

Format

Contribution for updating National Frequency Allocation Table-2022 (up to 1 GHz band)		
1	Name of Individual/Organization etc	Mobile Trunked Radio Operators Association of India
2	Address	Unit No.529, 5 th Floor, DLF Prime Towers, Okhla Industrial Area, Phase-I, New Delhi – 110020
3	Mail ID	mtroadelhi@gmail.com;
4	Phone/Mobile no.	Mobile +91-9373003079; +91-9810412723
5(a)*	Nature of business	Association of PMRTS operators
5(b)	Type of Organisation (Pvt industry, Association, academia, PSU, government departments etc.)	Association
6	Frequency band (kHz/MHz)	<p>As per IND-18 of NFAP 2022 following Frequency band are for PMRTS: 336-338 MHz paired with 346-348 MHz :<i>No deployment for PMRTS</i> 338-340 MHz paired with 348-350 MHz : One block issued in each of 7 cities from Kerala Circle (i.e. Quilon, Alappuzha city, Ernakulum city, Munnar City, Payyanur city, Trichur cities.) 811-814 MHz paired with 856-859 MHz –<i>Deployed for Digital PMRTS –Awaiting widespread deployment pending notification of new Telecom bill passed by Parliament</i> 814-819 MHz paired with 859-864 MHz: Extensively deployed for Analog PMRTS. Details available with DoT. <i>Awaiting widespread deployment pending notification of new Telecom bill passed by Parliament</i> 819-824 MHz paired with 864-869 MHz : <i>Predominantly for CMRTS (Captive Mobile Trunked Radio deployments).Details available with DoT</i></p> <p><i>There are over 60,000 Radio users and 400+ RF channels in expensive Equipment Infrastructure deployed in the 811-814 MHz (856-859 MHz) as well as 814 MHz-819 MHz (859MHz-864 MHz) bands across India</i></p> <p><i>Over 300 applications for new frequency allocation from PMRTS Operators were last pending with DoT pending their decision on whether PMRTS should be assigned Spectrum administratively or through auction. The new Telecom bill passed by the Parliament is pending notification for administrative assignment of Spectrum.</i></p> <p><i>Similarly, there are over 100,000 plus Radios deployed all over India under various Trunked Radio Technology platforms like APCO 25, TETRA, DMR I, II & III under Captive and CMRTS licensing, many of which are using the 800 MHz band, especially 819-824 MHz Exact details available with DoT</i></p>

7*	Applications of service	PMRTS, Two-Way, Push-To-Talk Radio communication on Handheld radios, Fixed/ Base radios, and Vehicle Mounted radios
8	Minimum & Maximum power with unit	1W to 3W for Handheld Radio 15 W to 30 W for Mobile/Vehicle Mounted Radios 75W to 100 W for Transmission from Base Station/Repeater
9	Purpose	Mission Critical Push-To-Talk Communication for Municipal Corporations for disaster management and recovery, Public Sector Companies in the Oil & Gas sector like IOCL,BPCL,HPL,ONGC for maintenance and day to day operations, Public Utility agencies like Electricity Boards for maintenance and day to day operations, Public Safety agencies for policing, Emergency Response Service agencies including Ambulance services ,Indian Naval Shipyards, Ports for loading & unloading, shipping & stevedoring operations, Airports for ground operations, Security Services for patrolling and surveillance across Public & Private Sector Enterprises, construction of high rise buildings higher than ten floors, Ready Mix Concrete Industry, Malls for Security, parking management & maintenance operations etc. etc.
10 (a)	Countries in which similar applications are used along with web link (if known)	Malaysia, United States, UK, Singapore, Israel, New Zealand, Australia,Indonesia, South American nations such as Brazil etc.... https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/Trunked_Radio_Going_Digital_2_compressed.pdf https://www.telco.nsw.gov.au/ https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-M.2014-3-2016-PDF-E.pdf
10 (b)	Provisions in frequency allocation table along with footnote of the country along with web link (if known)	380MHz to 385MHz – Malaysia... 410MHz to 430MHz – Malaysia... 694MHz to 790MHZ- Spain... 811MHz to 814MHz India (PMRTS digital), United States... 814MHz to 819MHz India (PMRTS Analog), United States... https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/Trunked_Radio_Going_Digital_2_compressed.pdf https://www.mdpi.com/2076-3417/9/2/250/pdf United States: https://www.law.cornell.edu/cfr/text/47/90.7 https://docs.fcc.gov/public/attachments/FCC-90-234A1.pdf Australia: https://www.fcc.gov/wireless/bureau-divisions/mobility-division/specialized-mobile-radio-service-smr https://www.law.cornell.edu/cfr/text/47/90.631 https://www.acma.gov.au/sites/default/files/2019-11/RALI-LM3.pdf https://www.acma.gov.au/technical-details-land-mobile-licences New Zealand: https://www.rsm.govt.nz/assets/Uploads/documents/pibs/radio-licence-policy-rules-pib-58.pdf Singapore: https://www.imda.gov.sg/-/media/irda/files/regulation-licensing-and-

