Consultation Paper No.15/2023

Telecom Regulatory Authority of India

Consultation Paper on

Review of Terms and Conditions of PMRTS and CMRTS Licenses

New Delhi, India

29.08.2023

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Written Comments on the Consultation Paper are invited from stakeholders by 26.09.2023 and counter-comments by 10.10.2023. Comments and counter-comments will be posted on TRAI's website. Comments and counter-comments may be sent, preferably in electronic form, to Shri Akhilesh Kumar Trivedi, Advisor (Networks, Spectrum and Licensing), TRAI, on the email ID: advmn@trai.gov.in.

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CONTENTS

ANNEXURES

CHAPTER 1
INTRODUCTION AND BACKGROUND

A. Introduction

1.1 Since the last decade of the 20th century, the world has witnessed extraordinary growth in the use of wireless communication systems, from cellular and cordless phones and radio-based fleet management systems to radio and television broadcasting, cognitive radio, and International Mobile Telecommunications 2020. At the same time, radio[1] has become a vital technology for a growing number of essential public services such as intelligent transport systems, global positioning systems, and emergency radiocommunication systems.

1.2 Wireless communication systems are mainly classified into satellite systems and terrestrial systems. Over the past few decades, Terrestrial wireless communication systems have evolved considerably, and new applications have emerged. Worldwide, cellular public land mobile telecommunication systems have been the most prominent terrestrial wireless communication systems. Alongside, non-cellular land mobile radio systems have also developed to cater to niche users. Unlike cellular systems, these systems are not intended for public use, but are engineered to provide communication among a group or organization. These systems have a widespread application in sectors such as public safety (ambulance, fire service, police, defence, forest, etc.), manufacturing (oil and gas, mining, etc.), courier (picking and delivery of packages), utilities (municipalities etc.), transportation (road, airport, harbors etc.), construction sites, schools, convention halls, factories, retailers etc. In general, non-cellular land mobile radio systems are preferred by organizations with mobile workforce that require person-to-person and person-to-group radio communications to coordinate and facilitate their operations.

1.3 A non-cellular land mobile radio system is a communication system consisting of two-way radio transceivers (a transmitter and receiver in one unit) which can be stationary, mobile, or portable ("walkie-talkies"). These systems could be

[1] Radio is the technology of signaling and communicating using radio waves. The Indian Telegraph Act, 1885 defines 'radio waves' as *"electro-magnetic waves of frequencies lower than 3,000 giga-cycles per second propagated in space without artificial guide"*.

conventional, or trunked. The following section outlines the characteristics of conventional and trunked land mobile radio systems.

(1) Conventional land mobile radio (CLMR) systems

1.4 Conventional land mobile radio (CLMR) systems were developed for business users who need to communicate over limited geographical areas. CLMR systems can be as basic and simple as a group of users (minimum two sets) operating on an assigned frequency (or frequencies) to communicate in one-to-one or one-to-group mode of communication by a simple push-to-talk.

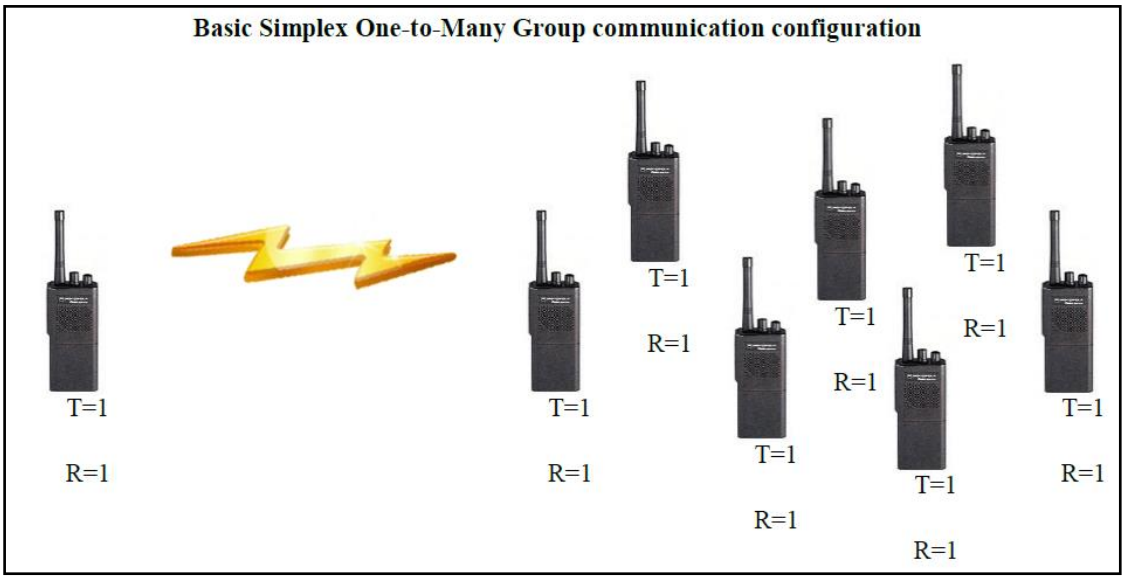
1.5 The Report No. ITU-R M.2474-0 (09/2019) titled 'Conventional digital land mobile radio systems'[2] published by International Telecommunication Union (ITU) states that "*CLMR systems can be categorized into two types: simplex operation for direct peer-to-peer communications; and repeater operation where repeater(s) is (are) used to extend the communication reach.*"

1.6 The ITU's Report outlines the following features of CLMR system for simplex operation for direct peer-to-peer communications:

"

- *There is no automated processing of the calls.*
- *Users simply 'push-to-talk' (PTT) on the channel (frequency) they have selected on their mobile or handheld terminals.*
- *Users have immediate access to selected channel(s) at any time and must listen for a clear channel before transmitting to avoid causing interference to another user in the group.*
- *The coverage of the basic conventional LMR system is limited by the range of the mobile terminals.*
- *…*
- *Simplex design (T=R).*
- *Pros: No infrastructure, low cost, can operate with only single frequency/ pair.*
- *Cons: No wide-area coverage, …*

[2] Source: ITU's Report No. ITU-R M.2474-0 (09/2019) titled 'Conventional digital land mobile radio systems'. The report is available at URL: https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-M.2474-2019-PDF-E.pdf

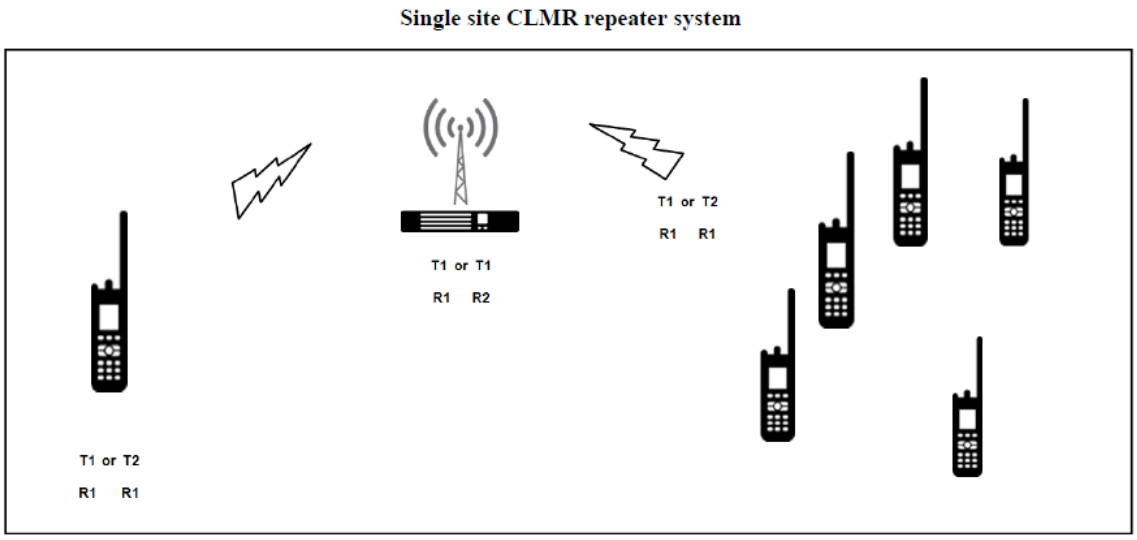


…

The coverage of CLMR simplex system is limited by the transmitter range of the mobile terminals. …"

1.7 With respect to <u>CLMR system with repeater operation</u>, the ITU's Report mentions as below:

"A common CLMR configuration with repeater system enables repeater to either re-transmit on the same frequency or using a second frequency channel….



- *A single-site system is defined as one site with a fixed base transmitter(s)/ repeater(s).*
- *There is no automated processing of calls.*

- *Two frequencies (one pair) are required per repeater although a single frequency configuration can be used with some systems settings but is not common.*
- *Fixed repeater base station enables extended coverage and as higher Transmit power is used in the order of 5-20 times that of the mobile radio.*
- *In Simplex Mode (R=T), the fixed station acts as a "repeater" and acts as a simple radio relay. Other mobile units may not hear mobile transmitter if not within range.*
- *In half Duplex mode, other mobile units will not hear mobile transmitter even if within range (R≠T)."*

(2) Trunked land mobile radio (TLMR) systems

1.8 Today, many non-cellular land mobile radio systems make use of 'trunking'[3]. Trunking is a technique to provide network access to many users by sharing a set of channels[4] amongst them instead of providing a separate channel to them individually. Trunking provides the benefits of less user intervention to operate the radio and greater spectral efficiency with large numbers of users.

1.9 In a trunked system, there is a pool of channels available for use. Users are assigned to a logical grouping (i.e. talk-groups). When any user wishes to communicate with another user in the talk-group, an idle radio channel is found automatically by the system and the conversation takes place on that channel.

1.10 Progressively, the CLMR systems have developed into trunked systems. ITU in its 'Recommendation ITU-R M.1808-1 (11/2019)'[5] outlines the difference between conventional systems and trunked systems as below.

[3] Trunking technique was developed in the early 1980 when there was an increasing congestion on the radio airwaves.

[4] In telecommunication networks, the term 'channel' refers to a physical or logical pathway for communicating an information signal across a distance. In land mobile radio systems, channels mean radio frequencies which are assigned to users for the purpose of communication.

[5] Source: Recommendation of International Telecommunication Union (ITU) titled 'Recommendation ITU-R M.1808-1 (11/2019)' available at https://www.itu.int/rec/R-REC-M.1808/en

(a) Conventional systems allow a user the use of only one channel. If that assigned channel is already in use, then the user must wait until the channel becomes available.

(b) Trunked systems employ access control techniques to share channel capacity among multiple users. In a trunked system a control channel is used and the decision as to which channel is used is invisible to the user. The design of a trunked system allows it to support many users on fewer channels than a conventional system. High capacity mobile system use trunking to increase the overall statistical traffic capacity.

1.11 ITU in its Recommendation ITU-R M.1808-1 (11/ 2019) states that trunking "*allows less blocking and is able to accommodate a greater number of users to a number of radio channels*."

1.12 Many land mobile radio trunked systems still operate in analog mode. However, the demand for better performance and reliable systems has shifted the strategic direction of service providers and users worldwide towards migration to digital mode. The digital mobile radio trunked systems offer enhanced signaling options, more consistent audio quality, higher radio spectrum efficiency, wider range of encryption features, etc. A summary of the prominent land mobile radio trunked systems is given in **Annexure-I**.

B. Mobile Radio Trunking Service (MRTS)

1.13 Unlike cellular mobile telephony, trunked land mobile radio service, also referred to as 'mobile radio trunking service' (in short, 'MRTS'), is not intended for public use. It provides communication channels to a group that has strong community interest with one another.

1.14 MRTS is a two-way mobile radio service in which users communicate amongst themselves in a designated group (often referred to as 'talk group'), through a pair of radio frequencies which get assigned out of a common pool of frequencies in a designated frequency band. A pair of frequencies is allocated on the placement of the call request, which is returned to the pool on completion of the call. The communication usually takes place through a repeater station (also called base

station). Once user is assigned a channel (a pair of frequencies) by the system, no one else can interfere with the communication. MRTS offers the following unique features to its users:

(a) Low latency (No dialing required - just push to talk with a large group of users, instantly with no waiting required; call gets connected at the click of a button);

(b) Assured availability (no or low congestion, MRTS involves frequent short bursts of a few seconds of group communication, thereby ensuring that a user does not keep other users waiting);

(c) Priority (in the event of congestion, a user may be granted priority to access channel over other users in the talk group); and

(d) Pre-emption (in the event of congestion, a user may be granted a privilege to instantly obtain a channel by prematurely terminating the communication of another user in the talk group).

1.15 Together, the above features make MRTS a preferred choice for mission critical applications. In India, MRTS has found a growing prominence in all critical infrastructure sectors such as manufacturing, oil & gas, mining, construction, courier, emergency medical services, utilities, transportation (road, airports, harbours etc.), energy & communication, fire & safety department of public utilities. Users include metro rail corridors, atomic research centres, steel plants, thermal power stations, road construction projects, prisons & correctional services Department, energy plants etc.

1.16 MRTS is a broad term which encompasses both commercial and captive MRTS services. The commercial MRTS services are known as public mobile radio trunking services (PMRTS). The captive MRTS services are known as captive mobile radio trunking services (CMRTS).

1.17 PMRTS has got a relatively small market in the country. Limited customer base is attributed to specific scope of the service meant for one-to-one and one-to-many radio communication within a closed user group (CUG). The subscriber base of PMRTS was 64,839 as on 30.06.2023. At present, eight licensed service providers are offering PMRTS services in 11 Licensed Service Areas (LSAs). As per the information provided by DoT, there are 117 CMRTS licensees in the country.

C. Regulatory Framework for PMRTS and CMRTS in India

1.18 The Department of Telecommunications (DoT), Government of India opened Public Mobile Radio Trunking Service (PMRTS) as a value-added service in the year 1995. Initial PMRTS licenses were issued in the country in 1995 and 1996. The first set of licenses were granted for a five-year period. 77 companies bid for 802 service areas in 153 cities in India. 279 licenses were issued by DoT to 41 companies for operations in 91 cities. There was no limitation on the number of service areas in the country. The service area was defined as the geographical area covered within the 30 Km radius from the base station site or city limit, whichever is larger.

1.19 After the introduction of New Telecom Policy (NTP) 1999, Telecom Regulatory Authority of India (in short "TRAI", hereinafter also referred to as "the Authority"), based on a reference from DoT, issued its recommendations on 'Licensing issues relating to Public Mobile Radio Trunking Service Providers (PMRTSPs)' dated 18.12.2000. Pursuant to these recommendations of TRAI, DoT issued 'Detailed Guidelines for Migration of Existing Operators and Issue of Fresh Licence for Public Mobile Radio Trunk Services (PMRTS)' dated 01.11.2001. The salient features of these guidelines are given below:

(a) The licensees willing to migrate shall be required to sign a fresh license agreement in terms of the new policy.

(b) The licence of existing operators, who are not willing to migrate to the new licensing regime, shall be extended, if requested, upto another ten years, so as to make the total licence period upto 15 years for continuing with analog systems, during which period the operators may change over to digital technology.

(c) Those operators willing to migrate to digital technology shall be allocated upto 1 MHz additional spectrum for digital technology and shall be directed to transfer their network positively within two years from the date of letter of confirmation. The license agreement for these operators shall be extended, so as to make the total license period of 20 years.

(d) A minimum of 10 channels (25 KHz each) shall be reserved for the expansion of the analog systems during the period of migration from analog to digital technology.

(e) New licenses for operation of PMRTS shall be granted on non-exclusive "first-come-first-served" basis. One MHz frequency spectrum shall be allotted at the time of grant of license. Fresh PMRTS licensees shall be bound to use only digital technology.

(f) Other than Metro service areas and other city service areas, a new type of service area along the Highways has been defined. The service area for Highways shall cover National Highways/ State High Ways /Other District Roads contiguous with the boundary of the State.

(g) There shall be no entry fee. All PMRTS licensees including those using Captive Mobile Radio Trunked Service shall pay license fee except for agencies working for public service such as Police, Fire and Government Security etc.

(h) There shall be separate charges (Royalty and License fee) for use of Radio Spectrum; the present arrangement of spectrum charging from PMRTS licenses for commercial as well as captive system shall continue.

(i) The license fee for commercial PMRTS system shall be 5% of the 'Adjusted Gross Revenue' (AGR). Spectrum beyond one MHz may be considered depending on availability for allotment only after complete service area has been covered with the service and customer base of 10,000 has been reached.

(j) Public Switched Telephone Network (PSTN) connectivity shall be given as one PSTN line for 5 RF Channels (of 25 KHz each) to start with for analog systems and one E1 link for new licenses for digital system.

(k) Inter-site connectivity shall be permitted to PMRTS Providers between their own sites within the licensed area.

1.20 On 01.11.2002, DoT requested TRAI to provide recommendations on the following issues concerning PMRTS raised by Mobile Radio Trunked Radio Operators Association (MTROA):

(a) Increase in quantum of PSTN[6] connectivity;

(b) Separate numbering scheme for PMRTS;

(c) Extension of the service area to cover local charging area;

(d) License Fee;

(e) Choice of technology for new licenses; and

(f) Service area.

[6] PSTN is an acronym of Public Switched Telephone Network.

1.21 In response, TRAI furnished its recommendations on 'Issues Concerning Public Mobile Radio Trunked Service (PMRTS) Referred by the DOT' dated 07.01.2003. Through these recommendations, TRAI recommended, *inter-alia*, as below:

(a) On the issue of PSTN Connectivity, the Authority reiterated that the total permitted usage of such interconnection in a month should not exceed 15% of total airtime usage of the network during the previous month.

(b) On the issue of separate numbering scheme for PMRTS, the Authority recommended that to retain the CUG characteristic of the PMRT services it is felt that only one-way PSTN connectivity should be allowed. This negates the requirement for a separate numbering scheme.

(c) On the issue of total Licence fee, the Authority reiterated that the licence fee (to be paid to DoT as well as WPC) and the Royalty for spectrum together should work out to not more than 5% of the AGR.

(d) On the issue of fee on captive licensees, the Authority recommended that the same fee as paid by PMRT service providers should be payable by the Captive licencees of Mobile Radio Trunking Service as well. Since the commercial trunking service providers have migrated to revenue sharing regime it recommended that captive licencees pay a licence fee of ₹300 per annum per terminal with a minimum of ₹25,000/- per annum as recommended by TRAI earlier. It also recommended that the licensor must ensure that the captive licencees pay their licence fee like commercial PMRTS providers.

(e) On the issue of definition of AGR for PMRTS, the Authority recommended that DoT should exclude the sale proceeds of instruments in the definition of the "Adjusted Gross Revenue" especially in case of PMRTS services.

(f) On the issue of choice of technology for PMRTS, the Authority keeping in view the high investment cost involved in deployment of digital technology and the health of the industry in last 2-3 years, the Authority had the view that with the new Licence agreement mandating digital technology the investment in subscriber terminals and other analog equipment would go waste if analog networks were replaced by digital networks. Therefore, it recommended that the choice of the technology should be left to the service providers.

1.22 On 19.05.2006, DoT issued an amendment to the clause B (ii) and clause B (iii) of its 'Detailed Guidelines for Migration of Existing Operators and Issue of Fresh Licence for Public Mobile Radio Trunk Services (PMRTS)' dated 01.11.2001 as below:

Existing	Amended
Clause B (ii): New licenses for operation of PMRTS shall be granted on nonexclusive "first-come-first served" basis. One MHz frequency spectrum shall be allotted at the time of grant of license.	New licenses for operation of PMRTS shall be granted on nonexclusive "first-come-first served" basis.
Clause B (iii): Fresh PMRTS licensees shall be bound to use only digital technology.	Frequency spectrum shall be allotted depending upon the justified requirements and the availability of the same.

1.23 Vide the circular No. 311-80/2001-VAS (Vol. II) dated 14.07.2006, DoT issued amendment to the license agreements for PMRTS consequent to migration to new licensing regime under NTP-99 superseding the earlier amendments to the PMRTS license agreement vide letter No. 311-80/2002-VAS dated 30.10.2002 to all PMRTS licensees.

1.24 Subsequently, in June 2007, DoT approved License Agreements for PMRTS and CMRTS based on the 'Detailed Guidelines for Migration of Existing Operators and Issue of Fresh Licence for Public Mobile Radio Trunk Services (PMRTS)' dated 01.11.2001 and TRAI's recommendations on 'Issues Concerning Public Mobile Radio Trunked Service (PMRTS) Referred by the DOT' dated 07.01.2003.

1.25 In the year 2014, DoT informed TRAI that spectrum allotment was being made administratively at administrative spectrum charges on formula basis to certain category of public/ commercial service providers such as Internet Service Providers (ISPs) and PMRTS for providing public/ commercial service, and, *inter-alia*, sought the recommendations of TRAI on the methodology for allotment of spectrum and spectrum pricing to such public/ commercial service providers. In reference to this, TRAI, through a letter No. 102-6/2014/NSL-II dated 08.07.2015 requested DoT to take a policy decision as to whether it is legally tenable to allocate spectrum by any other mechanism (viz. administratively) than auction in consultation with the Ministry of Law. TRAI therefore returned the reference to DoT to take appropriate decision in the matter and then seek fresh recommendations.

