHz and 947.5-960 MHz may be considered for train control& mobile train radio systems for specific locations on a case-by-case basis.
IND 50	Requirements for Micro cellular low powered, telecommunication systems with maximum EIRP up to 4 Watts, FDD access techniques may be considered at specific locations for indigenously developed systems and technology, in a small chunk, in the frequency band 900 MHz presently used by existing wireless users of captive systems subject to co-ordination on case-by-case basis.
IND51	In relation to specific problem of harmful interference from wireless access systems (fixed/mobile) for telecommunication services into cellular based networks, appropriate measures of incorporating filters in the wireless access systems (fixed/mobile) for telecommunication services shall be taken. Appropriate measures of incorporating filters in cellular based networks for blocking signals leaking through the extended cellular frequency bands shall also be taken.

ANNEXURE - II

City-wise Allotment of RF Spectrum for PMRTS to TSPs

Service Area	Location (City/Town)	Service Provider	No. of RF Channels Allotted at present			
			338 - 340 MHz / 348 - 350 MHz	814 - 819 MHz / 859 - 864 MHz	811 - 814 MHz / 856 - 859 MHz	Total
Andhra Pradesh	Hyderabad	Arya Omnitalk Radio Trunking Services Private Limited		5		5
		Quickcalls Private Limited		15		15
	Visakhapatnam	Arya Omnitalk Radio Trunking Services Private Limited		30		30
Delhi	Delhi	Arya Omnitalk Radio Trunking Services Private Limited		30		30
		Procall Private Limited		40		40
	Faridabad	Procall Private Limited		5		5
	Gurgaon	Procall Private Limited		15		15
Gujarat	Ahmedabad	Arya Omnitalk Radio Trunking Services Private Limited		10		10
		Inative Networks Private Limited			5	5
	Amreli	Inative Networks Private Limited			1	1
	Bharuch	Arya Omnitalk Radio Trunking Services Private Limited		5		5
		Inative Networks Private Limited			1	1
	Dahej	Arya Omnitalk Radio Trunking Services Private Limited		5		5
	Jamnagar	Inative Networks Private Limited			2	2
	Kutch	Inative Networks Private Limited			5	5
	Surat	Arya Omnitalk Radio Trunking Services Private Limited		15		15
		Inative Networks Private Limited			5	5
	Vadodara	Arya Omnitalk Radio Trunking Services Private Limited		10		10

City-wise Allotment of RF Spectrum for PMRTS to TSPs

Service Area	Location (City/Town)	Service Provider	No. of RF Channels Allotted at present			
			338 - 340 MHz / 348 - 350 MHz	814 - 819 MHz / 859 - 864 MHz	811 - 814 MHz / 856 - 859 MHz	Total
	Vadodara	Inative Networks Private Limited			2	2
Karnataka	Bangalore	Arya Omnitalk Radio Trunking Services Private Limited		40		40
		Quickcalls Private Limited		5		5
Kerala	Alappuzha	WiWaNet Private Limited	5			5
	Cochin	Arya Omnitalk Radio Trunking Services Private Limited			5	5
	Ernakulam	WiWaNet Private Limited	5			5
	Kollam	WiWaNet Private Limited	5			5
	Munnar	WiWaNet Private Limited	5			5
	Panniankara	WiWaNet Private Limited	5			5
	Payyanur	WiWaNet Private Limited	5			5
	Tirur	WiWaNet Private Limited	5			5
	Trichur	WiWaNet Private Limited	5			5
	Trivandrum	WiWaNet Private Limited	5			5
Kolkata	Kolkata	Arya Omnitalk Radio Trunking Services Private Limited		20		20
Madhya Pradesh	Indore	Arya Omnitalk Radio Trunking Services Private Limited		10		10
	Khandala	Arya Omnitalk Radio Trunking Services Private Limited		5		5
	Pune	Arya Omnitalk Radio Trunking Services Private Limited		15		15