		consultations/frameworks-and-policies/spectrum-management-and-coordination/spectrummgmthb.pdf				
11	Radio Regulations provisions (if known)	<p>Kindly refer INTERNATIONAL PRACTICSE section at below</p> <p><u>Ref. for Point#11 above --- Radio Regulations provision (if known)</u></p> <p style="text-align: center;">INTERNATIONAL PRACTICE</p> <p>Singapore</p> <p>4.1 According to the Spectrum Management Handbook⁹ issued by IMDA (Infocomm Media Development Authority) in July 2017, for providing Public Trunk Radio Service (PTRS) , the operators are required to take FBO (Facilities-Based Operations) license¹⁰ The duration of the license is 10 years and renewable for a further period, if required. The license fee is an Annual Fee¹¹ of S\$80,000 for the first S\$50 million in AGTO (Annual Gross Turnover)¹², 0.8% of AGTO for the Next S\$50-S\$100 million in AGTO and 1% of AGTO for the above S\$100 million in AGTO.</p> <p>4.2 IMDA was of the view that the trunked radio features have not been replaced by cellular services. The ability to make one-to-many group calls using trunked radio is a feature in which cellular networks have yet to offer. One-to-many group calls are crucial for operations that require information to be verbally communicated to all field staff in different locations simultaneously.</p> <p>4.3 IMDA's policy is to assign the spectrum allocated for public mobile services to FBOs only. Administrative-based approach is being used for spectrum allocation for PTRS. IMDA is of the view that it will continue to use administrative-based approach for services such as paging, trunked radio, fixed links, etc., till such time when there are competing demands for the spectrum.</p>				
12*	Type of Radiocommunication service	Public Mobile Radio Trunking Service				
13	Compatible Wireless Standard for the device likely to work in the proposed band (ETSI, 3GPP, IEEE, EC, FCC ,TEC etc or any proprietary standard)	PMRTS, since it has to operate in dense urban environments and for legacy reasons as well as based on availability of equipment, needs to continue operation in the existing 800MHz bands - <i>811-814 MHz (856-859 MHz) as well as 814 MHz-819 MHz (859MHz-864 MHz)</i> , and no changes are suggested considering the size of industry, existing population of analog and digital radios and the replacement cost of new infrastructure equipment deployed under both PMRTS and CMRTS.				
14	Benefit for public	<p style="text-align: center;">A) Trunked Radio User Groups</p> <p>There are a variety of user groups from various industry verticals who find PMRTS invaluable., These are:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Industry Vertical</th> <th style="width: 50%; text-align: center;">PMRTS / Trunked Radio Application</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;"> </td> <td> </td> </tr> </tbody> </table>	Industry Vertical	PMRTS / Trunked Radio Application		
Industry Vertical	PMRTS / Trunked Radio Application					