1.26 In the year 2017, DoT through its letter L-14027/08/2016-NTG dated 13.07.2017, on the subject- 'TRAI recommendations on method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism' sought the recommendations of TRAI on the following aspects:

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

1.27 In response, TRAI furnished its Recommendations on 'Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism' dated 20.07.2018. Through these recommendations, TRAI recommended, *inter-alia*, as below:

(a) The existing Licensed Service Area (LSA) based authorization criteria for PMRTS license should continue.
(b) The existing provision of duration of 20 years for PMRTS license should continue.
(c) Taking into consideration factors viz. PMRTS market conditions; low spectrum demand and high spectrum availability; the assignment of spectrum for PMRTS should be made administratively on the basis of demand.
(d) In order to promote efficient use of spectrum, the cap on the number of PMRTS handsets per channel that can be imported should be removed. However, while applying for import license, the PMRTS provider shall provide a justification for demand/ requirement of spares etc. of PMRTS handsets required to be imported.
(e) Carrier size for assignment to PMRTS licensee (both for analog or digital) shall be 6.25 KHz and multiples thereof.
(f) Carriers (frequency pairs) of 25 KHz already assigned to the service providers should be allowed to be retained by the service providers.
(g) Additional assignment of carriers for the existing analogue system shall continue @ carrier size of 25 KHz (counted as 4 carriers of 6.25 KHz each);
(h) Assignment in new cities/ service areas shall be made for digital systems only.

(i) Initially for each city, twelve carriers (frequency pairs) of carrier size 6.25 KHz in metro licensed service area and eight carriers (frequency pairs) in non-metro license service area shall be assigned for PMRTS (Digital system) depending on the availability.

(j) The Royalty charges for PMRTS and the options for payment of Royalty charges shall be:

(i) Option 1- Yearly Payment- ₹1200 (rupees one thousand two hundred) per year per 6.25 KHz channel for link distance upto 30 Km and ₹2400 (rupees two thousand four hundred) per year per 6.25 KHz channel for link distance upto 60 Km.

(ii) Option 2- Onetime Upfront Payment:

- Onetime upfront payment of ₹20,000 (rupees twenty thousand) for 6.25 KHz Spectrum for link distance upto 30 Km in the city within the same LSA for 20 years.
- Onetime upfront payment of ₹40,000 (rupees forty thousand) for 6.25 KHz Spectrum for link distance upto 60 Km in the city within the same LSA for 20 years.

(k) 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 the license fee of PMRT Service.

(l) 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.

(m) 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.

(n) 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.

(o) DoT shall incorporate the necessary changes in National Frequency Allocation Plan (NFAP) as proposed.

(p) 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.

(q) The Authority recommended an overall combined spectrum cap of 35% in a LSA on the spectrum identified and available for assignment to PMRTS/CMRTS, as per provision of NFAP-2011, shall be applicable to PMRTS licensee.

(r) 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).

D. DoT's Reference Dated 02.06.2022

1.28 DoT, through its reference letter No. 311-80/2022-CS-I-Policy (part) dated 02.06.2022 **(Annexure-II)**, requested TRAI to furnish recommendations under the terms of clause 11 (1) (a) of the TRAI Act, 1997 (as amended) regarding the terms and conditions for issue of fresh licenses for CMRTS and PMRTS services. The said reference is reproduced below:

"The Guidelines for PMRTS for Captive and Commercial use were issued on 1st Nov 2001 (Annexure-1) based on TRAI recommendations dated 18.12.2000. The license for commercial use is known as Public Mobile Radio Trunking Service (PMRTS) and the license for captive use it is known as Captive Mobile Radio Trunking Service (CMRTS). Further recommendations of TRAI regarding the PMRTS was given on 07.01.2003. on the basis of these guidelines of 1st Nov 2001 and TRAI recommendations dated 07.01.2003, License agreements of PMRTS and CMRTS were approved in June 2007.

2. Licenses for PMRTS were issued on the basis of available guidelines by the CS division up to 19.08.2013. Thereafter, the PMRTS license was brought under Unified Licensing (UL) regime and PMRTS Authorisation was issued under the UL guidelines. However, the CMRTS license, which is for captive use, was not included in the UL, and the CMRTS license continued to be issued on the basis of approved guidelines of 2001 and license agreement of 2007.

3. As per the existing arrangements, licenses have been issued on none-exclusive basis without any limit of numbers of operators in a service area, as well as the number of licenses that can be obtained by any single operators. The present list of existing PMRTS licensees and CMRTS licensees are enclosed as Annexure-2 and Annexure-3 respectively. These licenses were granted for a period of 20 Years and extendable by 10 Years beyond initial period, at a time.

4. CMRTS license conditions have not been reviewed since 2007 and also not been included in the UL. A copy of the sample CMRTS license agreement as applicable to the existing licensees is enclosed as Annexure-4. Further, following amendments of CMRTS license were issued which are placed collectively at Annexure-5: -

a. letter Nos. 311-Misc/2017-CS-1 dated 15.03.2021regarding procurement of telecommunication equipment

b. letter Nos. 311-Misc/2017-CS-1 dated 06.10.2021 regarding change interest rates, penalty and interest on penalty and

c. letter Nos. 311-Misc/2017-CS-1 dated 08.10.2021 regarding rationalisation of bank guarantees)

5. In this regard, various suggestions/representations have been received from PMRTS Licensees and their Associations are enclosed at Annexure-6 and representations received from CMRTS Licensees are enclosed at Annexure-7. Keeping in view the vast changes in the technology and financial aspects during this period and the resultant new user application, there is a need to review scope and guidelines for PMRTS & CMRTS services and the license conditions.

6. In view of the above, TRAI is requested to give recommendations under the terms of clause 11 (1) (a) of TRAI Act, 1997 (as amended) regarding the terms and conditions for issue of fresh licenses for CMRTS and PMRTS services especially w.r.t technical conditions (viz. connectivity with PSTN, internet, use of digital technology, allocation of spectrum to PMRTS, use of network slicing under 5G, etc.) and financial aspects, etc. TRAI is also requested to give its view on any other issues considered relevant for CMRTS and PMRTS licenses."

1.29 Along with the afore-mentioned reference dated 02.06.2022, DoT also enclosed (a) the suggestions/ representation received from PMRTS Licensees and their Association, and (b) a representation received from a CMRTS licensee.

E. Additional information sought from DoT

1.30 On the perusal, it was noticed that in the DoT's reference letter dated 02.06.2022, though DoT made a mention of the TRAI's earlier recommendations dated 20.07.2018, it did not provide the status of these recommendations. It was also noticed that DoT has not provided its views and comments on the representations received from the PMRTS Licensees, their Association and CMRTS Licensee. In this regard, TRAI, through its letter dated 17.06.2022, requested DoT to provide following additional information:

(a) Implementation Status of the TRAI's earlier Recommendations on "Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism" dated 20.07.2018; and

(b) Analytical report of DoT on the representations received from the PMRTS Licensees, their Association and CMRTS Licensee.

1.31 In response, DoT vide its letter No. 311-80/2022-CS-I dated 20.09.2022 (**Annexure-III)** informed that "*TRAI recommendations on Method of allocation of spectrum for PMRTS including auction, as a transparent mechanism dated 20th July, 2018 was deliberated in the department and it was decided that the decision on TRAI recommendations may be taken after the decision on Methodology of allocation of spectrum to PMRTS. The issue is now being considered under the ambit of "Telecom Bill"."* Through the afore-mentioned letter, DoT also provided its views/ comments on the representations/ inputs from the PMRTS Licensees (including their Association) and CMRTS Licensees.

1.32 Thereafter, through a letter dated 26.12.2022, TRAI informed DoT that some of the recommendations contained in the TRAI's earlier recommendations on 'Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism' dated 20.07.2018, which are yet to be accepted by DoT, will also be reviewed in TRAI's stakeholder consultation with respect to the DoT's reference No. 311-80/2022-CS-I Policy (Pt.) dated 02.06.2022 on 'Review of terms and conditions for issue of licenses for CMRTS and PMRTS'.

1.33 Thereafter, through a letter dated 18.01.2023, TRAI requested DoT to provide (a) information on assignment of frequency spectrum to PMRTS and CMRTS licensees and (b) information on pending demand of frequency spectrum for PMRTS and CMRTS. In response, DoT sent its inputs through a letter dated 09.03.2023.

F. The Present Consultation Paper

1.34 In the above background, this consultation paper has been prepared to solicit comments of stakeholders on specific issues related to 'Review of Terms and Conditions of PMRTS and CMRTS Licenses'. Chapter 1 deals with the introduction and background. Chapter 2 deals with the review of the terms and conditions of PMRTS Licenses. Chapter 3 deals with the review of the terms and conditions of CMRTS Licenses. Chapter 4 deals with financial aspects for PMRTS and CMRTS. Chapter 5 deals with the review of allocation of spectrum for PMRTS. Chapter 6 deals with methodology for assignment of frequency spectrum for PMRTS. Chapter 7 deals with valuation of frequency spectrum for PMRTS. Chapter 8 deals with international practices on Mobile Radio Trunking Services. Chapter 9 summarizes the issues for consultation.

CHAPTER 2
REVIEW OF THE TERMS AND CONDTIONS OF PMRTS LICENSES

A. PMRTS License and PMRTS Authorization Under Unified License

2.1 From the year 2007 to 2013, DoT issued licenses for 'Provision of Commercial Public Mobile Radio Trunking Service (PMRTS)' based on the 'detailed guidelines for migration of existing operators and issue of fresh licenses for Public Mobile Radio Trunk Services (PMRTS)' dated 01.11.2001. In the year 2013, DoT introduced a regime of Unified License for various telecommunication services, including PMRTS through the 'Guidelines for Grant of Unified License' [Guidelines No. 20-281/2010-AS-I (Vol VI) dated 19.08.2013]. DoT has amended these Guidelines from time to time. The most recent Guidelines for Grant of Unified License were issued on 17.01.2022.

2.2 Upon receiving request from eligible entities, DoT grants Unified License with authorization for provision of services as per the terms and conditions described in the Unified License Agreement. At present, there are nine authorizations under Unified License:

(a) Access Service
(b) Internet Service
(c) National Long Distance (NLD) Service
(d) International Long Distance (ILD) Service
(e) Global Mobile Personal Communication by Satellite (GMPCS) Service
(f) **Public Mobile Radio Trunking Service (PMRTS)**
(g) Very Small Aperture Closed User Group (VSAT CUG) Service
(h) Audio Conferencing/ Audiotex/ Voice Mail service
(i) Machine to Machine (M2M) Service

2.3 Chapter XIII of Unified License Agreement provides the terms and conditions of PMRTS Authorization. The salient features of PMRTS Authorization under Unified License are outlined below:

(a) **Service Area**: The Service Area of Public Mobile Radio Trunking Service (PMRTS) shall be the Telecom Circle/ Metro area.

(b) **Scope of PMRTS Service**: The licensee is permitted to provide PMRTS. The PMRTS refers to:

(i) a two-way land mobile service in which users communicate among themselves through a pair of radio frequencies out of a pool in a designated frequency band, assigned to the system using pair of radio frequencies, and

(ii) the pair of frequencies is allocated on placement of call request and returned to the pool on completion of call, and

(iii) communication usually takes place through repeater station (also called base station). Once the user is assigned a channel (a pair of frequencies) by the system, no one else can interfere with the communication.

(c) **Roll out Obligation:**

(i) The Licensee shall roll out the network by installing and commissioning at least one Base Station (BTS) in the city/ town for which frequency has been allotted by WPC.

(ii) Applicable system for provision of PMRTS Service must be commissioned within 12 months from the date of frequency allotment by WPC.

(iii) The time period for roll out of network as per the rollout obligations mentioned above shall be deemed as the essence of the License Agreement and the network must be rolled out not later than such specified time period(s). No extension in prescribed due date will be granted. If the network is rolled out after the expiry of the due date, such delay in rollout of network will entail recovery of Liquidated Damages (LD) under this Condition. Provided further that if the rollout of the network is affected within 15 calendar days of the expiry of the due date then the Licensor shall accept the rollout of network without levy of LD charges.

(iv) At present, minimum 60 calendar days duration is prescribed for grant of SACFA clearance. While examining the compliance of rollout obligations, the delay in granting the SACFA clearance beyond the above mentioned prescribed duration shall be excluded from the duration set for rollout obligations in the condition 3.2 above. For the purpose of calculating the delay in grant of SACFA clearance of Base Station site, the date of 'WPC

acceptance number' for SACFA clearance application would be treated as the 'start date' and the date on which the SACFA clearance is granted in the online system of WPC would be considered as the 'end date'. The difference between the 'start date' and 'end date' after excluding the above mentioned prescribed period would be considered as the delay in grant of SACFA clearance for that Base Station site for the limited purpose of calculating the delay in compliance of rollout obligations. If the SACFA clearance for a particular Base Station site has been granted within prescribed duration, then for that particular site, delay would be considered as 'zero' days.

(v) In case the Licensee fails to rollout the network, within the period prescribed, the Licensor shall be entitled to recover LD charges @ ₹ 10,000/- (Rupees Ten thousand only) per month subject to a maximum amount of ₹2.4 lakh. For delay of more than 24 months, in addition to imposition of maximum amount of LD as mentioned above, the frequency allotment may be withdrawn and the Service authorization may also be terminated. The PBG shall be encashed to the extent of LD amount, if the same is not paid within the time period specified in the notice for recovery of LD. The licensee on such occasions shall restore the partially encashed guarantee to the full amount. Any failure to do so shall amount to violation of the terms and conditions of the license.

(vi) For the purpose of calculation of delay in compliance of rollout obligations, the month shall mean 1 Calendar month and any extra day shall be counted as full month for the purposes of recovery of liquidated damages.

(d) **Technical Conditions**:

(i) This License Agreement does not authorize the right to use of spectrum for which a separate frequency allotment will be required from WPC Wing. The methodology and procedure for allotment of spectrum shall be as mentioned in Chapter VII of the License.

(ii) The Company shall specify the details of technology (Digital/ Analogue), Quality of Service and other Performance Parameters of the Systems proposed to be deployed for operation of the service.

(iii) The system installed for providing service should be designed in such a way so as to provide good radio coverage inside the buildings.

(e) **Network Interconnection**: The Licensee may interconnect to PSTN/ PLMN in the following manner:

(i) PSTN/ PLMN connectivity (outgoing only) shall be limited to one PSTN/ PLMN line for five RF Channels of 25 KHz each for analogue system, only with one Licensed Access Service Operator.

(ii) PSTN/ PLMN connectivity (outgoing only) shall be limited to one E-1 link (30 circuits) for digital system up to 10,000 customers and thereafter, one additional E-1 link (30 circuits) for each additional 10,000 customers or part thereof, only with one Licensed Access Service Operator.

(iii) Incoming PSTN/ PLMN connectivity is prohibited.

(iv) There shall be no interconnection between the two separately licensed PMRTS systems.

(f) **Security Conditions**:

(i) The Security conditions given hereunder are in addition to the conditions provided in Chapter-VI of PART-I of the Schedule to the License Agreement.

(ii) In the interest of security, suitable monitoring equipment as may be prescribed by the Licensor for each type of System used will be provided by the Licensee at his own cost for monitoring, as and when required.

(iii) The Conditions No. 39.5, 39.6, 39.7, 39.8, 39.10(ii), 39.21(i), 39.21(ii), 39.22(i), 39.22(ii), 39.22(iii), 39.22(iv), 39.22(v), 39.23(ix), 39.23(x) and 39.23(xvi) contained in PART-I of the Schedule to the License Agreement shall not be applicable for PMRTS Service.

2.4 PMRTS license issued earlier also contains similar conditions as enumerated above.

2.5 The financial aspects of PMRTS license will be covered in Chapter 4 of this Consultation Paper.

2.6 Worldwide, with the passage of time, PMRTS has witnessed a significant advancement not only in terms of technology but also in terms of services and facilities which may be made available to users through this service. ITU in its Report ITU-R M.2014-3 (11/2016) on 'Digital land mobile systems for dispatch traffic' outlines the technical and operational characteristics for spectrum efficient digital dispatch systems. Relevant extract of the said Report is given below:

"Demand in the land mobile service is on the increase due to annual growth as well as to new data-based service requirements. This has led to the development of more spectrally efficient technologies utilizing digital modulation and in many cases trunking. These technologies are being introduced in systems worldwide to accommodate this demand.

1 General objectives

The general objectives of a spectrum-efficient digital land mobile system, for dispatch in either private or public systems, are to provide:

- *systems that offer a higher spectrum efficiency, thereby accommodating more users within limited spectrum resources than analogue systems;*
- *a higher average level of voice quality over the network and enciphered speech for privacy;*
- *users with a wide range of services and facilities, both voice and non-voice, that are compatible with those offered by the public fixed networks (public switched telephone network (PSTN), public data network (PDN), integrated services digital network (ISDN), etc.);*
- *users with a variety of applications to satisfy their requirements, ranging from handheld stations to vehicle mounted stations, with voice and data interfaces;*
- *mobile and infrastructure equipment which use state of the art technology to provide savings in weight, power consumption and cost.*

2 Service types

The basic services offered by a digital dispatch traffic system can be divided into three types:

- *teleservices;*
- *bearer services; and*
- *supplementary services.*

2.1 Teleservices

Teleservices provide the user with full capability, including terminal equipment functions, to communicate with other users. Both lower layer (open systems interconnection (OSI) layers 1 through 3) and higher layers (OSI layers 4 to 7) functionality typify these services.

Typical teleservices should include:

- *a trunked and non-trunked capability to permit direct mobile-to-mobile and group speech call facilities with user options to permit selective and secure calling;*
- *telephony, facsimile and some extended service offerings, e.g. videotext, telex, etc.*

2.2 Bearer services

Bearer services give the user the capacity needed to transmit appropriate signals between certain access points. These services are typified by lower layer functionality, typically limited to OSI layers 1 through 3.

Typical bearer services should include:

- *a circuit mode data facility to permit a minimum of 7.2 kbit/s for unprotected data and a minimum of 4.8 kbit/s for protected data;*
- *a packet mode connection-oriented data and connectionless data facility.*

2.3 Supplementary services

The range of supplementary services varies depending on the system and also the particular implementation.

3 Channel design

Digital systems for dispatch traffic may have two types of channel categories:

- *traffic channels which are used for voice and data transmission; and*
- *control channels which are used for signalling and control purpose, e.g. access control, broadcast messages, synchronization, etc.*

4 Channel access techniques

The systems described in this Report use either frequency division multiple access (FDMA), time division multiple access (TDMA), code-division multiple access (CDMA), frequency hopping multiple access (FHMA), or hybrids of these. Digital cellular technology may be adaptable for dispatch use."

2.7 In India, while many PMRTS providers still use analog technology in their networks, a few PMRTS providers have deployed digital technology in their networks. Use of

digital technology in PMRTS networks enables the service providers to roll out new service types and offer better quality of service to their users. It also benefits them with significant spectral efficiency. In view of the remarkable developments in the technological landscape for PMRTS*, prima facie*, there is a need to review the terms and conditions of the PMRTS license. Besides, DoT, through the reference dated 02.06.2022, has sought the recommendations of the Authority on the terms and conditions for issue of fresh licenses for PMRTS license.

2.8 In this background, the Authority solicits comments of stakeholders on the following set of questions:

Issues for Consultation:

Q1. Whether there is a need to review the terms and conditions of PMRTS License and PMRTS Authorization under Unified License? Kindly provide a detailed response with justifications.

Q2. In case it is decided to review the terms and conditions of PMRTS License and PMRTS Authorization under Unified License, in what manner should the following conditions be amended?

(a) Scope of the license

(b) Roll out obligation

(c) Technical conditions

(d) Network interconnection

(e) Security conditions

(f) Any other (please specify).

Kindly provide a detailed response with justifications

B. Issues raised by PMRTS Licensees and their Association

2.9 As indicated in Chapter-I, DoT, through the Reference dated 02.06.2022, also sent various suggestions/ representations received from PMRTS Licensees and their Association. Thereafter, upon a request from TRAI, DoT, through a letter dated 20.09.2022, sent its views/ comments on the representations/ inputs from the PMRTS Licensees and their Association.

2.10 The suggestions and representations of PMRTS Licensees and their Association, and DoT's views/ comments thereof are being discussed in the succeeding paragraphs:

(1) Internet connectivity with static IP addresses

2.11 Suggestion of PMRTS Licensees and their Association: *"The PMRTS service today is licensed by DoT to be a "Closed User Group' service. An extremely restricted PSTN interconnect given to the industry (one PSTN line for every 5 channels issued). PMRTS should be allowed to connect IP/ Internet connectivity."*

2.12 DoT's view: *"The PMRT Service is for CUG purpose and the interconnect is as per existing License Agreement."*

2.13 During preparatory discussions, PMRTS providers indicated that they require internet connectivity with static IP for (a) site-to-site networking; (b) trunking system backhaul connectivity; and (c) to have inter-city and intra-city roaming voice calls. PMRTS providers also contended that Metro cities with wide geographical spread will benefit from IP based interconnection, which will extend seamless coverage to the end customers. One of the PMRTS providers mentioned that it should be permitted to interconnect all the base station sites within the same service area; for instance, all the base station sites in National Capital Region (NCR) should be allowed to be interconnected to offer seamless coverage; given that most customers have their offices in main city and factories/ warehouses in the suburbs, inter-linking of sites becomes a necessity to ensure seamless coverage across the city and suburbs.

2.14 At present, an entity holding PMRTS authorization under Unified License, is permitted PSTN/ PLMN connectivity (outgoing only). However, it is not permitted Internet connectivity. The PSTN/ PLMN connectivity (outgoing only) currently is limited to:

(a) One PSTN/ PLMN line for five RF Channels of 25 KHz each for analogue system, only with one Licensed Access Service Operator.

(b) One E-1 link (30 circuits) for digital system up to 10,000 customers and thereafter, one additional E-1 link (30 circuits) for each additional 10,000 customers or part thereof, only with one Licensed Access Service Operator.

2.15 The condition on Network Interconnection under PMRTS authorization under Unified License, *inter-alia*, provides that *"there shall be no interconnection among two separately licensed PMRTS systems*".

2.16 In this background, the Authority solicits comments from stakeholders on the following question:

Issue for Consultation:

Q3. Whether PMRTS providers should be permitted Internet connectivity with static IP addresses? Kindly provide a detailed response with justification.