City-wise Allotment of RF Spectrum for PMRTS to TSPs

Service Area	Location (City/Town)	Service Provider	No. of RF Channels Allotted at present			
			338 - 340 MHz / 348 - 350 MHz	814 - 819 MHz / 859 - 864 MHz	811 - 814 MHz / 856 - 859 MHz	Total
	Pune	Smart Talk Private Limited		10		10
Mumbai	Belapur	Arya Omnitalk Radio Trunking Services Private Limited		5		5
	Mumbai	Arya Omnitalk Radio Trunking Services Private Limited		40		40
		Bhilwara Telenet Services Private Limited		10		10
		Smart Talk Private Limited		10		10
	Navi Mumbai	Airtalk Solutions & Services Private Limited		5		5
	Vashi	Arya Omnitalk Radio Trunking Services Private Limited		10		10
	Jaipur	Arya Omnitalk Radio Trunking Services Private Limited		5		5
		Procall Private Limited		5		5
Tamilnadu	Chennai	Arya Omnitalk Radio Trunking Services Private Limited		40		40
		Quickcalls Private Limited		5		5
Total			45	425	26	496

ANNEXURE - III

Data i.r.o. demand of RF Channels for PMRTS in various cities

Service Area	Location (City/Town)	338 - 340 MHz / 348 - 350 MHz				811 - 814 MHz / 856 - 859 MHz				814 - 819 MHz / 859 - 864 MHz				Total demand of RF Channels for PMRTS in all the bands
		No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	*Total demand*	No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	*Total demand*	No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	*Total demand*	
Andhra Pradesh	Hyderabad	80			*0*	120		5	*5*	200	20		*20*	*25*
	Nellore	80			*0*	120		1	*1*	200			*0*	*1*
	Visakhapatnam	80			*0*	120		6	*6*	200	30	5	*35*	*41*
Bihar	Jamshedpur	80			*0*	120		1	*1*	200			*0*	*1*
Delhi	Delhi	80			*0*	120		27	*27*	200	70	20	*90*	*117*
	Faridabad	80			*0*	120			*0*	200	5		*5*	*5*
	Gurgaon	80			*0*	120			*0*	200	15		*15*	*15*
Gujarat	Ahmedabad	80			*0*	120	5		*5*	200	10	5	*15*	*20*
	Amreli	80			*0*	120	1		*1*	200			*0*	*1*
	Anand	80			*0*	120		1	*1*	200			*0*	*1*
	Bharuch	80			*0*	120	1	5	*6*	200	5	5	*10*	*16*
	Bhavnagar	80			*0*	120		1	*1*	200			*0*	*1*
	Chhota Udaipur	80			*0*	120		1	*1*	200			*0*	*1*
	Dahej	80			*0*	120		5	*5*	200	5		*5*	*10*
	Gandhinagar	80			*0*	120		1	*1*	200			*0*	*1*
	Halol	80			*0*	120		5	*5*	200			*0*	*5*
	Jamnagar	80			*0*	120	2		*2*	200			*0*	*2*
	Junagarh	80			*0*	120		1	*1*	200			*0*	*1*

Data i.r.o. demand of RF Channels for PMRTS in various cities

Service Area	Location (City/Town)	338 - 340 MHz / 348 - 350 MHz				811 - 814 MHz / 856 - 859 MHz				814 - 819 MHz / 859 - 864 MHz				Total demand of RF Channels for PMRTS in all the bands
		No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	Total demand	No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	Total demand	No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	Total demand	
	Kheda	80			0	120		1	1	200			0	1
	Kutch	80			0	120	5		5	200			0	5
	Navsari	80			0	120		1	1	200			0	1
	Porbandar	80			0	120		1	1	200			0	1
	Rajkot	80			0	120		1	1	200			0	1
	Sabarkatha	80			0	120		1	1	200			0	1
	Shidpur	80			0	120		1	1	200			0	1
	Sitapur	80			0	120		5	5	200			0	5
	Surat	80			0	120	5	5	10	200	15		15	25
	Surendranagar	80			0	120		1	1	200			0	1
	Vadodara	80			0	120	2		2	200	10	5	15	17
	Valsad	80			0	120		1	1	200			0	1
Haryana	Rohtak	80			0	120		1	1	200			0	1
Karnataka	Bangalore	80			0	120		15	15	200	45	25	70	85
	Bellari	80			0	120		2	2	200			0	2
	Mangalore	80			0	120		5	5	200			0	5
Kerala	Alappuzha	80	5		5	120			0	200			0	5
	Cochin	80			0	120	5	5	10	200			0	10