1.	Oil & Gas	<ul style="list-style-type: none"> • Maintenance during shut down • Emergency & disaster management operations • Intrinsically safe radios given hazardous environment
2.	Municipal Corporations	<ul style="list-style-type: none"> • Co-ordination of Operations in the Fire Dept., Solid Waste Management, Octroi.
3.	Public Utilities	<ul style="list-style-type: none"> • Disaster Management • Maintenance, troubleshooting & repair
4.	Shopping malls	Security & Maintenance, Parking management
5.	Construction	Co-ordination of men, materials, money, or machines. for construction of high rise buildings
6.	Hotels	Security & maintenance services
7.	Manufacturing	Security & co-ordination of day-to-day operations
8.	Pharmaceuticals	Intrinsically Safe Radios for co-ordination of day-to-day operations where no cell phones are allowed because of hazardous environment
9.	Airlines/Airports	Day to day management of multiple agencies & ground operations
10.	Property management	Large campus patrolling for better security & disaster preparedness.
11.	Private Security	Security & Safety of High-net-worth Individuals
12.	Ambulance / Mobile Medical Services	Co-ordination for emergency pick-up for golden hour
13.	Education	Security & disaster preparedness
14.	Banks	Alternative Channel of Communication especially during floods, natural or man made disasters.
15.	School bus transport	Safety & security of school children.
16.	Armed Forces (Defense, Navy.)	Requirements for better disaster preparedness.
17.	Ports	For container loading and unloading operations , day today port management and security operations

The above is a limited list of user groups of PMRTS. The key commonality of communication needs amongst the user groups above is:

- a) Instant mission critical communication at the press of a PTT button (Push-to-Talk).
- b) Frequent short bursts of communication
- c) Multiple Talk Groups for one-to-many or one-one communication, while on the move

Trunked Radio is the ideal communication device for the applications above since:

- It involves no dialing (just Push-to-Talk). Given that an average PTT conversation is a few seconds, imagine how tedious it would be to make 8-10 calls to someone within a minute by a cell phone.
- In the event of a man made or natural disaster, cell phone networks get jammed or in-operational. Therefore, for mission critical communications, a cell phone will simply not be able to do the job
- International safety agencies mandate use of PMRTS like radio communication for fire safety because of its ability to alert for evacuation or management hundreds of users instantly and at the same time, which no other communication device can do. In such situations there is no time to dial or to wait to connect.
- PMRTS is the most spectrum efficient service. There is no network congestion or network jamming because the infrastructure is geared to support multiple users across multiple talk groups in a semi-duplex mode,

		with severely restricted one way PSTN connectivity. Typical loading norms defined by DoT for analog PMRTS support 90 radio users per channel and Digital PMRTS @ 180 users per channel
15	If modification in NFAP-2022 footnote then quote relevant footnote no. of NFAP-22	<p>Existing PMRTS operators are using 25 KHz channeling plan No. 6 on NFAP. We further recommend that in order to accommodate different digital technologies having Channel bandwidth of 25 KHz- 4 slot TDMA /Channel bandwidth of 12.5 KHz 2 slot TDMA/Channel bandwidth of 12.5 KHz FDMA/ Channel bandwidth of 6.25 KHz FDMA available in the market, the band may be further subdivided into smaller bands for different technologies requiring three different channel bandwidths of 25 KHz/12.5 KHz and 6.25 KHz i.e. one sub band for each of the three technologies i.e. 25 KHz Channel bandwidth (Tetra/APCO 1) /12.5 KHz Channel Bandwidth (DMR, NXDN and APCO Phase II) and 6.25 KHz channel bandwidth technology (dPMR, NXDN)</p> <p>PMRTS industry categorically endorses the above recommendations and urges TRAI and DOT to ensure their urgent and immediate implementation to help the industry to migrate from Analog to the long-awaited Digital Infrastructure.</p> <p>Since analog infrastructure equipment has long been unavailable, we recommend that all new or additional assignment of carriers for the existing analogue system with a Carrier width of 25 KHz shall no longer be required. A 25 KHz Carrier being used by present analogue system can be counted as 4 carriers of 6.25 KHz each for the purpose of collecting royalty for spectrum usage from PMRTS operators.</p> <p>Immediate measure required by DOT is to put in place a frequency allocation plan for Digital PMRTS for 6.25 KHz, 12.5 KHz and 25 KHz channel spacing with required threshold adjacent channel spacing (depending on Digital technology deployed) and urgent assignment of above spectrum to PMRTS operators even if it has to be on an interim/provisional basis, without waiting either for new TRAI recommendations (based on conclusion of this Consultation Paper) or the New Telecom Bill. As it is, DOT is assigning spectrum on a provisional/ Interim basis to CMRTS (Captive Mobile Radio Trunking Service) and Captive users based on an undertaking that the recipient company shall pay the final price of spectrum as determined by DOT.</p> <p>We strongly urge the Authority to restore a level playing field for the PMRTS industry which for the last 9 years has been distorted unjustifiably in favor of PMRTS alternatives and substitutes i.e., CMRTS and Captive Radio users, despite PMRTS being more spectrum efficient.</p>
16	Remarks	<p>In today's NFAP Working Committee meeting, remarks were made by a Chennai based Company on reserving 10 MHz of contiguous spectrum in the 814-824 MHz(859MHz-869 MHz) band for PPDR operations. No details have been furnished either w.r.t. the equipment developed for same i.e. technology deployed, carrier width, equipment specifications, TEC approvals /Equipment Type Approvals etc. as also justification for why the proposed 800 MHz band is required, or on what basis a large chunk of 10 MHz spectrum should be reserved and why contiguous spectrum only is required.</p> <p>At the same time the 800 MHz band as highlighted above is already subject to widespread use by the PMRTS and the CMRTS Industry for over 100,000 users across more than 500 RF Channels deployed in expensive Infrastructure equipment</p>