(2) Licensed Service Area of PMRTS Authorization, and Geographical Area for Assignment of Frequency Spectrum

2.17 Suggestion of PMRTS Licensees and their Association: *"DOT has made PMRTS licenses from citywide to Circle wide. But WPC has not allowed to use the already allocated spectrum for one city earlier, in other cities of the circle. This has defeated the purpose of making the PMRTS license circle wide. PMRTS licensees should be allowed to use spectrum at any location within the Telecom Circle through an intimation to WPC. However, Operators shall pay location wise -WPC-Royalty and License fee for the new location intimated to WPC for frequency re-use."*

2.18 DoT's view: *"The frequency allocation to the PMRT operators has been done in accordance with the earlier PMRTS license conditions city wise.*
Further, TRAI Recommendation on "method of allocation of spectrum for PMRTS including auction, as a transparent mechanism" dated 20th July 2018 was deliberated in the department and it was decided that the decision on TRAI recommendations may be taken after the decision on Methodology of allocation of spectrum to PMRTS. The issue is now being considered under the ambit of 'Telecom Bill'."

2.19 For the PMRTS licenses granted prior to the year 2007, the licensed service area (LSA) was defined as the geographical area covered within the 30 Km radius from the base station site or city limit, whichever was larger. Analogously, the frequency spectrum to PMRTS providers was assigned city-wise. In the year 2007, the licensed

service area of the new (or migrated) PMRTS licenses was defined as telecom circle/ Metro area. However, the frequency spectrum continued to be assigned city-wise as before. This practice is continuing in the Unified License regime as well, i.e. while the licensed service area of PMRTS authorization under Unified License is at telecom circle/ Metro area level, the frequency spectrum is assigned to the PMRTS authorization holders city-wise.

2.20 At present, there are nine authorizations under the Unified License. The service area under these authorizations is given below:

S. No.	Service Authorization		Service Area
1	Access Service		Telecom Circle/ Metro Area
2	Internet Service	Category "A"	National Area
		Category "B"	Telecom Circle/ Metro Area
		Category "C"	Secondary Switching Area (SSA)
3	National Long Distance (NLD)		National Area
4	International Long Distance (ILD) Service		National Area
5	Global Mobile Personal Communication Service (GMPCS)		National Area
6	Public Mobile Radio Trunking Service (PMRTS)		Telecom Circle/ Metro Area
7	Very Small Aperture Terminal (VSAT) CUG Service		National Area
8	Audio Conferencing/ Audiotex/ Voice Mail Service		National Area
9	Machine to Machine (M2M) Service	Category "A"	National Area
		Category "B"	Telecom Circle/ Metro Area
		Category "C"	SSA

2.21 As may be seen from the above, the service area for PMRTS Authorization is at Telecom Circle/ Metro Area level like Access Service Authorization. One may contend that with a view to provide flexibility of operation, the service area for PMRTS may be classified in the manner it is classified for Internet Service. The provisions relating to service area for Internet Service Authorization under the Unified License is reproduced below:

"1. Service Area: The License/Authorization for Internet Service are granted for three different Categories namely Category 'A', Category 'B' and Category 'C'. The Service Area for Category 'A' authorization shall be the National Area. The Service Area for Category 'B' authorization shall be the Telecom Circle/Metro area as defined in Annexure-V. The Service Area for Category 'C' authorization shall be the Secondary Switching Area (SSA) as defined in Annexure-VII. If the Licensee desires to obtain ISP Category 'C' Authorization, under Unified License, for more than four SSAs in a Telecom Circle, the Licensee shall be required to obtain ISP Category 'B' authorization for that Service Area.

License/Authorization for Internet Service, granted for more than one Service Area (Telecom Circle/ Metro/ SSA), shall be administered at each Service Area level."

2.22 One may argue that in case the service area for PMRTS license is categorized at (a) National level, (b) telecom circle/ Metro Area level, and (c) SSA level, this will provide flexibility to PMRTS providers to opt for the specific category of authorization as per their requirement.

2.23 At present, the access spectrum[7] is assigned to access service providers based on Telecom Circle/ Metro Area. On the other hand, in the past, DoT has assigned frequency spectrum to PMRTS providers at city level through Wireless Operating License (WOL). The WOL specifies, *inter-alia*, the location (i.e. Address alongwith Latitude and Longitude) of a Fixed Station and stipulates that the Fixed Station is permitted to establish communication with mobile radio stations within a particular city. The WOL also specifies the authorized frequencies and emission parameters.

2.24 PMRTS providers contend that the frequency spectrum assigned to them for use in a city should be allowed to be used at any location within the Telecom Circle through an intimation to the Government; in case such permission is granted to them, they are willing to pay location wise Royalty Charges and License fee for each location for frequency reuse.

2.25 In this background, the Authority solicits the comments of stakeholders on the following set of questions:

[7] The Government has assigned access spectrum in 700 MHz band/ 800 MHz band/ 900 MHz band/ 1800 MHz band/ 2100 MHz band/ 2300 MHz band/ 2500 MHz band/ Mid-band (3300-3670 MHz)/ Milli-meter wave band (24.25 GHz to 27.5 GHz) to access service providers telecom circle/ Metro Area-wise.

Issues for Consultation:

Q4. Whether there is a need to review the extant provisions relating to service area for PMRTS Authorization under Unified License? If yes, whether it would be appropriate to grant PMRTS Authorization for three different categories with service area as (a) National Area; (b) Telecom circle/ Metro Area; and (c) Secondary Switching Area (SSA)? Kindly provide a detailed response with justification.

Q5. Whether there is a need to review the extant provisions relating to the authorized area for use of a particular frequency spectrum to PMRTS providers? If yes, in what manner should these provisions be amended? Kindly provide a detailed response with justification.

(3) Shifting of Base Station Sites

2.26 Suggestion of PMRTS Licensees and their Association: *"WPC is not allowing to use already allocated spectrum on new sites requiring, shifting of existing Tower site in the same Service Area to improve quality of coverage to subscribers in the existing Service Area. This has slowed down the growth of PMRTS business, especially since many industries are moving away from a city/ existing Service Area. PMRTS Operators should be free to use already allocated spectrum at an alternate site in the existing or new Service Area to serve customers well when they relocate away from an existing Service Area. PMRTS Operators should be free to use already allocated spectrum at an alternate site in the existing or new Service Area to serve customers well when they relocate away from an existing PMRTS site, through just an intimation to WPC.*

(a) Shifting of base stations - required due to expiry of lease period of site at an old location or availability of a better site location nearby.

(b) Permission for installation of additional new base stations by partial shifting of the already assigned frequencies. If PMRT Service Provider has been allotted one block of frequency (i.e. 5 frequency pairs) in one city and they are operating with single site/ location. They may be allowed to operate with 3 frequency pairs out of 5 frequency pairs in a new site/ locations in the same Service area, so as to provide improved coverage to their subscribers.

Operator to inform DOT/ WPC as matter of information and should not be made as part of any license requisite or condition."

2.27 DoT's views: *"Assignments to PMRTS are made city wise. Shifting of any base station from one place to another place within a service area may lead to alter/ extend the geographical coverage area and accordingly, the extended geographical area, the PMRTS frequency assignment is treated as new. The allocation of new frequency assignments is pending due to pending decision on methodology of allotment of spectrum to PMRTS. However, installation of a new Base Station within the existing PMRTS network in a city is permitted provided that no change in the geographical coverage area."*

2.28 As mentioned above, the WOL granted by DoT to a PMRTS operator for a city specifies the location (i.e. address alongwith latitude and longitude) of a Fixed Station and the authorized frequencies and stipulates that the Fixed Station is permitted to establish communication with mobile radio stations within that city. In the present scheme, in case it is decided to permit a PMRTS operator to shift the Fixed Station from the location specified on the WOL to a new location within the city, or to permit a PMRTS operator to split the frequencies authorized to it for use on a Fixed Station in a city between two or more Fixed Stations within the city, it will require to issues fresh WOL(s) indicating the location of new Fixed Station(s) and the authorized frequencies on them.

2.29 In this background, the Authority solicits comments of stakeholders on the following set of questions:

Issue for Consultation:

Q6. Whether there is a need to review the mechanism of shifting the fixed station from one location to another location within the authorized area for use of a particular frequency spectrum? If yes, what should be the terms and conditions for such permission? Kindly provide a detailed response with justification.

Q7. Whether there is a need to permit PMRTS providers to shift a few frequency carriers out of a pool of frequency carriers, assigned to an existing Fixed Station, to a new Fixed Station located within the authorized area for use of the pool of frequency carriers? If yes, in what manner the challenges arising out of such partial shifting of frequency

carriers may be mitigated? Kindly provide a detailed response with justification.

(4) Requirement of Wireless Operating License (WOL)

2.30 Suggestion of PMRTS Licensees and their Association*: "The requirement to obtain WOL as mentioned in the frequency assignment, frequency allotment, or frequency earmarking letters already issued to PMRTS Providers under Unified License for PMRTS authorization stands deleted. As it has been done in case of Access Service authorization vide DOT Circular No.: L-14004/01/2012- NTG dated 02/11/2016. WPC may give notice if operators fail to pay WPC-Royalty and License fee on the due date."*

2.31 DoT's view: *"As per existing rules/ procedure, to operationalize the frequency network including PMRTS, Wireless Operating License is required."*

2.32 At present, the Wireless Planning and Coordination (WPC) Wing of DoT, upon request from eligible entities and fulfillment of requisite conditions, grants wireless operating license (WOL) for the purpose of establishing, maintaining and operating Wireless Telegraph stations in India under the Section 4 of the Indian Telegraph Act, 1885. In the year 2016, DoT dispensed the requirement of obtaining WOL by the Access Service Providers under Unified License with Access Service Authorization, and Unified Access Service License through the Circular No. L-14004/01/2012- NTG dated 02.11.2016. PMRTS Licensees and their Association have requested that the requirement of obtaining WOL by PMRTS providers should also be dispensed with.

2.33 In this background, the Authority solicits comments of stakeholders on the following question:

Issue for Consultation:

Q8. Whether there is a need to review the requirement of obtaining Wireless Operating License (WOL) by PMRTS providers? Kindly provide a detailed response with justification.

(5) Sale, Lease and Rent of Radio Terminals

2.34 Suggestions of PMRTS Licensees and their Association:

(a) *"Since PMRTS subscribers, by virtue of license terms and conditions, are not required to obtain any separate license from WPC/ DoT and can obtain the hardware (radio terminal) from any authorized dealer on outright sale or lease or rent, the authorized dealer (DPL holder) should be allowed to offer radio terminals on rent or lease to such subscriber availing PMRTS Service from a Licensed operator."*

(b) *"A licensed PMRTS Operator, by virtue of the PMRTS license, can sell, rent or lease radio terminals without being a Dealer Possession License (DPL Holder). In view of this and the fact that there are no manufacturers of radio terminals in India, PMRTS operators should be allowed to freely import radio terminals under Open General Licence (OGL) without requiring any permission from DoT or WPC."*

(c) *"There should be no linkage of spectrum allocation and import of radio terminals by the PMRTS Operator since all subscribers who buy handsets do not return them even after they stop using the PMRTS Service. The main reason is that the radio terminal has a life of 5 years and is reflecting in the books of accounts of the subscriber as a Capital Asset. Also depending on usage and operating environment available at the subscriber end, many radio terminals become defective beyond economic repair in usage periods from 1-5 years, resulting in the customer having to buy such non-repairable radio terminals again."*

2.35 DoT's view:

(a) *"The PMRTS service providers after acquiring radio terminals either through direct import or buying from DPL holder, can provide these radio terminals to subscribers/ users upon mutually agreed terms and conditions."*

(b) *"The wireless users having valid frequency assignment under Indian Telegraph Act, 1885 can import directly, the permitted number of radio terminals/ wireless equipment."*

(c) *"As per existing rules/ procedure, the PMRTS frequency assignment holder can import the permitted number of terminals as per technical specifications mentioned in WOL against unserviceable terminals, after submitting the destruction certificate/ copy of FIR (in case of loss)/ appropriate proof."*

2.36 As indicated above, the PMRTS providers have contended that the Dealer Possession License (DPL) holder should be allowed to offer radio terminal on rent or lease to the subscribers availing PMRTS service from a Licensed PMRTS provider. In this regard, it is worth noting that the Central Government issued 'The Indian Wireless Telegraphy (Possession) Rules, 1965' [GSR 1318] dated 28.08.1965. The Licensing Requirement under these rules is given below:

"3. Licensing *Requirements. –*

(1) Save as provided in rule 5, no person shall possess a wireless telegraphy apparatus except under and in accordance with a licence issued under these rules.

(2) No dealer shall sell or hire a complete wireless set to any person, unless such person produces before the dealer a valid licence in such person's own name either under these rules to possess a wireless telegraphy apparatus or under the Indian Telegraph Act, 1885 (13 of 1885), to establish, maintain and work a wireless telegraph, or the dealer himself obtains from the post office on behalf of the purchaser or hirer the requisite licence for the set, within a period of seven days of the sale or hiring of the set, or where the said period of seven days expires on any Sunday or postal holiday, on the first postal working day after such expiry :

Provided that this sub-rule shall not apply when the person purchasing or hiring the set is not resident in India and is purchasing the set for use outside India.

…

5. Exemption from licence. - Subject to the provisions of these rules, every person other than a dealer is exempted from the requirement of holding a licence to possess a wireless telegraphy apparatus in respect of :

(a) such apparatus as is reasonably required for the purpose specified in a current licence issued to him under section 4 of the Indian Telegraph Act, 1885, to establish maintain and work a wireless telegraph;

(b) wireless telegraph apparatus other than complete wireless set;

(c) wireless receiving apparatus established in any motor vehicle which is exempted from registration in India, provided the said wireless apparatus is not used for the reception of wireless signals while in India;

(d) crystal wireless sets."

2.37 Simply put, *"as per the Indian Wireless Telegraphy (Possession) Rules, 1965, no person/ dealer shall sell or hire a wireless set/ equipment to any person, unless such person/ dealers hold a valid Dealer Possession License (DPL). The DPL holder can*

sell wireless sets/ equipment only to such person/ entity that hold an authorization issued by this Ministry to establish a wireless telegraph under Indian Telegraph Act, 19885."[8]

2.38 The PMRTS operators have also requested that they should be allowed to freely import radio terminals under Open General License (OGL) without requiring any permission from DoT or WPC. The items which fall within the scope of Open General License (OGL) are deemed to be freely importable without restrictions and without a license, except to the extent that they are regulated by the provisions of the Policy or any other law.

2.39 In this background, the Authority solicits comments of stakeholders on the following set of questions:

Issues for Consultation:

Q9. Whether there is a need to review the provisions related to sale, lease and rent of the radio terminals of PMRTS? Kindly provide a detailed response with justification.

Q10. In case your response to the Q9 is in the affirmative, what kind of changes will be required in PMRTS licenses and Dealer Possession License (DPL) and guidelines? Kindly provide a detailed response with justification.

Q11. Whether there is a need to review the provisions related to import of the radio terminals of PMRTS? Kindly provide a detailed response with justification.

(6) Replacement of Unserviceable Network Elements

2.40 Suggestions of PMRTS Licensees and their Association: *"PMRTS operators having to replace old infrastructure which have become defective and or has been obsoleted,*

[8] Source: DoT's letter No. P-11014/04/2013-PP dated 10.05.2016. The letter is available at https://dot.gov.in/sites/default/files/Online%20Sale%20or%20%20Purchase%20of%20Wireless%20Sets%20and%20Equipments.pdf

may be permitted to deploy different make and model of infrastructure but which is compatible with the existing. The details of the new model and make of infrastructure would be informed to DOT/ WPC as matter of information and should not be made as part of any license requisite or condition."

2.41 DoT's views: *"Under the valid spectrum assignment for PMRTS, the issue of replacement of radio terminals can be considered, on case-to-case basis, subject to submission of destruction certificates etc. of the defective/obsolete terminals."*

2.42 In this regard, the Authority took note of the DoT's O.M. No. R-11017/04/2017-PP dated 07.12.2018 through which DoT issued, *inter-alia*, the guidelines for destruction of Wireless Equipment and issue of destruction certificate. The relevant portion of these guidelines is reproduced below:

"2. For destruction of Wireless Equipments & issue of destruction certificate:

(a) All the electronic components of wireless equipment transformers, resistors, capacitors etc. be removed from the euipments panel and disposed off.

(b) The wirings inside the panels of the equipment be cut at two ends and jumbled.

(c) The transmitting/receiving antenna and its components may be disposed off.

(d) Confirmation of the above actions at 2 (a) to (c) may be sent to WPC Wing, Department of Telecommunications, Ministry of Communications and the concerned office from where the original wireless license was issued. Also the DPL holder should invariably submit quarterly the record to this effect to DPL issuing authority.

(e) Records of destruction certificates may be kept by issuing authorities.

(f) The disposal of e-waste generated through dismantling of wireless equipments may be carried out through authorised dismantler or recycler as per the provisions/guidelines issued by the Ministry of Environment, Forest and Climate Change, Government of India from time to time."

2.43 As indicated above, the PMRTS operators have contended that upon the old infrastructure becoming defective and obsolete, they should be allowed to deploy different make and model of infrastructure, but which is compatible with the existing infrastructure; for this purpose, the only requirement should be to inform the make and model of the new infrastructure to DoT/ WPC. In response, DoT has stated that

the issue of replacement of radio terminals can be considered on case-to-case basis, subject to submission of destruction certificate.

2.44 In this background, the Authority solicits comments of stakeholders on the following question:

Issue for Consultation:

Q12. Whether there is a need to review the provisions related to replacement of unserviceable network elements of PMRTS? Kindly provide a detailed response with justification.

C. Need for Migration to Spectrum-Efficient Digital Technologies

2.45 The Report ITU-R M.2014-3 (11/2016) on 'Digital land mobile systems for dispatch traffic' issued by ITU indicates that digital land mobile radio systems provide a higher spectrum efficiency, thereby accommodating more users within limited spectrum resources than analogue systems; these systems also provide a higher average level of voice quality over the network and enciphered speech for privacy; apart from the above, they provide with a wide range of services and facilitates, both voice and non-voice.

2.46 In digital MRTS, spectral efficiency is possible due to the systematic utilization of 12.5 KHz/ 6.25 KHz channel spacing in place of 25 KHz which is prevalent in analogue systems. The use of 12.5 KHz/ 6.25 KHz channels with digital technologies can provide an increase in capacity by 2 to 4 times, as compared with the traditional 25 KHz system.

2.47 Evidently, use of spectrally efficient digital technology is desirable from the standpoint of both – service providers and consumers. However, at present most of the PMRTS systems continue to work in analogue mode. *Prima facie*, there appears to be a need to nudge the PMRTS providers to migrate to spectrally efficient digital technologies.

2.48 It is noteworthy that the Authority, through its Recommendations on "Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism" dated 20.07.2018 had recommended as below:

"4.5 The Authority recommends that-

(a) Carrier size for assignment to PMRTS licensee (both for analog or digital) shall be 6.25 KHz and multiples thereof.

(b) Carriers (frequency pairs) of 25 KHz already assigned to the service providers should be allowed to be retained by the service providers.

(c) Additional assignment of carriers for the existing analogue system shall continue @ carrier size of 25 KHz (counted as 4 carriers of 6.25 KHz each);

(d) Assignment in new cities/ service areas shall be made for digital systems only.

(e) Initially for each city, twelve carriers (frequency pairs) of carrier size 6.25 KHz in metro licensed service area and eight carriers (frequency pairs) in non-metro license service area shall be assigned for PMRTS (Digital system) depending on the availability."

2.49 DoT has not yet accepted these recommendations of TRAI.

2.50 In this background, the Authority solicits comments of stakeholders on the following set of questions:

Issue for Consultation:

Q13. Whether there is need to review the recommendation No 4.5 (mentioned below) of the TRAI's Recommendations on 'Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism' dated 20.07.2018, which are under consideration of DoT?

"4.5 The Authority recommends that-

(a) Carrier size for assignment to PMRTS licensee (both for analog or digital) shall be 6.25 KHz and multiples thereof.

(b) Carriers (frequency pairs) of 25 KHz already assigned to the service providers should be allowed to be retained by the service providers.

(c) Additional assignment of carriers for the existing analogue system shall continue @ carrier size of 25 KHz (counted as 4 carriers of 6.25 KHz each).

(d) Assignment in new cities/ service areas shall be made for digital systems only.

(e) Initially for each city, twelve carriers (frequency pairs) of carrier size 6.25 KHz in metro licensed service area and eight carriers (frequency pairs) in non-metro license service area shall be assigned for PMRTS (Digital system) depending on the availability."

Kindly provide a detailed response with justification.

Q14. Whether there is a need to mandate PMRTS providers to migrate to spectrally efficient digital technologies in a time-bound manner? If yes, what should be the time frame for mandatory migration to spectrally efficient digital technologies? Kindly provide a detailed response with justification.

Q15. In case your response to Q14 is negative, what measures should be taken to nudge and encourage PMRTS providers to migrate to spectrally efficient digital technologies? Kindly provide a detailed response with justification.

D. Use of 5G Technology for Provision of PMRTS

2.51 Since October 2022, 5G technology-based wireless telecommunication services have started being rolled out in the country. 5G technology offers a feature of network slicing. Main aspects of network slicing feature of 5G technology are given below:

(a) Network slicing allows running multiple logical customized networks on a shared common infrastructure complying with agreed service level agreements (SLAs) for different vertical industry customers.

(b) Each slice can have attributes such as low latency, high bandwidth, support for a huge number of devices etc.

(c) Different slices can be engineered to serve different use cases/ applications/ user groups, according to the specific need, over the same infrastructure.

2.52 The features of network slicing of 5G technology may be explored for providing PMRTS/ CMRTS as it is likely to fulfill the basic requirements of mission-critical mobile radio trunking services like low latency, assured availability, priority and pre-emption.

2.53 It is noteworthy that TRAI, in its recommendations on "Recommendations on Auction of Spectrum in frequency bands identified for IMT/5G "dated 11.04.2022, recommended as below:

"Access Service providers can provide private network as a service to an enterprise by using network resources (such as through network slicing) over its PLMN public network. For the sake of clarity, specific provisions should be made in the License".