Data i.r.o. demand of RF Channels for PMRTS in various cities

Service Area	Location (City/Town)	338 - 340 MHz / 348 - 350 MHz				811 - 814 MHz / 856 - 859 MHz				814 - 819 MHz / 859 - 864 MHz				Total demand of RF Channels for PMRTS in all the bands
		No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	*Total demand*	No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	*Total demand*	No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	*Total demand*	
	Ernakulam	80	5		*5*	120			*0*	200			*0*	*5*
	Kollam	80	5		*5*	120			*0*	200			*0*	*5*
	Munnar	80	5		*5*	120			*0*	200			*0*	*5*
	Panniankara	80	5		*5*	120			*0*	200			*0*	*5*
	Payyanur	80	5		*5*	120			*0*	200			*0*	*5*
	Tirur	80	5		*5*	120			*0*	200			*0*	*5*
	Trichur	80	5		*5*	120			*0*	200			*0*	*5*
	Trivandrum	80	5		*5*	120			*0*	200			*0*	*5*
Kolkata	Kolkata	80			*0*	120		5	*5*	200	20		*20*	*25*
Madhya Pradesh	Indore	80			*0*	120			*0*	200	10	5	*15*	*15*
Maharashtra	Chandrapur	80			*0*	120		1	*1*	200			*0*	*1*
	Khandala	80			*0*	120			*0*	200	5		*5*	*5*
	Pune	80			*0*	120			*0*	200	25		*25*	*25*
	South Goa	80			*0*	120		1	*1*	200			*0*	*1*
Mumbai	Belapur	80			*0*	120		10	*10*	200	5	25	*30*	*40*
	Mumbai	80			*0*	120		10	*10*	200	60	25	*85*	*95*
	Navi Mumbai	80			*0*	120			*0*	200	5		*5*	*5*

Data i.r.o. demand of RF Channels for PMRTS in various cities

Service Area	Location (City/Town)	338 - 340 MHz / 348 - 350 MHz				811 - 814 MHz / 856 - 859 MHz				814 - 819 MHz / 859 - 864 MHz				*Total demand of RF Channels for PMRTS in all the bands*
		No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	*Total demand*	No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	*Total demand*	No. of RF Channels available (@ Channel Spacing of 25 kHz) for assignment	No. of RF Channels, assigned to existing networks	No. of RF Channels, requested for assignment	*Total demand*	
	Vashi	80			*0*	120		10	*10*	200	10	25	*35*	*45*
Orissa	Angul	80			*0*	120		5	*5*	200			*0*	*5*
	Jagatsinghpur	80			*0*	120		1	*1*	200			*0*	*1*
	Jajpur	80			*0*	120		1	*1*	200			*0*	*1*
Rajasthan	Barmer	80			*0*	120		1	*1*	200			*0*	*1*
	Jaipur	80			*0*	120		5	*5*	200	10		*10*	*15*
Tamilnadu	Chennai	80			*0*	120		21	*21*	200	45	15	*60*	*81*
	Coimbatore	80			*0*	120		5	*5*	200			*0*	*5*
West Bengal	Haldia	80			*0*	120		1	*1*	200			*0*	*1*

ANNEXURE - IV

(8)

Government of India
Ministry of Communications
(WPC Wing)

Parliament Street, Dak Bhavan
New Delhi – 110 001

No. L-14027/01/98-NTG Dated: Sep 18, 2000

ORDER

Subejct : Royalty and licence fee charges for the grant of licence to establish, maintain and work Public Mobile Radio Trunked Service (PMRTS) stations under the provisions of the Indian Telegraph Act , 1885.