which cannot be disturbed.

A cursory search on the said Chennai based Company's web site neither revealed any equipment details including technology used / specifications /frequency band, nor any product certifications from TEC or even a BIS approval certificate. Also details obtained from the Registrar of Companies website show that the said Chennai based Company *have no revenues from any equipment produced or sold by them as on 31st March 2023.*

In addition there is no other stakeholder of repute with credentials of any successful deployment of PPDR on the ground, that has either demonstrated availability of any PPDR equipment with them or showcased any credible technology in the frequency band suggested to be reserved or furnished any deployment details of the said PPDR technology in India or overseas. No details have also been furnished on any pilot installations of PPDR equipment along with user feedback for the same. Our humble submission is why we are even considering reserving a large slice of spectrum already in widespread use, for a product or application which is merely an intent today, with no underlying data on pilot, commercial or even trial deployments and without even any theoretical /academic details of the underlying technology to be deployed?

In conclusion, we submit that the new PPDR technology in the making may be either encouraged to use a spectrum band which does not conflict with spectrum bands already in extensive and widespread use by the PMRTS and CMRTS Industry already or at best use any other spectrum / frequency band that the NFAP forum may deem fit without causing any conflict, after sufficient justification and credentials of user acceptance for PPDR application , technology and equipment credentials have been furnished.

Notwithstanding above, we reproduce below some extracts from an ITU recommendation document for alternative frequency bands for your consideration, in lieu of the requested 800 MHz band (*please refer embedded file ITU recommendations*):

- The frequency range 380-399.9 MHz has been identified for narrowband PPDR operations in Malaysia. Part of this frequency range is used for PPDR operations in Malaysia.(Page 32)
- PCC.II/REC. 16 (VII-06): Use of the 4 940-4 990 MHz band in the Americas for Public Protection and Disaster Relief. (Page 27)
- The frequency range 351-370 MHz has been identified by the Ministry of Industry and Information Technology of the People's Republic of China for narrowband PPDR operations (page 29)
- The frequency range 380-470 MHz has been identified as a tuning range for PPDR in Region 1. The frequency band 380-385 MHz (uplink)/390-395 MHz (downlink) is the harmonized core band for permanent use for PPDR. For more information relating to countries within Europe, see ECC/DEC/(08)05 and ECC Report 102
- Harmonized frequency arrangements within the bands 694 to 791 MHz in accordance with the Arab States harmonized measures for broadband PPDR

- The frequency range 380-399.9 MHz has been identified for narrowband PPDR operations in Qatar. Part of this frequency range is used for PPDR operations in Qatar.
- The Narrowband PPDR channeling plan for frequency arrangement 414.0125-414.1000 MHz currently used in New Zealand for simplex services.
- Frequency arrangements within the frequency range 723 to 788 MHz in some countries of Region 1 for broadband PPDR



ITU PPDR
Recommendations.pc

(A) With regards to stakeholders' comments, we would like to submit our inputs to the comments submitted by M/s Susan Future Technologies, Chennai