2.54 In this background, the Authority solicits comments of stakeholders on the following questions:

Issue for consultation:

Q16. Whether it is possible to deliver the PMRTS/ CMRTS, which are mission-critical in nature, using 4G/ 5G Network Slicing or any other technology? If yes, in what manner should the delivery of PMRTS/ CMRTS using 4G/ 5G network slicing be enabled in the license? What should be safeguards to ensure that the quality-of-service for cellular networks is not adversely impacted? Kindly provide a detailed response with justification.

E. PMRTS Authorization Under Unified License (VNO)

2.55 According to the provisions of National Telecom Policy-2012 (NTP-2012), DoT through its reference dated 07.07.2014 had sought recommendations of the Authority on 'Delinking of licenses for networks from the delivery of services by way of Virtual Network Operators (VNOs) including associated issues of definition of Adjusted Gross Revenue (AGR) under the UL regime'. The Authority after detailed consultation issued its recommendations on "Introducing Virtual Network Operators in telecom sector" on 01.05.2015. Pursuant to these recommendations, DoT issued guidelines and license agreement for the grant of Unified License (Virtual Network Operators) on 31.05.2016.

2.56 Under the Unified License (Virtual Network Operators) [UL (VNO)] regime, DoT, upon receiving request from eligible entities, grants UL (VNO) with authorization for provision of services as per the terms and conditions described in the UL (VNO) License Agreement. At present, there are ten authorizations under UL (VNO):

(a) Access Service
(b) Internet Service
(c) National Long Distance (NLD) Service
(d) International Long Distance (ILD) Service
(e) Global Mobile Personal Communication by Satellite (GMPCS) Service
(f) **Public Mobile Radio Trunking Service (PMRTS)**
(g) Commercial Very Small Aperture Closed User Group (VSAT CUG) Service
(h) Resale of International Private Leased Circuit (IPLC)
(i) Access Service Category B
(j) Machine to Machine (M2M) Service

2.57 The salient features of PMRTS Authorisation under UL (VNO) are given below:

(a) **Service Area**: The Service Area of Public Mobile Radio Trunking Service (PMRTS) shall be the Telecom Circle/Metro area.

(b) **Scope**: The PMRTS refers to a two-way land mobile service in which users communicate among themselves through a pair of radio frequencies out of a pool in a designated frequency band, assigned to the system using pair of radio frequencies. The pair of frequencies is allocated on placement of call request and returned to the pool on completion of the call. The communication usually takes place through repeater station/ base station. Once user is assigned a channel (a pair of frequencies) by the system, no one else can interfere with the communication.

(c) **Network Interconnection**: A UL (VNO) Licensee with authorization for PMRTS shall be parent to NSO(s) only. Any Interconnection with Access Service providers, ISPs, ILDOs, VSAT operators, NLDOs shall be through the NSO to which it is parented. There shall be no interconnection between the two separately licensed PMRTS systems.

2.58 In this background, the Authority solicits comments of stakeholders on the following set of questions.

Issues for consultation:

Q17. Whether there is a need to review the terms and conditions of PMRTS Authorization under Unified License (VNO)? Kindly provide a detailed response with justification.

Q18. In case it is decided to review the terms and conditions of PMRTS authorization under Unified License (VNO), in what manner should the following existing provisions be amended?

(a) Service area

(b) Scope of the license

(c) Network interconnection

(d) Any other (Please Specify).

Kindly provide a detailed response with justification.

Q19. Whether there is any other issue relevant for review of terms and conditions of the PMRTS License, PMRTS Authorization under Unified License, and PMRTS authorization under Unified License (VNO)? Kindly provide a detailed response with justifications.

2.59 The following Chapter examines the issues related to the terms and conditions of CMRTS license.

CHAPTER 3
REVIEW OF THE TERMS AND CONDTIONS OF CMRTS LICENSE

A. License agreement of Captive Mobile Radio Trunking Service (CMRTS)

3.1 The License agreements of CMRTS were approved in June 2007 based on DoT's Guidelines of 2001 and TRAI's recommendations dated 07.01.2003. Except for a few amendments in the license agreement, which were carried out from time to time, the broad licensing framework of 2007 is continuing till date in case of CMRTS. The salient features of the CMRTS License Agreement are given below:

(a) **Service Area**: The service Area of the License shall be location specific as per the license agreement.

(b) **Scope**: The scope of the license is:

(i) This License is granted to provide service on a non-exclusive basis in the designated service area by utilizing any type of network equipment, including circuit and/or packet switches, that meet the relevant International Telecommunication Union (ITU)/ Telecommunication Engineering Center (TEC) /International standardization bodies such as 3GPP/ 3GPP-2/ ETSI/ IETF/ ANSI/ EIA/ TIA/ IS. Provided further that the licensor, on its own or through a designated operator, shall always have a right to operate the service anywhere in India including the service area for which this license is granted.

(ii) Licensee shall make its own arrangements for all infrastructure involved in providing the service and shall be solely responsible for installation, networking and operation of necessary equipment and systems, treatment of subscriber complaints, issue of bills to its subscribers, collection of revenue, attending to claims and damages arising out of his operations.

(c) **Duration of License**: The duration of License agreement shall be for a period of 20 years for both analogue and digital systems and may be extended by 10 years at one time.

(d) **Technical Conditions**: The salient aspects of Technical Conditions are as given below:

(i) The technology (Digital/ Analogue) should be based on standards issued by ITU/ TEC, or any other International Standards Organizations/ bodies and the Licensee shall seek the approval of the Licensor before deployment of such technologies.

(ii) Use of Fixed Telephones: Primary purpose of providing the service is to cater to the needs of mobile subscribers. Use of fixed stations will be secondary. Total number of fixed stations in the network should not exceed 10% of the total numbers of subscribers at any time.

(iii) The system installed for providing service should be designed in such a way to provide good radio coverage inside the buildings within the service area. The system will be designed to cover a radial distance of maximum of 30 Kms from the base station expect where larger distance has been allowed in respect of any individual license.

(iv) Only available frequency slots in the bands identified for CMRTS shall be considered for allotment to the Licensee as per NFAP-2002, revised from time to time.

(e) **Channel Assignment and Loading:**

(i) No interconnection between two separately licensed systems will be permissible.

(ii) Separate license will be required for operating in another frequency band irrespective of same base station/ repeater station sites being used for the new system.

(iii) Initially, not exceeding five channels (frequency pairs) will be assigned for Captive Analogue/Digital Mobile Radio Trunking System. For Captive Digital Mobile Radio Trunking System, the channel assignment exceeding 5 channels (frequency pairs) will depend on the availability, justification and actual usage of the same. Further additional channels will be considered subject to availability of frequency spectrum in the designated frequency bands in the particular service area after taking into account growth of service. This will include the control channel also.

(iv) The mobile trunked radio channels must have a minimum number of mobiles on a per channel basis with 90 mobiles being considered as acceptable usage for analogue system.

(v) The loading per channel for digital system will be much higher in comparison to analogue system. The minimum number of mobiles on a per channel basis for digital system will be decided in consultation with TEC.

(vi) Additional channels can be considered for allotment only if use per channel has reached 90% in terms of erlang traffic and continues to remain so for atleast a period of three months prior to the date of application. If at the end of initial six months of the validity of license loading is less than 70% in terms of erlang traffic, the Licensor may withdraw the radio channel assignment without any notice to the licensee.

(vii) The license for co-channel systems will be given on case by case clearance upon the terrain antenna height and necessary coordination as per established procedure.

(f) **Operating Conditions: The user/ mobile terminals:**

(i) The User Terminals (Mobile Telephone or Handset): The user/ mobile terminals employed in the network shall be of a type/ model certified by an internationally accredited agency with respect to ITU/ ETSI/ TEC standards or any other international standard as may be approved by the Government. They should carry a marking specifying their compliance with such standards.

(ii) Obligations imposed on the Licensee: The provisions of the Indian Telegraph Act 1885, the Indian Wireless Telegraphy Act 1933, and the Telecom Regulatory Authority of India Act, 1997 as modified from time to time or any other statute on their replacement shall govern this LICENSE. The LICENSEE shall furnish all necessary means and facilities as required for the application of provisions of Section 5(2) of the Indian Telegraph Act, 1885, whenever occasion so demands. Nothing provided and contained anywhere in this License Agreement shall be deemed to affect adversely anything provided or laid under the provisions of the Indian Telegraph Act, 1885 or any other law in force.

3.2 As mentioned earlier, DoT issued the Detailed Guidelines for Migration of Existing Operators and Issue of Fresh Licenses for Public Mobile Radio Trunk Services (PMRTSPs) dated 01.11.2001. These guidelines also specified the entry fee and license fee for CMRTS license. However, eligibility conditions for obtaining CMRTS license, and application processing fee for obtaining CMRTS license were not specifically mentioned in these guidelines.

3.3 The issues pertaining to Financial Conditions for CMRTS license will be covered in Chapter 4 of this Consultation Paper.

B. Issues raised by a CMRTS Licensee

3.4 A CMRTS licensee raised several issues to DoT in respect of the provisions of the CMRTS license, which were forwarded to TRAI along with the reference dated 02.06.2022. TRAI vide its letter dated 17.06.2022, requested DoT to provide analytical report on the representations received from the PMRTS Providers, their Association and CMRTS Licensee. In response, DoT vide letter dated 20.09.2022 provided its point-wise views/ comments on the representations/ inputs received from the CMRTS licensee. The representations/ inputs from CMRTS licensee are being examined in the succeeding paragraphs.

(1) Right to Represent before invoking any revoke/ termination/ suspension of license agreement

3.5 Representation of the CMRTS Licensee: "*CMRTS License Agreement. Condition 7: Suspension, Revocation or Termination of License: w.r.t. Condition 7.1*
Before invoking any revoke /termination / suspension, right to represent may be given to Government organizations/ Metro rail/ Public Transport Services for consideration."

3.6 DoT's views: "*This is as per terms and conditions of the license.*"

3.7 The clause 7 of CMRTS License provides as below:
"*7. Suspension, Revocation or Termination of License.*
7.1 LICENSOR shall have the right to revoke/ terminate/ suspend the LICENSE either in part or whole of the Service area in the interest of national security or in case of

emergency or war or low intensity conflict or any other eventuality in public interest as declared by the Government of India. Provided any specific orders or direction from the Government issued under such conditions shall be applicable to the LICENSEE and shall be strictly complied with. No License Fee shall be payable for the period for which the operation of this LICENSE remains suspended under this condition."

(2) Levy of License Fees on CMRTS Licensees

3.8 Representation of the CMRTS Licensee:

(a) "CMRTS License Agreement, Condition 13: Fees payable

Condition 13.1(a): 'All captive Mobile Radio Trunked Service licensees shall pay license fee except for agencies working for public service such as Police, Fire, and Government Security.

Gujarat Metro Rail Corporation (GMRC) is a government organisation, acting in public interest without profit-oriented goals. GMRC is not generating any revenue through this spectrum. The spectrum is being used by GMRC for passenger safety in same way as police, Fire and Govt. Security. Therefore, it should be considered as public service and hence being a public service, license fee may be exempted for Metro Rail Projects."

(b) "CMRTS License Agreement, Condition 13: Fees payable

Condition 13.1 (b): 'License fee for captive mobile radio trunking service systems shall be ₹300/- per annum per terminal subject to a minimum of ₹25,0000/- per annum per licensed area.

It has been noticed that during initial period of Metro Rail project radio terminal utilization is very less, therefore, minimum annual charges may be levied based on actual radio terminal utilization in place of existing minimum ₹25,000 per annum per licensed area."

(c) "CMRTS License Agreement, Condition 13: Fees payable w.r.t. Condition 13.2: Gujarat Metro Rail Corporation (GMRC) is a government organisation, acting in public interest without profit-oriented goals. Further, it has been also noticed that the revenue of Metro Rail operation does not compensate its overall expenditures and royalty charges acts as a financial burden on the organization. Being a public service, radio spectrum charges may be exempted for Metro Rail Projects."

(d) *"CMRTS License Agreement, Condition 14: Schedule of payment of ANNUAL LICENSE FEE and other dues: w.r.t. Condition 14.2 & 14.4*

Since, metro rail organisation, being government in nature and working as public services, therefore, in place of existing practice i.e., "advance payment of radio terminal utilization payable in quarterly installment and subsequent adjustment after actual utilization of same quarter, it is suggested to take the radio terminal charges after utilization as on actual basis (quarterly or yearly), which will make the process simple and efficient."

3.9 DoT's Views:

(a) *"Gujarat Metro Rail Corporation is a special purpose vehicle under the Companies Act 1956. This is 50:50 SPV Govt. of Gujarat and Govt. of India. GMRC may not be considered on equal footing with services like Police, Fire & Govt. Security."*

(b) *"License fee may be levied as per terms and conditions of License Agreement."*

(c) *"Spectrum is a scarce resource and may not be allotted free of cost."*

(d) *"This may be accepted as at present only CMRTS licensees are paying advance payment, all other are paying subsequently. However, suitable safeguard may be ensured for Govt. revenue."*

(3) Technical Conditions

3.10 Representation of the CMRTS Licensee:

"CMRTS License Agreement, Condition 16: Technical Conditions. w.r.t. Condition 16.6.3:

In view of presently enhanced size and complexity of metro transport networks across cities in India, more radio sites have become important requirement. Accordingly, channels as per actual are required to start the metro operation in big cities as there would be more sites in each metro. Hence, initially channels may be allotted as per actual requirement, in place of limited five channels for metro rail projects."

3.11 DoT's views:

"This issue *may be considered for allotment of additional frequency channels as per actual requirement based on justification by the licensee. Presently, additional frequencies are being allotted to Metro Rail projects due to operational safety*

*requirements. However, in such cases the CMRTS license fees is charged @ Rs 300 per terminal for actual number of terminals OR (Number of frequencies allotted * 90 terminals per frequency), whichever is higher."*

3.12 The Clause No. 16 of CMRTS License Agreement provides, *inter-alia*, as below:
"16.6 CHANNEL ASSIGNMENT AND LOADING:
16.6.3 Initially, not exceeding five channels (frequency pairs) will be assigned for Captive Analogue/ Digital Mobile Radio Trunking System. For Captive Digital Mobile Radio Trunking System, the channel assignment exceeding 5 channels (frequency pairs) will depend on the availability, justification and actual usage of the same. Further additional channels will be considered subject to availability of frequency spectrum in the designated frequency bands in the particular service area after taking into account growth of service. This will include the control channel also."

3.13 As per the information furnished by DoT, CMRTS licensees include Airports, Metro Rail Corridors, City Police, Fire Services, Atomic Research Centres, Steel Plants, Mines, Thermal Power Stations, Refineries, NHAI Projects, Prisons & Correctional Services Department, Energy Plants etc. The CMRTS licensees have been assigned frequency spectrum in 300 MHz, 400 MHz, and 800 MHz bands. While most of the CMRTS licensees have been assigned frequency channels (paired) of 25 KHz size, a few CMRTS licensees have been assigned frequency channels (paired) of 12.5 KHz size as well. The quantum of frequency spectrum assigned to CMRTS licensees ranges between 25 KHz to 1.1 MHz. The frequency assignments have been done for both analog and digital systems.

3.14 As per the WPC Wing's order No. P-11014/34/2009-PP (I) and P-11014/34/2009-PP (II) dated 22.03.2012, *"[t]he duration of a radio frequency assignment will normally be one or two years. If an applicant desires, and frequencies are available the duration of assignment may be fixed as three or four or five years."*

3.15 In view of above, the Authority solicits comments of stakeholders on the following set of questions:

Issues for consultation:

Q20. Whether there is a need to review the terms and conditions of CMRTS license? Kindly provide a detailed response with justifications.

Q21. What should be the eligibility conditions for obtaining CMRTS license? Further, what should be the application processing fee for CMRTS license? Kindly provide a detailed response with justification.

Q22. In case it is decided to review the terms and conditions of CMRTS license, in what manner should the following terms and conditions be amended?

(a) Service area

(b) Period of validity

(c) Scope of the license

(d) Technical conditions

(e) Channel assignment and loading

(f) Operating conditions

(g) Conditions relating to suspension, revocation or termination of license.

(h) Any other (please specify).

Kindly provide a detailed response with justifications.

Q23. Whether there is a need to mandate CMRTS licensees to migrate to spectrally efficient digital technologies in a time-bound manner? If yes, what should be the time frame for mandatory migration to spectrally efficient digital technologies? Kindly provide a detailed response with justification.

Q24. In case your response to Q23 is in the negative, what provisions should be made to nudge and encourage CMRTS licensees to spectrally efficient digital technologies? Kindly provide a detailed response with justification.

Q25. Whether there is any other issue relevant for review of terms and conditions of the CMRTS License? Kindly provide a detailed response with justifications.

3.16 The following chapter examines the issues relating to financial aspects of PMRTS and CMRTS.

CHAPTER 4

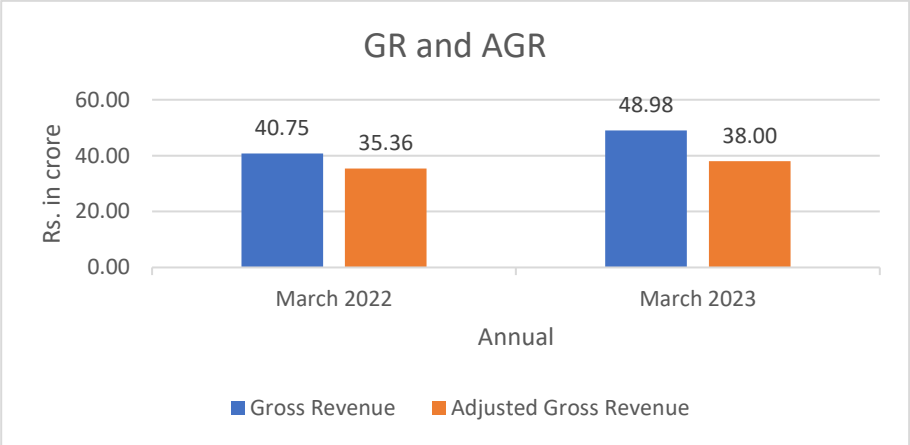
PMRTS AND CMRTS: FINANCIAL ASPECTS

4.1 As per the present licensing conditions, the PMRTS authorizations are being granted under Unified License and Unified License (Virtual Network Operator). The details of PMRTS licensees (as on 31.03.2023), LSA-wise, are tabulated as below: -

S. No.	Name of Company	Licensed Service Area (LSA)	No. of LSAs
1.	M/s Arya Omnitalk Radio Trunking Services Ltd.	Delhi, Mumbai, Kolkata, Gujarat, Karnataka, Tamil Nadu, Maharastra, Andhra Pradesh, Madhya Pradesh, Kerala & Rajasthan	11
2.	M/s Procall Private Limited	Delhi, Rajasthan	2
3.	M/s Bhilwara Telenet Services Private Limited	Mumbai	1
4.	M/s Smart Talk Private Limited	Mumbai, Maharashtra	2
5.	M/s Inative Networks Private Limited	Gujarat, Rajasthan, Bihar, Andhra Pradesh, Madhya Pradesh, Tamil Nadu, Karnataka, Haryana, Delhi, West Bengal, Orissa & Maharashtra	12
6.	M/s Quickcalls Private Limited.	Andhra Pradesh, Karnataka, Tamil Nadu	3
7.	M/s WiWaNet Private Limited	Kerala, Andhra Pradesh, Tamil Nadu, Gujarat and Maharashtra	5
8.	M/s Airtalk Solutions and Services Private Limited	Mumbai, Maharashtra, Gujarat	3
9.	M/s Reliance Jio Infocomm Ltd.	All 22 Service Areas	22
10.	M/s Bharat Sanchar Nigam Ltd.	All 22 Service Areas	22
11.	M/s West Unified Communications India Pvt. Ltd. (Now known as	All 22 Service Areas	22(UL-VNO)

	Intrado EC India Pvt. Ltd.)		
12.	M/s Tata Comm. Ltd.	All 22 Service Areas	22(UL-VNO)
13.	M/s ADPAY Mobile Payment India Pvt. Ltd	Tamil Nadu	1(UL-VNO)
14.	M/s Polaron Technologies Private Limited	Mumbai	1(UL-VNO)
		Total	83+68(VNO)

4.2 It may be noted that the PMRTS service is serving a niche market in a limited geographic area. The details of Gross Revenue (GR) and Adjusted Gross Revenue (AGR) for the last two years, for PMRTS service, are shown in the chart below: -



4.3 As can be seen, in March 2023 over March 2022, the Gross Revenue for PMRTS service has increased by 20.20% and AGR has also increased by 7.45% over the same period.

Financial Aspects

(1) Entry Fees

4.4 For the PMRTS authorization under Unified License, a one-time non-refundable entry fee of ₹50,000 (Rupees fifty thousand only) per telecom circle is to be paid by the license applicants. The applicants under the Unified License (Virtual Network Operator) category have to pay a one-time entry fee of ₹25,000 (Rupees twenty-five thousand only) per telecom circle for the same.

4.5 At present, no entry fee has been prescribed for obtaining the CMRTS license.

(2) Bank Guarantee

4.6 Subsequent to the telecom reforms of 2021, the amount of Bank Guarantees has been reduced by 80%. Thus, the PMRTS licensee is required to submit Financial Bank Guarantee (FBG) and Performance Bank Guarantee (PBG) separately, service area-wise for an amount equal to ₹20,000 (Rupees twenty thousand only) each, before signing the license agreement valid for one year. In the case of license applied for PMRTS authorization under Unified License (VNOs), only the FBG needs to be submitted, for an amount equal to ₹10,000 (Rupees Ten Thousand only) per telecom circle.

4.7 Subsequently, the amount of FBG is equivalent to 20% of the estimated sum payable of License fee for two quarters and other dues not otherwise securitized. The amount of FBG is subject to periodic review on six-monthly basis by the Licensor and is to be renewed from time to time.