In pursuance of powers conferred by section 4 of the Indian Telegraph Act, 1885 (13 of 1885), the Central Government hereby prescribes the following rates of royalty and licence fee charges for the grant of the licence to establish, maintain and work fixed/vehicle mobile/handheld mobile wireless telegraph stations in the Public Mobile Radio Trunked service (PMRTS):-

2. The formula for calculation of royalty and licence fee is given below:-

Total fee per year = L + R
where,

L = Licence fee
R = Royalty

2.1 Total fee per year is payable in advance for the whole year (year may start in any month in the first year and January, in the subsequent year. For the first year the royalty on pro-rata quarterly year basis is to be paid and licence fee is to be paid on annual basis)

2.2 Royalty and licence fee will have to be paid annually in advance by 15th January. The number of stations as on 1st January and 1st July shall be certified by the licencee by way of an affidavit. Balance of licence fee for additional number of stations based on 1st July and 1st January of the following year should be paid by 15th July and 15th January respectively.

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i) L & R for maximum radio link distance between 5 & 60 kms are to be calculated as follows :

$L = 100 X n$
$R = 4800 X f$

ii) L & R for maximum link distance below 5 kms, R & L will be expressed as :-

$L = 100 X n$
$R = 1200 X f$

where,

n = No. of stations (station includes fixed base station, Vehicle mounted mobile or hand held mobile stations)

f = No. of frequency spots used. (This corresponds to f/2 frequency pairs).

3. The order shall come into force from July 20, 1995.

4. This issues with the concurrence of Finance Advice IV Branch, DoT vide their UO No.616/DFIV/2000 dated 14.09.2000.

(Dr. Ashok Chandra)
Deputy Wireless Adviser to the Government of India

Copy to :-

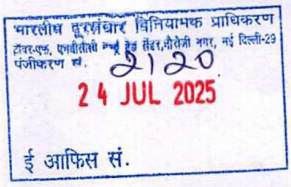
1. All concerned
2. Wireless Monitoring Organisation
3. Department of Telecommunications (Finance Advice IV Branch), New Delhi.

ANNEXURE-II: DoT's Back-Reference dated 21.07.2025

Government of India
Ministry of Communications
Department of Telecommunications
Wireless Planning & Coordination Wing
6th floor, Sanchar Bhawan,
20, Ashoka Road, New Delhi-110001.

No.: L-14027/01/2018-NTG-VOL- I Date: 21- 07-2025

To,
The Secretary, TRAI
G/90, Nauroji Nagar Market,
Block G, Block F, Nauroji Nagar,
New Delhi, Delhi 110029



Subject: Back reference on TRAI recommendations dated 20-07-2018 on "Method of Allocation of Spectrum for PMRTS including auction, as a transparent mechanism" - reg.

Sir,

The undersigned is directed to refer TRAI Letter. No. D.O. No.102-5/2017-NSL-II dated 20-07-2018 vide which TRAI has provided their recommendations on "Method of Allocation of Spectrum for PMRTS including auction, as a transparent mechanism". These recommendations have been considered by the Department and the following has been decided:

i. There is a need to seek reconsidered recommendations from TRAI in respect of some of the recommendations/sub-sections of recommendations. Such recommendations/ sub-sections of recommendations and the issues involved therein are enclosed as **Annexure-I**.

ii. Certain recommendations from TRAI have been accepted and additional related information in respect of these recommendations is being communicated to TRAI. These recommendations along with the corresponding information are enclosed as **Annexure-II.**

iii. Rest of the recommendations are accepted completely

2. In view of the above, TRAI is requested to provide reconsidered recommendations, in accordance with the provisions of Section 11 of the TRAI Act 1997, as amended in 2000, on the recommendations listed in **Annexure-I**.

3. This issues with approval of competent authority.

Encl: As above.

(M Revathi)
Joint Wireless Adviser

Annexure-I

Issues for reconsideration of TRAI arising from its recommendations dated 20-07-2018 on "Method of Allocation of Spectrum for PMRTS including auction, as a transparent mechanism"

1. **Calculation of Royalty component of Spectrum Charges: (Para 4.6 of the TRAI Recommendations)**

The Authority had recommended two options for payment of Royalty Charges for PMRTS. Option 1: Yearly Royalty payment of Rs 1200/- per year for each 6.25 kHz channel for link distances up to 30 km and Rs 2400/- per year for each 6.25 kHz channel for link distances up to 60 km.