1. There is no feedback or updates shared by the Company in response to our request made in WG1 meeting 1 to share same on broadband PPDR trials conducted so far by the Company and corresponding results, type of terminal devices in use etc. and any third-party evaluation results as of date. No details have been furnished either with respect to the equipment developed, frequency band chosen for same, technology deployed, carrier spacing & bandwidth required, equipment specifications, TEC approval data /Equipment Type Approval data etc. *as also justification for why the proposed 800 MHz band only is required.*
2. We had also requested information on the compelling reasons for asking 10 MHz of contiguous spectrum, as we do not find the same even in the TRAI recommendations being cited by DoT for making the above said accommodation recommendations for PPDR, which is still awaited.
3. In the said Company's submission dated 09/07/2024 on PPDR spectrum being used in other countries like Jamaica, where the Company has provided a weblink for details, we studied the same. Upon clicking and perusing the weblink, we got a document which makes no mention or a case for PPDR to be operating in the 800 MHz band. In fact both the weblinks referred to in their submission are the same, with identical underlying information, not related to PPDR in 800 MHz band.

(B) With regards to ITU-APT Foundation of India's

recommendations made in NFAP WG1 Meeting 2 dated 07/08/2024 our submission is as follows -

S. No.	Frequency Band	ITU-APT Foundation Recommendation	Arya Omnitalk Recommendation
8	806-811 MHz/851-856 MHz	PPDR	PPDR may be allocated spectrum after meeting needs of CMRTS
9	811-814 MHz/856-859 MHz	PMRTS	We are okay with this suggestion
10	814-819 MHz/859-864 MHz	PMRTS/PPDR	<p>This band is already allocated nationwide to PMRTS and will not be available to PPDR until needs of the PMRTS Industry are evaluated post PMRTS migrating to Digital as well as elimination of interference problems observed and not resolved for the last over 5 years.</p> <p>However, since spectrum for PPDR is not in demand for the short & the medium term, the PMRTS Industry, after completing migration to Digital in the next 5 years after new spectrum allocation restarts, can accommodate, based on compelling reasons/demand from PPDR providers 2 MHz i.e. 817-819 MHz paired with 862-864MHz in the 814-819 MHz paired with</p>

			859 MHz-864 MHz to meet PPDR expansion needs if required.
11	819-824 MHz/864-869 MHz	PMRT/CMRT/PPDR	PPDR may be allocated spectrum after meeting needs of PMRTS & CMRTS

We humbly request confirmation of our understanding of the suggestions as above made by ITU-APT Foundation, since these were presented in the Working Group discussions, but no separate document was submitted.

Please refer the attached PDF document below capturing the inputs submitted to NFAP WG-1 on dated 11th July 2024.



Input format
AORTSPL, NFAP2022

814 MHz- 819 MHz /859 MHz – 864MHz Band

This band has been in use since 1996 by the PMRTS Industry. The channeling plan is attached as Annexure 1. The 5 MHz band translates to having 200, 25 KHz channels for allocation to the PMRTS operators in each city (approx.100-120 kms radius circle for repeating any of the 200 channels, if RF interference has to be avoided).

Based on a channel loading norm of 90 users per Channel defined by DoT, this sub-band(814-819MHz) provides for a maximum PMRTS Industry analog subscriber base of 18,000 users. As on July 2014, a total of 425, 25 KHz spaced channels in 814-819 MHz for 34 cities have already been allocated to PMRTS operators (please refer to Annexure-II in below for details).

The PMRTS Industry has not been allocated any spectrum since July 2014. As on date, if the spectrum allocation is resumed for the PMRTS Industry, there is an immediate demand of 305 channels of 25 KHz spacing for 18 cities. The city-wise revised channel usage plan is attached in below Annexure-III.

Assuming the above spectrum is issued, the top 8 Telecom Circles will have the following spectrum(channels) left after clearing the waiting list for new allocation:

S/ No	Service Area	Operati ng City	Chann els allocat ed in 811- 814 MHz	Channe ls in 814-819 MHz allocate d till date	Subscri ber count till today	New channel s of 25 KHz based on loading	Remain ing Spectru m in 5 MHz with WPC
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			till date			norms	till today (120* channels of 25KHz)
1.	Mumbai	Mumbai Metro		80	12,348	75	40
2.	Delhi	Delhi NCR		70	10,028	45	50
3.	Karnataka	Bangalore		45	7,709	40	75
4.	Tamil Nadu	Chennai		45	7,679	45	75
5.	Gujarat	Vadodara	2	15	1,994	10	105
6.	Gujarat	Ahmedabad	5	10	1,578	10	110
7.	Gujarat	Bharuch	1	5	1,858	15	115
8.	Gujarat	Dahej		5	1,892	15	115
			8	275	45,086	245	

*Band 817-818 MHz has not been considered due to heavy interference in this band.