4.8 However, the CMRTS licensees are required to submit only the Financial Bank Guarantee. Subsequent to the reduction of amount of Bank Guarantees in the telecom reforms, they are required to submit FBG for an amount equal to ₹20,000 (Rupees twenty thousand only), before signing the license agreement valid for one year. Subsequently, the amount of FBG is equivalent to 20% of the estimated sum payable of License fee for two quarters and other dues not otherwise securitized.

4.9 The issues related to Entry Fee and Bank Guarantees under UL & UL (VNO) and licenses other than UL & UL(VNO) are being dealt with in a separate consultation paper titled 'Rationalization of Entry Fee and Bank Guarantees' issued on 26th July 2022. Hence, no issues related to Entry Fee and Bank Guarantees have been raised in the present consultation paper.

(3) License Fees

4.10 Presently, the PMRTS licensee is required to pay 8% of AGR as an Annual license fee in four quarterly instalments, service-area wise from the effective date of the respective authorization. From the second year of the effective date of respective

authorization, the License fee is subject to a minimum of 10% of the Entry Fee of the respective service area.

4.11 Further, in the Telecom reforms of 2021, the interest rate payable on delayed payments has been reduced from 4% plus one-year Marginal Cost of Lending Rate (MCLR) to 2% plus one-year MCLR, in respect of the license fees or any other dues.

4.12 In case of CMRTS, except for the agencies working for public service such as Police, Fire and Government Security, all other types of licensees are required to pay annual license fee on the basis of the number of terminals deployed.

4.13 The License Fee for CMRTS systems is Rs. 300/- (Rupees three hundred only) per annum per terminal subject to a minimum of Rs. 25,000/- (Rupees twenty five thousand only) per annum per licensed area.

4.14 Accordingly, the following issues arise for license fee in respect of PMRTS and CMRTS services:

Issue for Consultation:

Q26. Is there a need to review the license fee prescribed for PMRTS/CMRTS? Please justify your answer. If yes, please suggest detailed methodology for arriving at the license fees for PMRTS/CMRTS with justification.

4.15 The following chapter examines the issues relating to allocation of frequency spectrum to PMRTS.

CHAPTER 5
REVIEW OF ALLOCATION OF SPECTRUM FOR PMRTS

5.1 DoT, in its reference dated 02.06.2022, has sought recommendations, *inter-alia*, on 'allocation of spectrum to PMRTS'. In this regard, the extract of the DoT's reference is reproduced below:

"In view of the above, TRAI is requested to give recommendations under the terms of clause 11 (1) (a) of TRAI Act, 1997 (as amended) regarding the terms and conditions for issue of fresh licenses for CMRTS and PMRTS services especially w.r.t technical conditions (viz. connectivity with PSTN, internet, use of digital technology, ***allocation of spectrum to PMRTS****, use of network slicing under 5G, etc.) and financial aspects, etc. TRAI is also requested to give its view on any other issues considered relevant for CMRTS and PMRTS licenses."*

5.2 Keeping the above in view, the aspects related to allocation of spectrum of PMRTS are being dealt in this Chapter.

5.3 Earlier, in the NFAP-2011, sub-bands identified for MRTS were as per the table given below:

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

5.4 TRAI, through the Recommendations on "Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent

mechanism" dated 20.07.2018 recommended changes in NFAP-2011 in respect of allocation of spectrum sub-bands for MRTS as below:

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

5.5 Besides, through the afore-mentioned recommendations dated 20.07.2018, TRAI recommended, *inter-alia*, 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.

5.6 The Government has not yet accepted the afore-mentioned recommendations dated 20.07.2018. Meanwhile, the Government issued NFAP-2018. The IND 18 of NFAP-2018 provides, *inter-alia*, as below:

"Trunked radio systems are operational in the frequency ranges 336-340 MHz paired with 346-350 MHz, 351-358 MHz paired with 361-368 MHz, 380-389.9 MHz paired with 390-399.9 MHz, 410-420 MHz paired with 420-430 MHz, and 806-819 MHz

paired with 851-864 MHz. The preferred use of these frequency ranges is as under.

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

Existing radio trunking systems, not in conformity with the above table, will continue to operate until the end of their lifetime. New systems or expansion of existing systems are encouraged to conform to the above table.

Wideband and broadband PPDR applications shall be in accordance with the channel arrangements that promote harmonization to the greatest extent possible. The harmonization shall also be encouraged for the radio trunking systems in general and, in particular, those operating in conformity with the table above. Broadband PPDR application will be encouraged in the Frequency Band 410-420 MHz paired with 420-430 MHz"

5.7 Through the Reference dated 02.06.2022. DoT has sought, *inter-alia*, recommendations on allocation of spectrum to PMRTS. However, it is noticed that on 26.10.2022, DoT issued a new National Frequency Allocation Plan–2022 (NFAP-2022). Through NFAP-2022, sub-bands allocated by DoT for MRTS are given 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)*
			387.5-389.9(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*	

5.8 As DoT has recently revised the National Frequency Allocation Plan through NFAP-2022 since its reference dated 02.06.2022, a question arises as to whether there is any further need to review frequency allocation of spectrum for MRTS.

5.9 In this background, the Authority solicits comments of stakeholders on the following question.

Issues for Consultation:

Q27. Whether there is a need to review the allocation of spectrum for PMRTS? If yes, what changes should be made in the allocation of spectrum for PMRTS in the National Frequency Allocation Plan? Kindly provide a detailed response with justifications.

5.10 The following chapter examines the issues related to assignment of frequency spectrum for PMRTS.

CHAPTER 6
ASSIGNMENT OF FREQUENCY SPECTRUM FOR PMRTS

6.1 Through the judgment dated 02.02.2012, the Hon'ble Supreme Court in the Writ Petition (Civil) No. 423 of 2010 (often referred to as "2G case") pronounced, inter-alia, as below:

"…In our view, a duly publicised auction conducted fairly and impartially is perhaps the best method for discharging this burden and the methods like first-come-first-served when used for alienation of natural resources/ public property are likely to be misused by unscrupulous people who are only interested in garnering maximum financial benefit and have no respect for the constitutional ethos and values.

In other words, while transferring or alienating the natural resources, the State is duty bound to adopt the method of auction by giving wide publicity so that all eligible persons can participate in the process."

6.2 Thereafter, in response to the Presidential Reference subsequent to the decision of Supreme Court in the 2G Case (referred to as "Re: Special Reference No. 1 of 2012" dated 27.09.2012), the five-Judge bench observed, inter-alia, that "[t]*he 2G Case does not even consider other laws and judgments that prescribe methods, other than auction, for dispensation of natural resources; something that it would have done, in case, it intended to make an assertion as wide as applying auction to all natural resources. Therefore, the observations in Paras 94 to 96 could not apply beyond the specific case of spectrum, which according to the law declared in the 2G Case, is to be alienated only by auction and no other method. Thus, 2G case does not deal with modes of allocation for natural resources, other than spectrum".*

6.3 In the year 2013, DoT instituted Unified License regime in the country. Under the Unified License regime, assignment of spectrum has been delinked from the grant of license. The Guidelines for grant of Unified License dated 17.01.2022 provides, *inter-alia,* as below:

"The allocation of spectrum is delinked from the licenses and has to be obtained separately as per prescribed procedure. At present, spectrum in 700/800/900/ 1800/2100/2300/2500 MHz band is allocated through bidding process. For all other services and usages like Public Mobile Radio Trunking Service (PMRTS), the

allocation of spectrum and charges thereof shall be as prescribed by Wireless and Planning and Co-ordination wing of Department of Telecommunications from time to time."

6.4 After the institution of Unified License regime, DoT assigned frequency spectrum to PMRTS on an administrative basis, subject to the conditions reproduced below:

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

ii. In the event of final decision to allot spectrum only 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;

…….

v. The respective wireless users would be required to give an undertaking to pay the revised spectrum charges, as finally determined through market related mechanism or otherwise as may be applicable, from the date of Letter of Intent (LoI) for provisional allotment of spectrum

6.5 In the year 2017, DoT through its letter L-14027/08/2016-NTG dated 13.07.2017, on the subject- 'TRAI recommendations on method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism' sought the recommendations of TRAI.

6.6 In response, TRAI furnished its Recommendations on 'Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism' dated 20.07.2018. Through these recommendations, TRAI recommended, *inter-alia*, as below:

"Accordingly, the Authority recommends that taking into consideration factors viz. PMRTS market conditions; low spectrum demand and high spectrum availability; the assignment of spectrum for PMRTS should be made administratively on the basis of demand."

6.7 At this stage, it is noteworthy that DoT, through a separate reference dated 12.04.2022, requested TRAI to submit recommendations under Section 11(1)(a) of TRAI Act, 1997 (as amended) on frequency assignment for data

communication services between aircraft and ground stations for services provided by organizations other than Airport Authority of India. Through the said reference, DoT requested, *inter-alia*, to provide recommendations on *"[t]he manner in which the frequency assignment should be made to these organizations, in light of the supreme Court judgment made in the 2G case in 2012 - to assign radio frequencies only through auction."*

6.8 The following table mentions, *inter-alia*, the sub-bands allocated by DoT for PMRTS in the NFAP 2022:

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)
			387.5-389.9(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	

6.9 As mentioned earlier, PMRTS serves niche markets. Its market is driven by the development and deployment of infrastructure such as seaports, airports, metro rail projects, industrial plants, and hubs etc. As per the reports submitted by the PMRTS operators, the demand for PMRTS exists only in 11 LSAs out of the 22 LSAs. The subscriber base of PMRTS was 64,839 as on 30.06.2023. This implies that the scope and opportunities for business are fragmented across the country.

6.10 Currently, the Government assigns frequency spectrum to PMRTS providers for a period of one year, which is renewable on an annual basis upon the request of PMRTS providers. As per the information furnished by DoT, the PMRTS providers have been assigned frequency spectrum in 338-340/ 348-350 MHz, 811-814/ 856-

859 MHz and 814-819/ 859-864 MHz. The number of frequency channels (paired) of 25 KHz size, assigned to PMRTS providers in various cities, range between 1-40.

6.11 While access spectrum is assigned to access service providers based on Telecom Circle/ Metro Area, the PMRTS licensees are assigned spectrum based on 'city'. For simplicity, it may be referred to as the authorized area for use of spectrum by PMRTS licensee.

6.12 In case it is decided to assign spectrum to the PMRTS licensees through the process of auction, the aspects related to (a) eligibility conditions to participate in the auction of spectrum, (b) quantum of spectrum to be put to auction, (c) block size, (d) minimum bid quantity, (e) spectrum cap, (f) roll out obligations, (g) period of assignment of spectrum, (h) conditions for surrender of spectrum etc. will have to be examined. The following section provides a brief outline of these aspects.

(1) Eligibility Criteria to Participate in the Auction of Spectrum

6.13 Generally, in spectrum auctions, entities must fulfil the prescribed eligibility criteria to participate in the auction. For instance, in the Notice Inviting Applications (NIA) for auction of spectrum in 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300 MHz, and 26 GHz bands dated 15.06.2022[9] (hereinafter, also referred to as "NIA for auction of spectrum dated 15.06.2022"), the eligibility criteria to participate in the auction was prescribed as below:

(i) Any licensee that holds a UASL/ UL with authorization for Access Services for that LSA; or

(ii) Any licensee that fulfils the eligibility criteria for obtaining a Unified License with authorization for Access Services, and gives an undertaking to obtain a Unified License with authorization for Access Services; or

(iii) Any entity that gives an undertaking to obtain a Unified License with authorization for Access Services through a New Entrant Nominee as per the DoT guidelines/ license conditions can bid for spectrum in the various bands, subject to other provisions of the NIA.

[9] https://dot.gov.in/sites/default/files/NIA_Version_Dated_15_06_2022.pdf

(2) Quantum of Frequency Spectrum Available for Auction

6.14 The term 'quantum of frequency spectrum for auction' refers to the total amount of frequency spectrum being made available for auction. The quantum of frequency spectrum is usually measured in terms of Hertz (Hz), kilohertz (kHz), megahertz (MHz) etc. and is specified location/ geographical area wise. For instance, in the NIA for auction of spectrum dated 15.06.2022, DoT had provided details of frequency band-wise, licensed service area-wise quantum of frequency spectrum which was put to auction. In most of the frequency bands, the entire quantum of frequency spectrum, which was available at that time, was put to auction.

(3) Block Size, and Minimum Bid Quantity

6.15 In a spectrum auction, the term 'block size' refers to the amount of frequency spectrum that is made available as a single unit for bidding. The block size is usually defined in terms of bandwidth, measured in Hertz (Hz), kilohertz (KHz) or megahertz (MHz).

6.16 As mentioned earlier, the PMRTS licensees have been assigned frequency spectrum in the channel size of 25 KHz. However, advanced digital technologies for PMRTS evolved under various standards have paved the way for better and efficient utilization of the spectrum. The digital systems make use of a channel size of 6.25 KHz.

(4) Spectrum Holding Capping Rule

6.17 Spectrum caps or spectrum limits are regulatory measures implemented to restrict the amount of radio frequency spectrum that an entity can acquire or hold in a particular frequency band and/ or geographical area. The purpose of spectrum caps is to promote competition, prevent spectrum concentration, and ensure efficient spectrum utilization. For instance, in the NIA for auction of spectrum dated 15.06.2022, DoT imposed the following spectrum caps:

(i) A Cap of 40% on the combined spectrum holding in the sub-1 GHz bands i.e., 600 MHz (APT 600 Option B1), 700 MHz, 800 MHz and 900 MHz bands, including existing spectrum holding of TSPs in these bands.

(ii) A Cap of 40% on the combined spectrum holding in 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz bands, including existing spectrum holding of TSPs in these bands.

(iii) A Cap of 40% on the total spectrum put to auction in 3300 MHz band

(iv) A Cap of 40% on the total spectrum put to auction in 26 GHz band

(5) Roll-out Obligations

6.18 Roll-out obligations or network deployment obligations refer to the conditions or obligations for a telecom service provider to deploy their network infrastructure and launch the services within a specified time in a specified geographical area. The purpose of roll-out obligations is to ensure that the operators efficiently utilize the assigned frequency spectrum and start providing telecommunication services within the stipulated time. For instance, in the NIA for auction of spectrum dated 15.06.2022, DoT stipulated roll out obligations for 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz in terms of coverage of licensed service areas. On the other hand, roll out obligations for 3300 MHz and 26 GHz bands were stipulated in terms of commercial launch of service in the licensed service areas and number of sites to be deployed in the licensed service areas.

6.19 In case the spectrum for the PMRTS is assigned through auction, the issue of roll out obligation as well as penalties also will have to be revisited. The provisions of roll out obligations and penalties associated (on non-conforming the roll-out obligations) applicable to PMRTS authorization under UL are given below:

"4.1 The Licensee shall roll out the network by installing and commissioning at least one Base Station (BTS) in the city/ town for which frequency has been allotted by WPC.

4.2 Applicable system for provision of PMRTS Service must be commissioned within 12 months from the date of frequency allotment by WPC.

4.7 In case the Licensee fails to rollout the network, within the period prescribed, the Licensor shall be entitled to recover LD charges @ Rs. 10,000/- (Rupees Ten thousand only) per month subject to a maximum amount of Rs. 2.4 lakh. For delay of more than 24 months, in addition to imposition of maximum amount of LD as mentioned above, the frequency allotment may be withdrawn and the Service authorization may also be terminated. The PBG shall be encashed to the extent of LD amount, if the same is not paid within the time period specified in the notice for recovery of LD."

(6) Period of Assignment of Spectrum

6.20 Generally, the frequency spectrum assigned through the auction process has a specified period of validity. For instance, in the NIA for auction for spectrum dated 15.06.2022, rights to use of spectrum in various frequency bands were offered in the auction for a period of twenty (20) years from the 'Effective Date'.

(7) Surrender of Spectrum

6.21 One may contend that in case entities are permitted to surrender spectrum acquired through auction prior to the expiry of validity period, it may encourage better utilization of spectrum and may result in ease of doing business. DoT issued 'Guidelines for surrender of Access spectrum by Access Service Providers' dated 15.06.2022. The salient points of these guidelines are given below:

(i) Telecom Service Providers (TSPs) would be permitted to surrender the spectrum acquired through any auction conducted henceforth after a minimum period of ten years from the date of acquisition of such spectrum.

(ii) For surrendering spectrum, a TSP would be required to apply at least 12 months prior to the proposed date of surrender.

(iii) The quantity of spectrum qualifying for surrender would be any multiple(s) of the block size specified in the relevant Notice Inviting Application(s).

(iv) In-principle approval alongwith details of outstanding spectrum dues, i.e. dues relating to acquisition of right to use spectrum, till the proposed date of surrender would be conveyed by DoT.

(v) The TSP will clear the dues so communicated within a period of three month from the date of demand raised by DoT.

(vi) Upon clearance of dues, the final approval to the surrender of spectrum, effective from proposed date of surrender, would be communicated by DoT to the TSP within 15 days.

(vii) On surrender of spectrum, no future installments with respect to the surrendered spectrum will be required to be paid after the date of surrender.

(viii) There shall be no refund of any payment made, either as full or partial upfront payment or installments or pre-payments, towards the acquisition of such spectrum.

(ix) A processing fee @Rs. 1000 per spectrum band per licensed service area would be charged from the TSPs for surrender.

6.22 In view of the on-going discussion, the following issues arise for consultation: -

Issues for Consultation:

Q28. What should be the method of assignment of spectrum for PMRTS?

(a) Auction; or

(b) Administrative

In the case of auction, what should be the methodology for auction of spectrum? Kindly provide a detailed justification.

Q29. In case it is decided to auction the frequency spectrum allocated to PMRTS, -

(a) What should be the eligibility conditions for participating in auction?

(b) Whether the entire available spectrum in the frequency bands identified for PMRTS in National Frequency Allocation Plan (NFAP) should be put to auction?

(c) What should be the block size of spectrum, and minimum bid quantity in terms of number of blocks?

(d) What should be the spectrum cap for each authorized area for use of spectrum?

(e) What should be the roll-out obligations associated with the assignment of spectrum? What should be the penalties upon non-conforming the roll-out obligations?

(f) What should be the period of assignment of spectrum?

(g) What should be the minimum period beyond which the spectrum acquired through auction may be permitted to be surrendered?

(h) What should be the process and associated terms and conditions for permitting surrender of spectrum through auction?

Kindly provide a detailed response with justification in respect of each of the above.

6.23 The following chapter presents the issues pertaining to valuation of Spectrum for PMRTS.

CHAPTER 7
VALUATION OF SPECTRUM FOR PMRTS

7.1 As indicated earlier, as an interim measure, DoT has assigned frequency spectrum to PMRTS on an administrative basis, subject to the conditions reproduced below:

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

ii. In the event of final decision to allot spectrum only 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;

…….

v. The respective wireless users would be required to give an undertaking to pay the revised spectrum charges, as finally determined through market related mechanism or otherwise as may be applicable, from the date of Letter of Intent (LoI) for provisional allotment of spectrum."

7.2 Moreover, Economic theory[10] also suggests that pricing of a public resource should reflect, as far as possible, its current economic value, so as to encourage its most efficient, optimal and equitable use. Therefore, whenever, and wherever possible, the prices may be determined through market mechanisms, such as auctions etc.

7.3 Regarding the charging of spectrum, it is worth mentioning that as per the licensing condition, apart from the license fee as a percentage of AGR (i.e. 8% of AGR), PMRTS operators are paying license fee and Royalty charges for the use of spectrum. These charges for spectrum usage are levied on formula basis and include the number of assigned Radio Frequency (RF) channels, the number of radio stations (base and mobile stations) and coverage radius in kilometers (kms), for the purpose of calculation. The Royalty charges for spectrum usage are being levied on annual basis as per WPC's order no.L-14027/01/98-NTG dated 18.09.2000 (**Annexure-IV**).

[10] Arrow, Kenneth J. "An Extension of the Basic Theorems of Classical Welfare Economics," in Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability (Berkeley & Los Angeles: University of California Press, 1951), pp. 507—532

7.4 The formula for calculation of royalty and licence fee for the use of spectrum is briefly given below:

Total fee per year = L + R
(Where, L = License Fee per PMRTS station and R = Royalty)

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

L = 100 * n, R = 4800 * f

ii. L & R for maximum link distance below 5 Kms, L & R are to be calculated as follows: -

L = 100 * n, R = 1200 * 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).

7.5 On the other hand, CMRTS operators are paying annual licence fee on per terminal basis and, in addition to this, royalty charges and license fees per year on the formula basis for the use of spectrum. The spectrum is assigned on administrative basis and charges for spectrum usage are being levied on annual basis as per WPC's orders dated 22.03.2012.

7.6 The annual royalty for single channel operations is being levied as per order no. P-11014/34/2009-PP (I), briefly given as follows:

Annual Royalty per Carrier (in Rs.) = $M * W$

where, M = Basic Royalty, value of M is dependent upon the maximum distance over which the network operates.

$$W = \frac{Actual\ Channel\ Bandwidth\ in\ KHz}{12.5}$$

7.7 The annual royalty for multi-channel operations is being levied as per order no. P-11014/34/2009-PP (II), briefly given as follows:

Annual Royalty (in Rs.) = $\sum_{i=1}^{n} Mi * W$

Where, n = no. of carriers

M = Basic Royalty, value of M is dependent upon the maximum distance over which the network operates

W factor is dependent upon adjacent channel separation

7.8 Annual License fee for the use of spectrum is also being charged as per order no. P-11014/34/2009-PP (IV), briefly given as follows:

S. No.	Type of License	Annual Licence Fee (Rs.)	Remarks
1	CMRTS Fixed Station	500	Per Fixed Station
2	CMRTS Mobile Station	250	Per Mobile Station/ Vehicle Mounted Station/ Hand-held mobile station

7.9 The WPC's order no. P-11014/34/2009-PP(I), P-11014/34/2009-PP(II) and P-11014/34/2009-PP(IV) dated 22nd March 2012 are given at **Annexure-V.**

7.10 Presently, Radio Trunked Services are operational in distinct frequency bands viz. 336-340 MHz paired with 346-350 MHz, 351-358 MHz paired with 361-368 MHz, 380-389.9 MHz paired with 390-399.9 MHz, 410-420 MHz paired with 420- 430 MHz, and 806-819 MHz paired with 851-864 MHz. Although distinct sub-bands have been identified for radio trunking services, there is no strict demarcation in these sub-bands between the usage by commercial and non-commercial radio trunking services. Moreover, for the frequency bands in 300 MHz band and 400 MHz there is no historical auction data available.