Option 2: One-time upfront payment of ₹20,000 (twenty thousand) or ₹40,000 (forty thousand) is applicable for 6.25 kHz spectrum with link distances of up to 30 km or 60 km respectively, within the city and the same LSA, for a period of **20 years.**

The Department is of the view that option 1 may be accepted. Further with respect to option 2, currently spectrum assignment on administrative basis is issued for a maximum period of 5 years and the same provision has been incorporated in the proposed spectrum assignment rules, which are under preparation. Accordingly, TRAI is requested to consider option 2 for a period of 5 years.

2. **Calculation of License fee component of Spectrum Charges (Para 4.7 of the TRAI Recommendations)**

The Authority recommended that the SUC for the spectrum allocated to PMRTS shall be levied @ 1% of AGR and while determining the AGR for the purpose of levy of license fee and SUC, the revenue from sale of handsets (the cost of which is separately identifiable) shall be allowed as deduction from the GR of PMRTS for the purpose of levy of license fee.

The Department is of the view that the License Fee component of spectrum charges shall be levied at 1% of AGR. However, the revenue from the sale of handsets shall not be allowed as a deduction from Applicable Gross Revenue (ApGR) while calculating AGR. This is in line with the TRAI recommendations on the 'The Framework for Service Authorization to be Granted Under the Telecommunications Act,2023'.

3. Duration/validity period of spectrum assigned (Para 4.10 of the TRAI Recommendations)

The Authority recommended that the validity of spectrum assignment should be for 20 years in line with the license validity, however, assignment should be co-terminus with the validity of the license (in case the validity of the license expires or surrender of the license or non-conformity to the license conditions such as rollout obligations, loading criteria).

The Department is of the view that, as per the current practice, spectrum assignment on administrative basis shall be issued for a maximum period of 5 years. The same has been incorporated in the proposed spectrum assignment rules. Further, the section 4 of The Telecommunications Act, 2023 has not yet been enacted as the rules for spectrum assignment are under preparation.

Annexure-II

Recommendations with additional related information to TRAI from its recommendations dated 20-07-2018 on "Method of Allocation of Spectrum for PMRTS including auction, as a transparent mechanism"

1. **LSA based authorization criteria for PMRTS license: (Para 4.1 of the TRAI Recommendations)**

   The Department accepted the recommendation of continuation of existing Licensed Service Area (LSA) based authorization criteria for PMRTS license

   However, it may be noted that, Section 3 of The Telecommunications Act, 2023 has not yet been enacted as authorization rules are under preparation. The existing practice will continue till the enactment of Section 3 of The Telecommunications Act, 2023. After enactment, the authorization will be issued in accordance with the new rules.

2. **Duration of PMRTS license: (Para 4.2 of the TRAI Recommendations)**

   The Department accepts the recommendation that the existing provision of duration of 20 years for PMRTS license should continue.

   However, it may be noted that, Section 3 of The Telecommunications Act, 2023 has not yet been enacted as authorization rules are under preparation. The existing practice will continue till the enactment of Section 3 of The Telecommunications Act, 2023. After enactment, the authorization will be issued in accordance with the new rules.

3. **Methodology of assignment of spectrum: (Para 4.3 of the TRAI Recommendations)**

   The Department accepts the recommendation for the administrative assignment of spectrum for PMRTS.

   The above recommendation is in line with The Telecommunications Act, 2023, wherein, the assignment of spectrum for PMRTS has been made part of First Schedule, for which, the spectrum assignments will be considered on administrative basis. Presently, spectrum assignment rules under section 4 of the Telecommunications Act, 2023 are under preparation.

4. **Preferable spectrum bands for the PMRTS: (Para 4.8 (a) to (d) of the TRAI Recommendations)**

The Department is of the view that, with respect to recommendations 4.8 (a) to (d), the band plan in the spectrum band 806-824 MHz/ 851-869 MHz as mentioned in latest NFAP-2022 issued by the Government should be followed.