7.11 It is also to be noted that although the 800 MHz band was put to auction for IMT/ 5G in 2022, it was sold only in four LSAs. Thus, the latest Auction Determined Price (ADP) is available in only four LSAs. Further, if ADP of IMT/ 5G spectrum is to be used as a basis for the purpose of valuation of these bands, some alternative mechanisms, such as using relative technical efficiency factor of some other spectrum bands for which the price is available for the LSAs, needs to be explored.

7.12 Regarding the use of IMT/ 5G prices for the valuation of Radio Trunking Service bands, it is mentioned that the IMT/ 5G prices for other frequency bands (other than 800 MHz) are available for the entire 22 LSAs. However, as detailed above, the spectrum for PMRTS service is being allotted administratively on city basis. Moreover, the market and financial parameters for these services are distinct from those of the access services segment.

7.13 The Authority is conscious of the market and financial conditions of PMRTS service, high spectrum availability vis-à-vis low spectrum demand. However, in the recent references received on assignment of spectrum, DoT has specifically sought recommendations for the auction of spectrum and in one of the references, the Supreme Court judgment made in the 2G case in 2012 has been referred to assign radio frequencies only through auction.

7.14 In view of the above, the following issues are raised for consultation: -

Issues for Consultation:

Q30. In case auction methodology is to be followed for assignment of spectrum:

(a) Whether the value of frequencies assigned to the PMRTS providers be derived by relating it to the value or auction determined prices of other IMT/5G bands by using technical efficiency factor? If yes, with which spectrum band, should these frequencies be related and what efficiency factor or formula should be used? Please justify your suggestions.

(b) Given the city wise allocation and the potential difference in financial/market parameters of PMRTS with respect to access services, should the valuation of frequency spectrum for these services derived on the basis of IMT/5G prices be adjusted in order to account for the said distinctions? Please explain the adjustment methodology in detail.

(c) Apart from the above approaches, which other valuation approaches can be adopted for valuation of spectrum assigned to PMRTS providers? Kindly support your suggestions with detailed methodologies, assumptions, and other relevant factors.

(d) Is it appropriate to take the reserve price as 70% of the valuation of spectrum? If not, what should be the ratio adopted between the reserve price for the auction and valuation of spectrum and why?

(e) What should be the payment terms and conditions relating to upfront payment, moratorium period, number of instalments to recover deferred payments, rate of discount etc.?
Please support your answer with detailed justification.

7.15 The following chapter presents the international practices in respect of mobile radio trunking service.

CHAPTER 8
INTERNATIONAL PRACTICES

8.1 The regulatory practices service followed in other countries in respect of mobile radio trunking service are outlined below:

A. France

8.2 In France, professional mobile networks (often grouped together under the acronym PMR for "professional mobile radio") are independent mobile networks of generally local or regional scope, operated for professional use. These professional mobile networks are used by companies of very different sizes (from independent professionals to large groups) and from different sectors of activity such as transport, security, construction, energy and industry.

8.3 "PMR" networks are also used by certain State services, hospitals, local authorities, as well as certain public establishments. Like other uses of the spectrum by electronic communications services, the use of frequency requires Wireless Operating License (WOL) issued by ARCEP. However, this is not the case for those operated by the Ministry of the Interior and the Ministry of Defence, which are themselves allocators of frequency bands in the same way as ARCEP.

8.4 Under this regime, the use of frequencies for a professional network is subject to prior authorisation granted to a holder, on an individual basis, by decision of ARCEP[11].

8.5 The holder of an authorisation to use frequencies granted by ARCEP decision is subject to the payment of administrative charging (sum of annual State fee and annual management fee), the amounts of which are determined in accordance with the provisions of Decree No. 2007-1532, as amended on 24 October 2007, and the corresponding implementing decrees.

[11] Authorisation of the use of allocated frequencies | Arcep

B. United States

8.6 The Specialized Mobile Radio (SMR) service was established by the Commission in 1979 to provide land mobile communications on a commercial (i.e., for-profit) basis. SMR systems consist of three distinct types: conventional radio system, trunked radio system, and 800 MHz cellular system. The majority of the current SMR systems are either trunked radio systems or 800 MHz cellular systems.

8.7 Federal Communications Commission (FCC) defines a trunked radio system as: "A radio system employing technology that provides the ability to search two or more available communications paths and automatically assigns an open communications path to a user"[12]. A trunked radio system combines channels and contains micro-processing capabilities that automatically search for an open channel. A trunked system user who wants to transmit is automatically routed by a computer to the first available channel, and if no channel is available, is placed in a waiting line (queue) to be served in turn. This search capability allows more users to be served at any one time. Trunked systems are currently only authorized on frequencies above 800 MHz. A trunked system usually employs five or more channels (frequency pairs)[13].

8.8 Frequencies in the 809.750-824/ 854.750-869 MHz, and 896-901/ 935-940 MHz bands are available for trunked, conventional, or cellular systems used in non-border areas. The maximum number of frequency pairs that may be assigned at any one time for the operation of a trunked radio system is 20. No non-SMR licensee will be authorized an additional trunked system within 64 Km of an existing trunked system, except where the licensee's existing trunked system is loaded to at least 70 mobile and control stations per channel.

8.9 Licenses in the 800 MHz SMR and 900 MHz SMR bands are contained in the Universal Licensing System (ULS). Maintaining a license may require periodic filings such as a modification, transfer, assignment, or renewal application or notification of construction or consummation. In the first 800 MHz auctions, most of the licenses were sold. Any license that was not sold may be available for subsequent auctions.

[12] https://www.law.cornell.edu/cfr/text/47/90.7

[13] https://docs.fcc.gov/public/attachments/FCC-90-234A1.pdf

The total number of licenses available can change at any time because of disaggregation, partitioning, or cancellations. Currently there is no 800 MHz SMR or 900 MHz SMR spectrum scheduled for auction. There are, however, other methods to gain access to this spectrum. Each requires a filing via the ULS. These methods include:

(a) Assignment of Authorization: Sale of an entire license
(b) Partition: Sale of part of a license based on a geographic area
(c) Disaggregation: Sale of part of a license's spectrum
(d) Partition & Disaggregation: A combination of the sale of a part of a license based on the geographic area containing only a part of a license's spectrum
(e) Transfer of Control: Acquisition of a company and its assets, including its licenses.
(f) Spectrum Leasing: Leasing of all or a part of a licensee's spectrum usage rights associated with a license[14].

8.10 Non-SMR trunked systems will be authorized on the basis of loading criteria of one hundred (100) mobile stations per channel. Each applicant for a non-SMR trunked system must certify that a minimum of seventy (70) mobiles for each channel authorized will be placed into operation within five (5) years of the initial license grant. If a station is not placed in permanent operation, in accordance with the technical parameters of the station authorization, within one year, its license cancels automatically[15].

C. Australia

8.11 The Australian Communications and Media Authority (ACMA) published a document on Radiocommunications Assignment and Licensing Instruction (RALI) for trunked land mobile services in December 199816, which continues to govern the technical framework for land mobile licenses in Australia17. Its purpose was to is to facilitate the apparatus licensing of trunked land mobile services (TLMS) by ACMA.

[14] https://www.fcc.gov/wireless/bureau-divisions/mobility-division/specialized-mobile-radio-service-smr

[15] https://www.law.cornell.edu/cfr/text/47/90.631
[16] https://www.acma.gov.au/sites/default/files/2019-11/RALI-LM3.pdf
[17] https://www.acma.gov.au/technical-details-land-mobile-licences

8.12 The limited amount of trunking spectrum, the need for operators to have multiple channels for trunking operation, and the need to support the development of competitive services mean that special attention is necessary for the management of this limited resource. Two policy principles apply in support of this objective:

(a) Support of high-efficiency technology - The trunking bands are to be used for high-efficiency technologies such as trunking systems carrying voice or data or non-trunked systems carrying data only. Trunking bands are not to be used for single-channel conventional voice systems. Conversely, trunking systems or data systems may operate in any of the conventional single-channel mobile radio bands; and

(b) Equitable access - In assigning multiple channels to applicants, a balance needs to be struck between preserving the capacity to accommodate future operators and supporting the expansion of existing operators. Accredited persons intending to undertake assignment work in the trunking spectrum should discuss channel availability with the relevant ACMA Area Manager before undertaking that work.

8.13 There are a number of bands designated for TLMS use in Australia; they are within the VHF High Band, the 400 MHz band, and the 800 MHz band. The basic trunking assignment unit is the group which consists of five specified channels. A specified number of groups comprise a block. Trunking channels are arranged, by combination, in a systematic order of blocks and groups, designed to minimize interference and enable maximum efficiency of use. These arrangements are typically established through international or major regional standards processes.

8.14 A TLMS system may be located at a single site or at multiple sites. A TLMS system comprises those TLMS channels, in a particular TLMS band, assigned to a licensee in anyone 'operational area', where:

(a) In the cities of Sydney, Melbourne, Brisbane, Adelaide, and Perth, an operational area is defined as having a 100 Km radius centered on the General Post Office.

(b) In areas outside those cities, an operational area is defined as having a 100 Km radius centered on any one site operated by a particular licensee. The above area is defined for channel entitlement purposes (ie, an area within which loading criteria for system expansion apply). It is not an area for assignment purposes.

8.15 The number of channels to be licensed initially to an operator in an operational area is a maximum of 20 channels for a single-site system, or a maximum of 30 for a multi-site system, subject to the spectrum available. A licensee of a TLMS system may seek licenses for a maximum of a further five channels at a time.

8.16 In the Land Mobile license type, all services require an individual frequency to be assigned so the fee is calculated individually. Clients have the option of taking out an apparatus license for any period of up to five years.

D. New Zealand[18]

8.17 Trunked radio is a spectrally efficient land mobile system where a few channels can serve a large number of users. Trunked systems are controlled by a central computing system that can dynamically allocate users a voice circuit when required. The TD (406.1 - 420.00625 MHz) and TS (813 - 869.025 MHz) bands are allocated solely to Trunked Mobile Radio, as depicted in the table below:

Band	Frequency Range (MHz)	Channel spacing (KHz)	Typical Use	Modulation
TD	406.1 - 420.00625	12.5, 6.25	Commercial Trunked Radio only	Analogue and Digital
TS	813 - 869.025	25, 12.5, 6.25	Commercial Trunked Radio only	Analogue and Digital

8.18 To realize the spectrum efficiency in these bands, licenses for a Trunked Mobile Radio system must, at each repeater location, have a minimum of three analog voice channels: or digital voice circuits equivalent to three analog voice channels.

[18] https://www.rsm.govt.nz/assets/Uploads/documents/pibs/radio-licence-policy-rules-pib-58.pdf

E. Germany

8.19 Trunked radio is a modern form of private/professional mobile radio (PMR) where several users share one channel. Dynamic channel allocation enables more efficient use of the limited number of radio frequencies available for these applications. Alongside a wide range of businesses mostly using technologies such as digital mobile radio (DMR), emergency and public safety services and organizations have recognized the benefits of trunked radio. Its acceptance has led to the standardization of digital narrowband and wideband trunked radio technologies such as TETRAPOL, TETRA, and TEDS for emergency and public safety purposes19.

8.20 These networks are mobile radio networks with features designed especially for the needs of user groups, such as "priority call", "individual call", "group call", "call authorized by dispatcher", and "dynamic group number assignment". Users can make calls to and from the public telephone network/ISDN. The Allocation Rules were published in the Reg TP's Official Gazette 5/2000 of 8 March 2000 (Administrative Order 22/2000).

8.21 According to the aforesaid rules, numbers are allocated to eligible applicants in blocks of 100,000 or 1,000,000 subscriber numbers (primary allocation), and individual numbers are allocated to end users by the primary allocatees (sub-allocation). Numbers for public trunked radio networks occupy the 0167 range in the national public telephone network/ISDN number range as defined in ITU-T Recommendation E.164. They begin with a three-digit service code which is preceded by the prefix 0 and followed by a seven-digit subscriber number comprising a block code (1 or 2 digits) and an extension number (6 or 5 digits)[20].

[19] https://www.bundesnetzagentur.de/EN/Areas/Telecommunications/Companies/Technology/Standardisation/RadioApplications/TrunkedRadio/TrunkedRadio_node.html

[20] https://www.bundesnetzagentur.de/SharedDocs/Downloads/EN/Areas/Telecommunications/Companies/TelecomRegulation/NumberManagement/TechnicalNumbers/ruleswithapplicationformId2355pdf.pdf?__blob=publicationFile&v=2

F. Singapore (IMDA)[21]

8.22 Under the Long-Term Usage scheme there are two fees:

(a) Application & Processing Fee: $300 one-time fees is charged by the licensor ($100 for Commonly Assigned Frequencies for temporary or occasional use)

(b) Annual Frequency Management Fee: Fees for the use of a radio frequency on an exclusive basis:

Radiocommunication Service	Radio Frequency Bands	Occupied Bandwidth (X)	Fee payable per annum*
Private Mobile Radio	All Frequency Bands	X ≤ 25 kHz	$400
		25 kHz < X ≤ 500 kHz	$500
		500 kHz < X ≤ 10 MHz	$9,200
		10 MHz < X ≤ 20 MHz	$29,800
		X > 20 MHz	$44,500
Public Mobile Radio	All Frequency Bands	per 5MHz of occupied bandwidth or part thereof	$7,700

* excluding GST

8.23 Under the Temporary Usage scheme, fees are charged slab-wise:

Bandwidth (x)	Fee (Excluding GST)	
	10 days or less*	11- 90 days
1. x ≤ 25 kHz	$100	$175
2. 25 < x < 500 kHz	$150	$275
3. 500 kHz ≤ x < 1 M Hz	$450	$825
4 1 MHz ≤ x < 20 MHz	$900	$1,625
5. x ≥ 20 MHz	$1,550	$2,800

*Unless otherwise determined by the Authority, a fee of $100 is payable for the use of any of the above radio frequencies if the period of usage or cumulative period of usage is less than 24 hours.

[21] https://www.imda.gov.sg/-/media/imda/files/regulation-licensing-and-consultations/frameworks-and-policies/spectrum-management-and-coordination/spectrummgmthb.pdf

G. Ofcom (UK)[22]

License fees for Business radio light license prescribed by Ofcom

Licence class[23]	Licence fee
Business Radio Simple UK Light licence	£75 per 5 years
Business Radio Simple Site Light licence	£75 per site per 5 years
Business Radio Suppliers Light licence	£75 per 5 years

8.24 The table below shows the fees for a 2 x 12.5 kHz (or 1 x 25 kHz) channel for frequency bands shown in Table: Frequency Band categories (except for Band I).

Area Defined license fee prescribed by Ofcom

Area	*Fee (£) for Highly Popular bands*	*Fee (£) for Medium Popular bands*	*Fee (£) for Less Popular bands*
UK	9900	8250	3300
England	8275	6895	2758
Wales	490	410	163
Scotland	855	710	285
Northen Ireland	280	235	93
GB (England. Wales and Scotland)	9620	8015	3206
Trading unit within high population category (A)	1185	990	395
Trading unit within medium population category (B)	150	125	50
Trading unit within low population category (C)	14*	12*	5*
*Subject to a minimum annual license fee of £75			

Frequency Band categories

Band categories	Bands	Frequency range (MHz)
Highly Popular bands (HPB)	High Band	165.04375 — 173.09375
	UHF 1	425.00625 — 449.49375
	UHF 2	450.0 — 470.0
Medium Popular bands (MPB)	Mid Band	137.9625 — 165.04375
	Band III	177.20625 —207.49375
Less Popular bands (LPB)	Paging	26.225 — 49.49375
	Band 1	55.75 — 68.0
	Low Band	68.08125 — 87.49375

[22] https://www.ofcom.org.uk/__data/assets/pdf_file/0022/36823/nonexcelguide.pdf
[23] https://www.ofcom.org.uk/__data/assets/pdf_file/0022/29272/ofw432.pdf

H. Malaysia (MCMC)[24]

Radio Frequency fees:

8.25 The fees for apparatus assignment of the spectrum are split into 2 factors viz. fixed annual fees and variable annual fee. The fixed annual fee for mobile trunked radio services is equivalent to RM (Malaysian ringgit) 120 per trunked radio base station and variable annual fees with respect to bands per apparatus are tabulated below:

Bandwidth (per channel) (kHz)	Band 30 MHz up to 3GHz (in Malaysian ringgit)
0.000 - 5.000	90
5.001 - 12.000	110
12.001 - 25.000	130
25.001 - 100.000	230
100.001 - 200.000	380
200.001 - 1000.000	520
1000.001 - 3500.000	680
3500.001 - 7000.000	840
7000.001 - 14000.000	1000
14000.001 - 28000.000	1160
28000.001 - 36000.000	1300
36000.001 - 54000.000	1470
54000.001 or greater	1620

8.26 According to the Spectrum Management Handbook[25] issued by IMDA (Infocomm Media Development Authority) in June 2022, provision of telecom service includes operation of telecommunication system (e.g. base stations, radio network controllers, mobile switching centers) required to offer public cellular telephony, trunked radio or mobile data service. IMDA's policy is to assign the spectrum

[24] https://www.mcmc.gov.my/en/legal/acts/communications-and-multimedia-act-1998-reprint-200/communications-and-multimedia-spectrum-regulatio/schedule/first-schedule

[25] https://www.imda.gov.sg/-/media/imda/files/regulation-licensing-and-consultations/frameworks-and-policies/spectrum-management-and-coordination/spectrummgmthb.pdf

allocated for public mobile services to eligible Facilities-Based Operators (FBOs) only. The duration of the license is 15 years and renewable for a further period if required.

8.27 Currently, GRID Communications and CitiCall Communications are the two operators that provide PMRTS in Singapore. The frequency bands allocated for public trunked radio services for GRID Communications and CitiCall Communications are 400 MHz/ 800 MHz and 400 MHz respectively.

8.28 In October 2016, IMDA issued a document on "Technical Specification[26] of Land Mobile Radio Equipment". The following table shows some of the technical requirements for Radio Equipment to be used in Land Mobile Radio Services.

Technology	Operating Frequencies (MHz)	Channel Spacing (KHz)	ERP Limit (Watts)
DMR	136 – 174/ 400 – 410/ 430 – 450	6.25/ 12.5	25
TETRA	380 – 400	25	25

8.29 The following chapter lists the issues for consultation.

[26] https://www.imda.gov.sg/~/media/imda/files/regulation%20licensing%20and%20consultations/ict%20standards/telecommunication%20standards/radio-comms/imda_ts_lmr.pdf

CHAPTER 9
ISSUES FOR CONSULTATION

Stakeholders are requested to provide responses to the following questions with detailed justification:

Q1. Whether there is a need to review the terms and conditions of PMRTS License and PMRTS Authorization under Unified License? Kindly provide a detailed response with justifications.

Q2. In case it is decided to review the terms and conditions of PMRTS License and PMRTS Authorization under Unified License, in what manner should the following conditions be amended?
(a) Scope of the license
(b) Roll out obligation
(c) Technical conditions
(d) Network interconnection
(e) Security conditions
(f) Any other (please specify).
Kindly provide a detailed response with justifications

Q3. Whether PMRTS providers should be permitted Internet connectivity with static IP addresses? Kindly provide a detailed response with justification.

Q4. Whether there is a need to review the extant provisions relating to service area for PMRTS Authorization under Unified License? If yes, whether it would be appropriate to grant PMRTS Authorization for three different categories with service area as (a) National Area; (b) Telecom circle/ Metro Area; and (c) Secondary Switching Area (SSA)? Kindly provide a detailed response with justification.

Q5. Whether there is a need to review the extant provisions relating to the authorized area for use of a particular frequency spectrum to PMRTS providers? If yes, in what manner should these provisions be amended? Kindly provide a detailed response with justification.

Q6. Whether there is a need to review the mechanism of shifting the fixed station from one location to another location within the authorized area for use of a particular frequency spectrum? If yes, what should be the terms and conditions for such permission? Kindly provide a detailed response with justification.

Q7. Whether there is a need to permit PMRTS providers to shift a few frequency carriers out of a pool of frequency carriers, assigned to an existing Fixed Station, to a new Fixed Station located within the authorized area for use of the pool of frequency carriers? If yes, in what manner the challenges arising out of such partial shifting of frequency carriers may be mitigated? Kindly provide a detailed response with justification.

Q8. Whether there is a need to review the requirement of obtaining Wireless Operating License (WOL) by PMRTS providers? Kindly provide a detailed response with justification.

Q9. Whether there is a need to review the provisions related to sale, lease and rent of the radio terminals of PMRTS? Kindly provide a detailed response with justification.

Q10. In case your response to the Q9 is in the affirmative, what kind of changes will be required in PMRTS licenses and Dealer Possession License (DPL) and guidelines? Kindly provide a detailed response with justification.

Q11. Whether there is a need to review the provisions related to import of the radio terminals of PMRTS? Kindly provide a detailed response with justification.

Q12. Whether there is a need to review the provisions related to replacement of unserviceable network elements of PMRTS? Kindly provide a detailed response with justification.

Q13. Whether there is need to review the recommendation No 4.5 (mentioned below) of the TRAI's Recommendations on 'Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction, as a transparent mechanism' dated 20.07.2018, which are under consideration of DoT?

"*4.5 The Authority recommends that-*

(a) Carrier size for assignment to PMRTS licensee (both for analog or digital) shall be 6.25 KHz and multiples thereof.

(b) Carriers (frequency pairs) of 25 KHz already assigned to the service providers should be allowed to be retained by the service providers.

(c) Additional assignment of carriers for the existing analogue system shall continue @ carrier size of 25 KHz (counted as 4 carriers of 6.25 KHz each).

(d) Assignment in new cities/ service areas shall be made for digital systems only.

***(e) Initially for each city, twelve carriers (frequency pairs) of carrier size 6.25 KHz in metro licensed service area and eight carriers (frequency pairs) in non-metro license service area shall be assigned for PMRTS (Digital system) depending on the availability.*"**

Kindly provide a detailed response with justification.

Q14. Whether there is a need to mandate PMRTS providers to migrate to spectrally efficient digital technologies in a time-bound manner? If yes, what should be the time frame for mandatory migration to spectrally efficient digital technologies? Kindly provide a detailed response with justification.

Q15. In case your response to Q14 is negative, what measures should be taken to nudge and encourage PMRTS providers to migrate to spectrally efficient digital technologies? Kindly provide a detailed response with justification.

Q16. Whether it is possible to deliver the PMRTS/ CMRTS, which are mission-critical in nature, using 4G/ 5G Network Slicing or any other technology? If yes, in what manner should the delivery of PMRTS/ CMRTS using 4G/

5G network slicing be enabled in the license? What should be safeguards to ensure that the quality-of-service for cellular networks is not adversely impacted? Kindly provide a detailed response with justification.

Q17. Whether there is a need to review the terms and conditions of PMRTS Authorization under Unified License (VNO)? Kindly provide a detailed response with justification.

Q18. In case it is decided to review the terms and conditions of PMRTS authorization under Unified License (VNO), in what manner should the following existing provisions be amended?

(a) Service area

(b) Scope of the license

(c) Network interconnection

(d) Any other (Please Specify).

Kindly provide a detailed response with justification.

Q19. Whether there is any other issue relevant for review of terms and conditions of the PMRTS License, PMRTS Authorization under Unified License, and PMRTS authorization under Unified License (VNO)? Kindly provide a detailed response with justifications.

Q20. Whether there is a need to review the terms and conditions of CMRTS license? Kindly provide a detailed response with justifications.

Q21. What should be the eligibility conditions for obtaining CMRTS license? Further, what should be the application processing fee for CMRTS license? Kindly provide a detailed response with justification.

Q22. In case it is decided to review the terms and conditions of CMRTS license, in what manner should the following terms and conditions be amended?

(a) Service area

(b) Period of validity

(c) Scope of the license

(d) Technical conditions

(e) Channel assignment and loading

(f) Operating conditions

(g) Conditions relating to suspension, revocation or termination of license.

(h) Any other (please specify).

Kindly provide a detailed response with justifications.

Q23. Whether there is a need to mandate CMRTS licensees to migrate to spectrally efficient digital technologies in a time-bound manner? If yes, what should be the time frame for mandatory migration to spectrally efficient digital technologies? Kindly provide a detailed response with justification.

Q24. In case your response to Q23 is in the negative, what provisions should be made to nudge and encourage CMRTS licensees to spectrally efficient digital technologies? Kindly provide a detailed response with justification.

Q25. Whether there is any other issue relevant for review of terms and conditions of the CMRTS License? Kindly provide a detailed response with justifications.

Q26. Is there a need to review the license fee prescribed for PMRTS/CMRTS? Please justify your answer. If yes, please suggest detailed methodology for arriving at the license fees for PMRTS/CMRTS with justification.

Q27. Whether there is a need to review the allocation of spectrum for PMRTS? If yes, what changes should be made in the allocation of spectrum for PMRTS in the National Frequency Allocation Plan? Kindly provide a detailed response with justifications.

Q28. What should be the method of assignment of spectrum for PMRTS?

(a) Auction; or

(b) Administrative

In the case of auction, what should be the methodology for auction of spectrum? Kindly provide a detailed justification.

Q29. In case it is decided to auction the frequency spectrum allocated to PMRTS, -

(a) What should be the eligibility conditions for participating in auction?

(b) Whether the entire available spectrum in the frequency bands identified for PMRTS in National Frequency Allocation Plan (NFAP) should be put to auction?

(c) What should be the block size of spectrum, and minimum bid quantity in terms of number of blocks?

(d) What should be the spectrum cap for each authorized area for use of spectrum?

(e) What should be the roll-out obligations associated with the assignment of spectrum? What should be the penalties upon non-conforming the roll-out obligations?

(f) What should be the period of assignment of spectrum?

(g) What should be the minimum period beyond which the spectrum acquired through auction may be permitted to be surrendered?

(h) What should be the process and associated terms and conditions for permitting surrender of spectrum through auction?

Kindly provide a detailed response with justification in respect of each of the above.

Q30. In case auction methodology is to be followed for assignment of spectrum:

(a) **Whether the value of frequencies assigned to the PMRTS providers be derived by relating it to the value or auction determined prices of other IMT/5G bands by using technical efficiency factor? If yes, with which spectrum band, should these frequencies be related and what efficiency factor or formula should be used? Please justify your suggestions.**

(b) **Given the city wise allocation and the potential difference in financial/market parameters of PMRTS with respect to access**

services, should the valuation of frequency spectrum for these services derived on the basis of IMT/5G prices be adjusted in order to account for the said distinctions? Please explain the adjustment methodology in detail.

(c) **Apart from the above approaches, which other valuation approaches can be adopted for valuation of spectrum assigned to PMRTS providers? Kindly support your suggestions with detailed methodologies, assumptions, and other relevant factors.**

(d) **Is it appropriate to take the reserve price as 70% of the valuation of spectrum? If not, what should be the ratio adopted between the reserve price for the auction and valuation of spectrum and why?**

(e) **What should be the payment terms and conditions relating to upfront payment, moratorium period, number of instalments to recover deferred payments, rate of discount etc.?**

Please support your answer with detailed justification.

Q31. Whether there are any other issues/ suggestions relevant to the subject? If yes, the same may kindly be furnished with proper justification.

ANNEXURE -I

Prominent Land Mobile Radio Systems

Many international standards have been developed for land mobile radio systems worldwide. The ITU's Report No. ITU-R M.2014-3 (11/2016) on "Digital Land Mobile Systems for Dispatch Traffic"[27] provides the technical and operational characteristics of several MRTSs. A few prominent MRTS technologies are outlined below:

(a) **Terrestrial Trunked Radio (TETRA)**: It is a European Telecommunications Standards Institute (ETSI) open standard for a trunked radio system. It provides a comprehensive radio capability encompassing trunked, non-trunked and direct mobile-to-mobile communication with a range of facilities including voice, circuit mode data, short data messages and packet mode services. It uses Time Division Multiple Access (TDMA) technology. It operates in 380-390 MHz/ 390-400 MHz, 410-420 MHz/ 420-430 MHz, 450-460 MHz/ 460- 470 MHz, 870-888 MHz/ 915-933 MHz frequency bands. TETRA has higher data throughput than Digital Mobile Radio (DMR) and Project 25 (P25) standards. However, TETRA has poor coverage, covers half of DMR for same spectrum and transmit power. It does not support backwards compatibility or migration from legacy analog networks.

(b) **PROJECT 25 (P25):** It is a suite of standards established in October 1989, standardized under the US Telecommunications Industry Association (TIA), and P25 was developed for Land Mobile Radios (LMR) for public safety organization in North America. P25 is equivalent to TETRA, but it is not interoperable with TERTA. It operates in VHF (136-174 MHz) and UHF (403-512 MHz, 806-870 MHz) bands. Latency time ranges around 250msec. The Common Air Interface (CAI) standard is most widely deployed interface enabling interoperability between P25 radios and infrastructure irrespective of the manufacturer. P25 has channel efficiency of only 12.5 KHz FDMA. However, Phase 2 provides an upgrade path to 6.25 KHz, but only for voice.

[27] Source: https://www.itu.int/pub/R-REP-M.2014

(c) **Tetrapol**: TETRAPOL (Terrestrial Trunked Radio POLice) is a digital professional mobile radio standard as defined by the Tetrapol Publicly Available Specification (PAS), in use by professional user groups, such as public safety, military, industry and transportation organizations throughout the world. Airbus Defence and Space (Germany) is the main supplier of this technology. It provides a spectrum efficient, digital narrow-band FDMA, voice and data system for dispatch traffic, which has been developed and validated, and which is operational since 1992. The Tetrapol land mobile radio specification was defined by the Tetrapol Forum to provide specifications to the most demanding PMR segment: the public safety and then extended to professional users. The Tetrapol applicable band is 470-520 MHz, 746-870 MHz, 870-888 MHz/ 915-933 MHz, with a channel spacing of 10-12.5 KHz. Future generation Tetrapol is expected to make provision for two 6.25 KHz channels in a single 12.5 KHz channel. The access mode is FDMA technique, with a fully digital constant amplitude modulation GMSK. The data rate is 8 kbit/s per channel.

(d) **DMR (Digital Mobile Radio)**: Digital mobile radio (DMR) is an open digital mobile radio standard developed by ETSI. In practice, DMR manufacturers have focused on building products for the professional and commercial markets for both licensed conventional mode operation (DMR Tier II) and licensed trunked mode operation (DMR Tier III). The DMR standard operates within the 12.5 KHz channel spacing. It achieves two voice channels through two-slot TDMA technology. The TDMA implementation in DMR offers a spectrum-efficiency of 6.25 KHz per channel. The modulation is 4-state GPS, which creates four possible symbols over the air at a rate of 4.8 Kbps, corresponding to 9.6 Kbps. It has lower data throughput than TETRA.

(e) **Next Generation Digital Network system (NXDN)**: NXDN is a Digital LMR system which meets a requirement of narrow 6.25 kHz bandwidth. The specifications for NXDN have been developed in Japan and managed by the NXDN Forum. The NXDN system aims to satisfy the needs of a wide range of professional users, ranging from public safety to commercial and industrial users and can be used in various systems from simple systems using a direct mode operation to large network trunked systems. NXDN physical layer employs FDMA technique with a four-level FSK modulation and includes two transmission rates; one is 4.8 kbps for 6.25 KHz bandwidth and the other is 9.6 kbps for 12.5 KHz bandwidth used for current analogue FM.

1.35 A comparison of different digital trunked radio standards is given below:

Radio Standards	Traffic Channels/ RF Carrier	Access Method	RF Carrier Spacing (KHz)	Cell Radius (Km)	Frequency Bands (MHz)
Project 25	Integrated voice & data FDMA:1@ 12.5 KHz TDMA:2@12.5 KHz TDMA:4@ 25 KHz	FDMA/ TDMA	6.25/ 12.5	7.6-35	136-200 360-520 746-870
TETRA	4	TDMA	25	3.8-17.5	380-390/ 390-400 or 410-420/ 420-430 or 450-460/ 460-470 or 870-888/ 915-933
DMR	6, 4, 3, 8, 12	TDMA	25	5-40	806-821/ 851-866
TETRAPOL	1	FDMA	12.5-10 6.25 evolution	8-28	470-520/ 746-870 870-888/ 915-933
NXDN	1	FDMA	12.5/ 6.25	Depend on Design	136-174/ 380-512 806-821/ 851-866 896-901/ 935-940

ANNEXURE-II

DoT's Reference dated 02.06.2022 (without Annexures)

Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20, Ashoka Road, New Delhi-110001
(Carrier Service Cell)

No. 311-80/2022-CS-I-Policy(part) **Dated: 2nd June, 2022**

To

The Secretary
Telecom Regulatory Authority of India,
MTNL Building, Jawahar Lal Nehru Marg,
New Delhi-110002

Subject: Recommendations of TRAI sought in regard to review of terms and conditions for issue licenses for CMRTS and PMRTS.

The Guidelines for PMRTS for Captive and Commercial use were issued on 1st Nov, 2001 **(Annexure-1)** on the basis of TRAI recommendations dated 18.12.2000. The license for commercial use is known as Public Mobile Radio Trunking Service (PMRTS) and the license for captive use it is known as Captive Mobile Radio Trunking Services (CMRTS). Further recommendations of TRAI regarding the PMRTS was given on 07.01.2003. On the basis of these guidelines of 1st Nov, 2001 and TRAI recommendations dated 07.01.2003, License Agreement for PMRTS and CMRTS were approved in June 2007.

2. Licenses for PMRTS were being issued on the basis of these guidelines by CS division up to 19.08.2013. Thereafter, the PMRTS license was brought under Unified Licensing (UL) regime and PMRTS Authorization were issued under the UL guidelines. However, CMRTS license, which is for captive use, was not included in the Unified License and CMRTS licenses continued to be issued on the basis of approved guidelines of 2001 & license agreement of 2007.

3. As per the existing arrangements, licenses have been issued on non-exclusive basis without any limit on number of operators in a service area, as well as the number of licenses that can be obtained by any single operators. The present list of existing PMRTS licenses and CMRTS licenses are enclosed as **Annexure-2** and **Annexure-3** respectively. These licenses were granted for a period of 20 years and extendable by 10 years beyond initial period, at a time.

4. CMRTS license conditions have not been reviewed since 2007 and also not been included in the UL. A copy of the sample CMRTS license agreement as applicable to the existing licensees is enclosed as **Annexure-4**. Further, following amendments of CMRTS license were issued which are placed collectively at **Annexure-5**:-

a. letter No. 311-Misc/2017-CS-I dated 15.03.2021 regarding procurement of telecommunication equipment
b. letter No. 311-Misc/2017-CS-I dated 06.10.2021 regarding change in interest rate, penalty and interest on penalty and

c. letter No. 311-Misc/2017-CS-I dated 08.10.2021 regarding rationalization of bank guarantees)

5. In this regard, various suggestions/ representations received from PMRTS Licensees and their Association are enclosed at **Annexure-6** and a representation received from a CMRTS licensee is enclosed at **Annexure-7.** Keeping in view the vast changes in the technology and financial aspects during this period and the resultant new user applications, there is a need to review scope and guidelines for PMRTS & CMRTS services and the license conditions.

6. In view of the above, TRAI is requested to give recommendations under clause 11(1)(a) of the TRAI Act, 1997 (as amended) regarding the terms and conditions for issue of fresh licenses for CMRTS and PMRTS services especially w.r.t. technical conditions (viz. connectivity with PSTN, internet, use of digital technology, allocation of spectrum to PMRTS, use of network slicing under 5G etc.) and financial aspects etc. TRAI is also requested to give its view on any other issues considered relevant for CMRTS and PMRTS licenses.

2/6/2022

(Sharad Trivedi)
DDG (Carrier Services)
Ph: 011-23710437

Enclosed: Annexures 1 to 7.

ANNEXURE-III

DoT's letter dated 20.09.2022

311-80/2022-CS-I-Policy[part]

I/3060898/2022

Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20, Ashoka Road, New Delhi-110001
(Carrier Service Cell)

No. 311-80/2022-CS-I Dated: 20/09/2022

To

The Secretary
Telecom Regulatory Authority of India
MTNL Building, Jawahar Lal Nehru Marg
New Delhi-110002

Subject: DOT Reference seeking TRAI Recommendations on review of terms and conditions for issue of licenses for CMRTS and PMRTS

Kindly refer to your letter no. C-9/6/(1)/2022-NSL-II dated 17/06/2022, whereby it was requested to provide the following information:

a) Implementation status of the TRAIs Recommendation on "Method of allocation of spectrum for Public Mobile radio Trunking Service (PMRTS) including auction, as a transparent mechanism" dated 20th July 2018.
b) Analytical report of DOT on the representations received from the PMRTS Licensees, their Association and CMRTS Licensees.

2. Regarding implementation status of TRAI recommendations dated 20-07-2018, this is to inform you that TRAI recommendations on "Method of allocation of spectrum for PMRTS including auction, as a transparent mechanism" dated 20th July, 2018 was deliberated in the department and it was decided that the decision on TRAI recommendations may be taken after the decision on Methodology of allocation of spectrum to PMRTS. The issue is now being considered under the ambit of 'Telecom Bill'.

3. The views/comments of DOT on the representations/inputs from the PMRTS Licensees (including their Association) and CMRTS Licensees are furnished in the **Annexure-A** and **Annexure-B** respectively.

Enclosed: Annexure-A & B

20/9/22
(S.L. Meena)
Director (Carrier Services- I)

I/3060898/2022

Annexure-A

Issues raised by PMRTS Licensees (including their association)

S. No	Issues raised by PMRTS Licensees and their Association.	Remarks of concerned wing
1	The PMRTS service today is licensed by DoT to be a "Closed User Group' service. An extremely restricted PSTN interconnect given to the industry (one PSTN line for every 5 channels issued). PMRTS should be allowed to connect IP/ Internet connectivity.	The PMRT service is for CUG purpose and the interconnect is as per existing License agreement.
2	DOT has made PMRTS licenses from citywide to Circle wide. But WPC has not allowed to use the already allocated spectrum for one city earlier, in other cities of the circle. This has defeated the purpose of making the PMRTS license circle wide. PMRTS licensees should be allowed to use spectrum at any location within the Telecom Circle through an intimation to WPC. However, Operators shall pay location wise -WPC-Royalty and License fee for the new location intimated to WPC for frequency re-use.	(a) The frequency allocation to the PMRT operators has been done in accordance with the earlier PMRTS license conditions city wise. (b) Further, TRAI recommendations on "Method of allocation of spectrum for PMRTS including auction, as a transparent mechanism" dated 20 th July 2018 was deliberated in the department and it was decided that the decision on TRAI recommendations may be taken after the decision on Methodology of allocation of spectrum to PMRTS. The issue is now being considered under the ambit of 'Telecom Bill'.
3	WPC is not allowing to use already allocated spectrum on new sites requiring, shifting of existing Tower site in the same Service Area to improve quality of coverage to subscribers in the existing Service Area. This has slowed down the growth of PMRTS business, especially since many industries are moving away from a city / existing	Assignments to PMRTS are made city wise. Shifting of any base station from one place to another place within a service area may lead to alter/extend the geographical coverage area and accordingly, the extended geographical area, the PMRTS frequency assignment is treated as new. The allocation of new frequency assignments is pending due to pending

	Service Area. PMRTS Operators should be free to use already allocated spectrum at an alternate site in the existing or new Service Area to serve customers well when they relocate away from an existing PMRTS site, through just an intimation to WPC. a) **Shifting of base stations** -required due to expiry of lease period of site at an old location or availability of a better site location nearby. b) **Permission for installation of additional new base stations** by partial shifting of the already assigned frequencies. If PMRT Service Provider has been allotted one block of frequency (i.e. 5 frequency pairs) in one city and they are operating with single site/location. They may be allowed to operate with 3 frequency pairs out of 5 frequency pairs in a new site/locations in the same Service area, so as to provide improved coverage to their subscribers. Operator to inform DOT / WPC as matter of information and should not be made as part of any license requisite or condition.	decision on Methodology of allocation of spectrum to PMRTS. However, installation of new base station within the existing PMRTS network in a city is permitted provided that no change in the geographical coverage area
4	The requirement to obtain WOL as mentioned in the frequency assignment, frequency allotment, or frequency earmarking letters already issued to PMRTS Providers under Unified License for PMRTS authorization stands deleted. As it has been done in case of Access Service authorization vide DOT Circular No. No.: L -14004/01/2012- NTG dated 02/11/2016. *WPC may give notice if operators fail to pay WPC-Royalty and License fee on the due date.*	As per existing rules/procedure, to operationalise the frequency network including PMRTS, Wireless Operating Licence is required.
5	DOT- License Fee (Fixed/AGR based)	License fee may be payable as per terms &

	should be payable/ applicable after assignment of frequencies/TERM Registration Certificate to operator.	conditions of License Agreement.
6	PMRTS AGR definition also needs a review to exclude non-Telecom revenue as well as introduce a concept of redefining income from hardware sales for levy of license fee on "*selling price of hardware less cost price of hardware*" rather than on "*selling price of hardware*" as it exists today.	PMRTS AGR definition to exclude non-telecom revenue has already been implemented as approved by Union Cabinet in September-2021 by DOT. An O.M. in this regard was issued on 25.10.2021 by DOT.
7	Since PMRTS subscribers, by virtue of license terms and conditions, are not required to obtain any separate license from WPC/DoT and can obtain the hardware (radio terminal) from any authorized dealer on outright sale or lease or rent, the authorized dealer (DPL holder) should be allowed to offer radio terminals on rent or lease to such subscriber availing PMRTS Service from a Licensed operator.	The PMRTS service providers after acquiring radio terminals either through direct import or buying from DPL holder, can provide these radio terminals to subscribers/users upon mutually agreed terms and conditions.
8	A licensed PMRTS Operator, by virtue of the PMRTS license can sell, rent or lease radio terminals without being a DPL Holder. In view of this and the fact that there are no manufacturers of radio terminals in India, PMRTS operators should be allowed to freely import radio terminals under OGL without requiring any permission from DoT or WPC.	The wireless users, having valid frequency assignment under Indian Telegraph Act, 1885, can import directly, the permitted number of radio terminals/wireless equipments.
9	There should be no linkage of spectrum allocation and import of radio terminals by the PMRTS Operator since all subscribers who buy handsets do not return them even after they stop using the PMRTS Service. The main reason is that the radio terminal has a life of 5 years and is reflecting in the books of	As per existing rule/procedure, the PMRTS frequency assignment holder can import the permitted number of terminals as per technical specifications mentioned in WOL against unserviceable terminals, after submitting the destruction certificate/copy of FIR (in case of loss)/ appropriate proof.

	accounts of the subscriber as a Capital Asset. Also depending on usage and operating environment available at the subscriber end, many radio terminals become defective beyond economic repair in usage periods from 1-5 years , resulting in the customer having to buy such non-repairable radio terminals again.	
10	It has now been more than 3.5 years since TRAI recommendations pertaining to spectrum allocation and fee structure for PMRTS were made. All substitute services (CMRTS), Captive etc. despite their end use being identical to PMRTS, are being allocated spectrum on an interim basis, pending policy finalization by DoT, causing grave injustice besides distorting the level playing field between PMRTS and its alternate/substitute services/applications. This should be urgently addressed.	Refer para 2 (b) above.
11	PMRTS operators having to replace old infrastructure which have become defective and or has been obsoleted, may be permitted to deploy different make and model of infrastructure but which is compatible with the existing. The details of the new model and make of infrastructure would be informed to DOT / WPC as matter of information and should not be made as part of any license requisite or condition.	Under the valid spectrum assignment for PMRTS, the issue of replacement of radio terminals can be considered, on case to case basis, subject to submission of destruction certificates etc. of the defective/obsolete terminals.

I/3060898/2022

Annexure-B

Issues raised by CMRTS Licensee

S No	Issues raised by M/s GMRCL, CMRTS Licensee	Remarks of concerned DOT wing
1	CMRTS License Agreement, **Condition 7: Suspension, revocation or Termination of License:** w.r.t. **Condition 7.1** Before invoking such revoke/termination/suspension, right to represent may be given to government organisations/ metro rail/ public transportation services for consideration.	As per terms and conditions of the license.
2	CMRTS License Agreement, **Condition 13: Fees payable** ***Condition 13.1(a)***: *'All Captive Mobile Radio Trunked Service licensees shall pay license fee except for agencies working for public service such as Police, Fire and Government Security'.* Gujarat Metro Rail Corporation (GMRC) is a government organisation, acting in public interest without profit oriented goals. GMRC is not generating any revenue through this spectrum. The spectrum is being used by GMRC for passenger safety in same way as police, Fire and Govt. Security. Therefore, it should be considered as public service and hence being a public service, license fee may be exempted for Metro Rail Projects.	Gujarat Metro Rail Corporation is a special purpose vehicle under the companies act 1956. This is 50:50 SPV Govt. of Gujarat and Govt. of India. GMRC may not be considered on equal footing with services like Police, Fire & Govt. Security.
3	CMRTS License Agreement, **Condition 13: Fees payable** ***Condition 13.1(b)***: *'License fee for captive mobile radio trunking service Systems shall be Rs. 300/- per annum per terminal subject to a minimum of Rs. 25,000/- per annum per licensed area.'*	License fee may be levied as per terms and conditions of License Agreement.

6

	In view of presently enhanced size and complexity of metro transport networks across cities in India, more radio sites have become important requirement. Accordingly, channels as per actual are required to start the metro operation in big cities as there would be more sites in each metro. Hence, initially channels may be allotted as per actual requirement, in place of limited five channels for metro rail projects.	justification by the licensee. Presently, additional frequencies are being allotted to Metro Rail projects due to operational safety requirements. However, in such cases the CMRTS license fees is charged @ Rs 300 per terminal for actual number of terminals OR (Number of frequencies allotted * 90 terminals per frequency), whichever is higher.

	It has been noticed that during initial period of Metro Rail project, radio terminal utilization is very less, therefore, minimum annual charges may be levied based on actual radio terminal utilization in place of existing minimum Rs. 25,000 per annum per licensed area.	
4	CMRTS License Agreement, **Condition 13: Fees payable** w.r.t. ***Condition 13.2:*** Gujarat Metro Rail Corporation (GMRC) is a government organisation, acting in public interest without profit oriented goals. Further, it has been also noticed that the revenue of Metro Rail operation does not compensate its overall expenditures and royalty charges acts as a financial burden on the organization. Being a public service, radio spectrum charges may be exempted for Metro Rail Projects.	Spectrum is a scarce resource and may not be allotted free of cost.
5	CMRTS License Agreement, **Condition 14:** Schedule of payment of ANNUAL LICENSE FEE and other dues: w.r.t. ***Condition 14.2 &14.4:*** Since, metro rail organisation, being government in nature and working as public services, therefore, in place of existing practice i.e. "advance payment of radio terminal utilization payable in quarterly installment and subsequent adjustment after actual utilization of same quarter, it is suggested to take the radio terminal charges after utilization as on actual basis (quarterly or yearly), which will make the process simple and efficient.	This may be accepted as at present only CMRTS licensees are paying advance payment, all other are paying subsequently. However, suitable safeguards may be ensured for Govt. revenue.
6	CMRTS License Agreement, **Condition 16:** Technical conditions. w.r.t. ***Condition 16.6.3:***	May be considered for allotment of additional frequency channels as per actual requirement based on

ANNEXURE – IV

WPC Wing, DoT's letter dated 18.09.2000

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.

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

$$L = 100 \times n$$
$$R = 4800 \times f$$

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

$$L = 100 \times n$$
$$R = 1200 \times f$$

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-V

WPC Wing, DoT's Order No. P-111014/34/2009-PP-I, II, IV dated 22.03.2012

Government of India
Ministry of Communications & IT
Department of Telecommunication
Wireless Planning & Co-ordination (WPC) Wing

Sanchar Bhavan,
20, Ashoka Road,
New Delhi-110 001

No. P-11014/34/2009-PP (I) Date: 22nd March, 2012

ORDER

Subject: Royalty charges for Assignments of Frequencies to 'Captive Users' (users being charged on formula basis) including all Government Users, involving **Single Channel** Operations for Fixed/ Land/ Land Mobile Stations/ terrestrial Broadcasting.

In pursuance of Power conferred by section 4 of the Indian Telegraph Act, 1885(13 of 1885) and in supersession of this Ministry's Orders No. R-11014/26/2002-LR dated 06.05.2003 and No. R-11014/4/87-LR dated 09.12.1987, the Central Government has decided the following Royalty charges for Assignments of Frequencies to 'Captive Users' (users being charged on formula basis) including all Government Users, involving **Single Channel** Operations for Fixed/ Land/ Land Mobile Stations/ Broadcasting:-

2. ***Annual Royalty per Carrier (in Rs.) = M x W;*** and the following rules apply:

i. The Basic Royalty (M) given below is for one carrier frequency in a Basic Link (simplex) of 2 Fixed/ Land/ Land Mobile stations (1 station for terrestrial Broadcasting).

ii. The Minimum Channel bandwidth for charging purpose is 12.5 kHz.

iii. Duplex circuits and Semi-duplex circuits shall be charged at twice the rate of simplex (single central frequency) circuits.

iv. For multi-frequency circuits, even if operating in simplex mode, the Basic Royalty shall be charged for each frequency separately.

v. For each additional station beyond the Basic Link (i.e. 2 stations), operating on the same carrier frequency, additional royalty will be charged @ 25% of that payable for the Basic Link of that frequency.

vi. For the purpose of charging Royalty, the bandwidth factor W shall be computed in terms of a Unit Channel Width of 12.5 KHz (equivalent voice channel):

$$W = \frac{\text{Actual Channel Bandwidth in kHz}}{12.5}, \quad \textbf{rounded to next higher integer.}$$

vii. For all carrier frequencies, the chargeable bandwidth shall include the Guard Bands required to be provided as per ITU.

viii. The following Table-A is applicable only for Single Channel Bandwidths up to 375 KHz, inclusive of guard-band.

Royalty Charges for Single channel

Table A-for the 'M' Factor

Distance Cat.	'Maximum Distance (KM) Over Which the F/L/LM Network would operate'	Royalty (in Rs.) for 24-hour operation of the Basic Link (M) per Carrier	Royalty (in Rs.) for 12-hour operation of the Basic Link, adjusted for inflation.	Per Carrier Royalty for each additional station beyond the Basic Pair (Rs.) working in the same frequency
		M	*m1*	*m2*
I	<= 2	*1500*	*N/A*	*25%*
II	<= 5	*3000*	*N/A*	*25%*
III	> 5 <= 25	*6000*	*N/A*	*25%*
IV	> 25 <= 60	*12000*	*N/A*	*25%*
V	> 60 <= 120	*22500*	*N/A*	*25%*
VI	> 120 <= 500	*37500*	*25000*	*25%*
VII	> 500	*50000*	*33330*	*25%*

ix. In addition to above, the explanatory "Notes" on the applicability of royalty charges, are as following:

- A *simplex* operation is a method in which transmission is made possible alternately in each direction of a communication channel, e.g. by manual control.
- A *duplex* operation is a method in which transmission is possible simultaneously in both directions of a telecommunication channel.
- A *semi-duplex* operation is a method which is simplex operation at one end of the circuit and duplex operation at the other.
- To determine the "Maximum Distance" slab applicable to a case, the 'maximum power rating/ assigned' of the transmission equipment be considered, and expressly recorded in the assignment instrument Decision Letter, Agreement-in-Principle, or Wireless Operating License (DL/ AIP/ WOL).
- The *duration* of a radio frequency assignment will normally be one or two years. If an applicant desires, and frequencies are available, the duration of assignment may be fixed as three or four or five years.
- Before issuing any DL/ AIP/ WOL, full amounts of Royalty shall be submitted by the applicant in advance for the entire duration of the DL/ AIP/ WOL.
- For all assignments of frequencies, all applicants or users shall pay the applicable Royalty, License Fee, etc. **at the rates and terms in force from time to time, all previously paid amounts being adjusted on pro-rata basis.**
- Frequencies will normally be assigned, and hence charged, on 24-hour basis, unless indicated otherwise.

Government of India
Ministry of Communications & IT
Department of Telecommunication
Wireless Planning & Co-ordination (WPC) Wing

Sanchar Bhavan,
20, Ashoka Road,
New Delhi-110 001

No. P-11014/34/2009-PP (II)

Date: 22nd March, 2012

ORDER

Subject: Royalty charges for Assignments of Frequencies to 'Captive Users' (users being charged on formula basis) including all Government Users, involving **Multi Channel** Operations for Fixed/ Land/ Land Mobile Stations.

In pursuance of Power conferred by section 4 of the Indian Telegraph Act, 1885(13 of 1885) and in supersession of this Ministry's Orders No. R-11014/26/2002-LR dated 06.05.2003, No. R-11014/26/2002-LR dated 01.04.2003, No. R-11014/4/87-LR (pt.) dated 20.07.1995 and No. R-11014/4/87-LR dated 09.12.1987, the Central Government has decided the following Royalty charges for Assignments of Frequencies to 'Captive Users' (users being charged on formula basis) including all Government Users, involving **Multi Channel** Operations for Fixed/ Land/ Land Mobile Stations:-

2. *Annual Royalty* is calculated as per the following formula and rules:

$$\textit{Annual Royalty (in Rupees)} = \sum_{i=1}^{n} M_i \times W, \text{ where n = no. of carriers.}$$

i. The Basic Royalty (M) given below is for *one* carrier frequency in a *Basic Link* (simplex) of 2 Fixed/ Land/ Land Mobile stations (1 station for broadcasting).

ii. Duplex circuits (with two central frequencies) and Semi-duplex circuits shall be charged at twice the rate of simplex (single central frequency) circuits.

iii. For multi-frequency circuits, even if operating in simplex mode, the Basic Royalty shall be charged for each frequency separately.

iv. For the purpose of charging Royalty under Table-B, the *Bandwidth Factor W* shall be as per *Table-C*, given below.

v. For all carrier frequencies, the chargeable bandwidth shall include the *Guard Bands* required to be provided as per *ITUs*.

vi. The rates of Royalty apply to the specified *polarization(s)* of the assigned frequencies.

vii. In addition to above, the explanatory "Notes" on the applicability of royalty charges, are as following:

- To determine the "Maximum Distance" slab applicable to a case, the 'maximum power rating/ assigned' of the transmission equipment be considered, and expressly recorded in the assignment instrument Decision Letter, Agreement-in-Principle, or Wireless Operating License (DL/ AIP/ WOL).

- The *duration* of a radio frequency assignment will normally be one or two years. If an applicant desires, and frequencies are available, the duration of assignment may be fixed as three or four or five years.
- Before issuing any DL/ AIP/ WOL, full amounts of Royalty shall be submitted by the applicant in advance for the entire duration of the DL/ AIP/ WOL.
- For all assignments of frequencies, all applicants or users shall pay the applicable Royalty, License Fee, etc. **at the rates and terms in force from time to time, all previously paid amounts being adjusted on pro-rata basis.**

Table-B For The 'M' Factor

Distance Cat.	"Maximum Distance (KM) Over Which the F/L/LM Network would operate"	Royalty Charges (in Rs.) for of the Basic Link.
		M
I	<= 2	*1500*
II	<= 5	*3000*
III	> 5 <= 25	*6000*
IV	> 25 <= 60	*12000*
V	> 60 <= 120	*22500*
VI	> 120 <= 500	*37500*
VII	> 500	*50000*

Table-C for The 'W' Factor

Slabs of Adjacent Channel Separation (BW), in MHz	Values of W
Up to and including 2	30
More than 2 but < = 3.5	40
More than 3.5 but < = 7	60
More than 7 but < = 14	90
More than 14 but < = 28	120
> 28	120+30 x (Excess bandwidth to 28 MHz / 7) @

@: That is, in steps of 7 MHz or part thereof.

viii. Any "single channel service" that uses a channel bandwidth in excess of 375 KHz shall be covered by Charging Table-C above, where the Bandwidth Factor "W" is used from the lowest value of 30 onwards.

3. For Charging of "Licence fee and other fees, Surcharge/ late fee and Charging Methodologies for Royalty / licence fees, Order No. No. P-11014/34/2009-PP (IV) dated 22nd March, 2012 shall be applicable

4. This issues with the concurrence of the Wireless Finance Division, vide this Dy. No.482/Sr.DDG(WPF), dated 19/3/12.

5. This Order shall come into force from 1st April 2012.

(Viresh Goel)
Deputy Wireless Advisor
to the Government of India

Copy to:

1. All concerned
2. Wireless Finance Division
3. Wireless Monitoring Organisation
4. Director, IT DoT for uploading on DoT website
5. DWA(ASMS) for uploading on WPC Wing website

Government of India
Ministry of Communications & IT
Department of Telecommunication
Wireless Planning & Co-ordination (WPC) Wing

Sanchar Bhavan,
20, Ashoka Road,
New Delhi-110 001

No. P-11014/34/2009-PP (IV) Date: 22nd March, 2012

ORDER

Subject: Licence fee and other fees, Surcharge/ late fee and Charging Methodologies for Royalty / licence fees for 'Captive Users' (users being charged on formula basis) including all Government Users.

In pursuance of Power conferred by section 4 of the Indian Telegraph Act, 1885(13 of 1885) and in supersession of this Ministry's Orders No. R-11014/28/2004-LR dated 23.03.2005, and No. R-11014/4/87-LR dated 20.07.1995 the Central Government has decided the following rates of Licensee fees, and other fees, Surcharge/ late fee and Charging Methodologies for Royalty / licence fees for different types of Assignments of Frequencies to 'Captive Users' (users being charged on formula basis) including all Government Users. :-

2. **License Fees**

Sl. No.	Type of License	Annual License Fee, Rs.	Remarks
i.	Fixed/ Land Station	500	Per station
ii.	Land Mobile Station	250	Per station
iii.	Captive paging (Hub)	2000	Per Hub
iv.	Maritime Mobile Station (fishing trawlers)	500	Per trawler
v.	Maritime Mobile Station (Ships)	5000	Per ship
vi.	Aero-mobile Station	5000	Per aircraft
vii.	USR (short range)	250	Per station
viii.	Fixed station of Microwave links/ Radar Station/NLD station/BTS	1000	Per station
ix.	CMRTS fixed station	500	Per fixed station
x.	CMRTS Mobile Station	250	Per mobile station; vehicle mounted or hand-held
xi.	Fixed station in Satellite Network, e.g., DTH/ Teleport/ DSNG/ NLD/ ILD/ DCP/ IP-II	1000	Per Fixed Station
xii.	Captive V-SAT	500	Per Hub or Terminal
xiii.	INMARSAT	250	For Mobile terminal
xiv.	INMARSAT	500	For Fixed terminal

NOTE: License Fee for standby sets shall also be charged at the same rates.

3. **Fees for issuing duplicate copies and License Modification**

Sl. No.	Type	Fee in Rupees
i.	Duplicate copy of License (Without Schedule)	500
ii.	Duplicate copy of Schedule(s) of a License	500
iii.	Duplicate copy of Renewal Certificate	250
iv.	License Modification	1000

4. **Charging Methodologies** for Royalty / licence fees:

i. No radio frequency be assigned, reserved, or blocked through a Decision Letter, Agreement-in-Principle, or any other instrument of like nature *unless* the applicant pays, in advance, all applicable license fees and royalty charges for the full duration of authorization/ assignment of the radio frequency, or minimum of one year, whichever is less.

ii. Upon successful processing of an application requesting for an assignment of radio frequency (RF), the applicant be informed about the License Fees and Royalty required to be deposited by him. These shall be calculated for the full period of the requested assignment. Where the period is greater than one year, the wireless user/ applicant has to pay the license fee and royalty in annual installments in advance every year.

iii. Immediately thereafter, but in no case later than thirty (30) days from the date of issue of the said letter, the applicant shall pay the charges for issue of License/ DL/AIP, if otherwise permissible. If, on the other hand, the payment is not received within this period of 30 days, the application will be treated as ***cancelled*** and the frequencies shall be freed for being assigned to others. If the same applicant wants to subsequently pursue the application, he shall be required to submit a ***fresh*** application.

iv. The amounts due for different periods may be determined as follows.

License Period	License Fee payable	Royalty payable from the date of DL/ AIP/ WOL, as the case may be	Method of payment
One month or less	At specified flat rate.	Annual royalty divided by 12.	Full license fee & royalty to be paid in advance at the time of issue of DL/AIP/ license.
More than one month but up to one year	At specified flat rate.	On pro-rata basis. However, part of a month shall be taken as one month.	-- do --
More than one year	At specified flat rate.	On pro-rata basis. However, part of a month shall be taken as one month.	Pay the L/fee plus Royalty for the entire duration in advance at issue of DL/AIP/ license, OR pay it in annual advance instalments.

v. In case the licensee defaults on one of the annual installment payments, all the remaining installments shall become immediately payable.

vi. A Licensee shall be responsible to apply for the renewal of his/ her existing frequency authorization or wireless operating license (WOL), within a period of thirty (30) days *before* the expiry of the said WOL/ AIP/ DL.

vii. **Surrender of a License/ AIP/ DL:** Spectrum charges are payable minimum for one month and thus on surrender of licenses the Royalty charges in excess of one month can be adjusted. However, any monetary refund can only be made if the payments have been received for more than one year and surrender results the Royalty charges in excess of 1 year. The word "surrender" in this paragraph shall mean surrender of a complete **License/ AIP/ DL** with all its frequency assignments.

5. Surcharge/Late Fee for Late Renewal of Wireless Station Licenses: Surcharge/ Late fee for delayed renewal of various licenses shall be levied on the total amount due (i.e. license fee *plus* royalty charges) @ 2% per month or part thereof, subject to the minimum of Rs. 250/- per license. In case the delay is more than one year the said late fee shall be applied in an *annually compounded* manner.

6. This issues with the concurrence of the Wireless Finance Division, vide this Dy. No.482/Sr.DDG(WPF), dated 19/3/12.

7. This Order shall come into force from 1st April 2012.

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ANNEXURE-VI

LIST OF ACRONYMS

ACMA	Australian Communications and Media Authority
AGR	Adjusted Gross Revenue
AGTO	Annual Gross Turnover
BB-PPDR	Broadband-Public Protection and Disaster Relief
BTS	Base Transceiver Station
CLMR	Conventional Land Mobile Radio
CMRTS	Captive Mobile Radio Trunking Service
CMTS	Cellular Mobile Telephone Service
CUG	Closed User Group
DMR	Digital Mobile Radio
DoT	Department of Telecommunications
DPL	Dealer Possession License
DTRS	Digital Trunk Radio System
FBG	Financial Bank Guarantee
FBO	Facilities-Based Operations
FCC	Federal Communications Commission
FDMA	Frequency Division Multiple Access
FHMA	Frequency Hopping Multiple Access
FM	Frequency Modulation
FSK	Frequency Shift Keying
GMRC	Gujarat Metro Rail Corporation
GMSK	Gaussian Minimum Shift Keying
GMPCS	Global Mobile Personal Communication by Satellite

IMDA	Infocomm Media Development Authority
ISP	Internet Service Provider
ITU	International Telecommunication
ITU-R	International Telecommunication Union's Radio Communication Sector
LD	Liquidated Damage
LMR	Land Mobile Radio
LoI	Letter of Intent
LSA	License Service Area
M2M	Machine-To-Machine
MCMC	Malaysian Communications and Multimedia Commission
MRTS	Mobile Radio Trunking Service
MTROA	Mobile Trunked Radio Operators Association
NFAP	National Frequency Allocation Plan
NLD	National Long Distance
NTP	National Telecom Policy
OGL	Open General License
P25	Project 25
PBG	Performance Bank Guarantee
PMR	Professional Mobile Radio
PMRTS	Public Mobile Radio Trunking Service
PMRTSP	Public Mobile Radio Trunking Service Provider
PPDR	Public Protection and Disaster Response
PSTN	Public Switched Telephone Network
PTT	Push-to-Talk
RF	Radio Frequency
RALI	Radiocommunication Assignment and Licensing Instruction

SACFA	Standing Advisory Committee on Radio Frequency Allocation
SLA	Service Level Agreement
SMR	Specialized Mobile Radio
SRSP	Standard Radio System Plan
SSA	Secondary Switching Area
SUC	Spectrum Usage Charge
TDMA	Time Division Multiple Access
TEC	Telecommunication Engineering Centre
TETRA	Terrestrial Trunked Radio
TLMR	Trunked Land Mobile Radio
TLMS	Trunked Land Mobile Service
TRAI	Telecom Regulatory Authority of India
TRS	Trunk Radio System
UL	Unified License
ULS	Universal Licensing System
VNO	Virtual Network Operator
VSAT	Very Small Aperture Terminal
WOL	Wireless Operating License
WPC	Wireless Planning & Coordination