There is additional demand for 183 channels in 42 cities in the 811-814 MHz paired with 856-859 MHz band for Digital PMRTS.

Thus, it can be seen from the above that in 4 Telecom Circles, hardly any spectrum is available for expansion of the analog PMRTS business, leave alone earmarking a portion of the band for recasting the earmarked portion into a new channel spacing of 12.5KHz/ 6.25KHz required for migration from analog PMRTS to a Digital PMRTS infrastructure. (based on Digital PMRTS technology chosen by the PMRTS operator) Discretion will demand that the new 12.5KHz /6.25 KHz channel spacing required for Digital PMRTS is configured in the 811-814MHz/856-859 MHz band already reserved under present NFAP for Digital PMRTS migration.

To make matters worse, for spectrum in the 814-819 MHz/859-864 MHz band for Analog PMRTS , the PMRTS Industry has reported severe interference issues with increased noise threshold levels of -90dBm to -80 dBm (ref. level for better signal -100dBm or less, especially in 817 MHz & 818 MHz/ 862 MHz & 863 MHz sub-bands, which have therefore been rendered as good as unusable for the last 5.5 years on account of the Department's inability to either trace the source of interference much less resolve same. *Please refer to Annexure-I in below for complaints submitted references to our most recent submission made to WMS & WPC, evidencing above. The interference has been observed in NCR, Delhi, Gurgaon, Noida, and Jaipur*

Annexure I:



WPC-Sites of Delhi
NCR & Interference

In the last 5 months, we have also noticed random interference in the 814-816 MHz/ 859-858 MHz sub band, leading us to request temporary replacement allocation in the 811-814 MHz/856-859 MHz bands from WPC, in order to provide much needed relief to our existing customers experiencing frequent disruptions in day-to-day communication. On the one hand the industry is not getting new spectrum and on the other hand the already allocated spectrum is increasingly subject to severe interference issues, which is driving subscribers away from PMRTS.

In view of the above it is clear that if we remove the most interference prone sub-bands of 817 & 818 MHz, the PMRTS industry will be left with just a 3 MHz band, equivalent to 120 ,25KHz channels and based on present loading norms, supporting a maximum of 10,800 subscribers, not sufficient for the PMRTS Industry for almost all Tier 1 and Tier 2 cities.

Almost all the new spectrum that the PMRTS Industry will now be issued under the new Telecom Act will be for new site locations, away from the present PMRTS sites due to businesses moving away from city centers to suburbs. This will also limit reuse of spectrum, both because adjoining service areas beyond 30 kms will require different frequencies as well as reduced loading due to site interconnection being required to provide seamless coverage between city center and suburbs.

Conclusion:

The PMRTS Industry has more than 65,000 subscribers in 20 cities/service areas, out of which more than 34,700 are analog PMRTS subscribers. While analog 25KHz channels from the 3 MHz useful sub-band in the interference prone 814-819 MHz band will be required to improve quality of service for existing analog subscribers, migration to Digital PMRTS will be require new channels with 12.5KHz/6.25KHz Channel spacing out of the 811-814MHz/856-859MHz ban. Here also 168 Channels out of a maximum possible 250, 12.5KHz spacing channels are already in use. (Please refer to Annexure 5 for city wise details of this allocation).

Therefore, to begin with, both 811-814MHz paired with 856-859MHz as well as 814-819MHz paired with 859-864 MHz shall require to be reserved exclusively for the PMRTS industry until full migration to Digital is accomplished over the next 5 years (the user will not throw away their analog terminals)

Once the entire analog PMRTS Industry base is migrated to Digital, we shall understand the future requirement of spectrum for the PMRTS Industry better because of the following:

		<ul style="list-style-type: none"> ▪ We would have completed 5 years of Digital PMRTS service with vastly superior spectrum efficiency, without any bottlenecks or delays in obtaining spectrum in existing service areas. This will help us make a better forecast of future demand, given additional functionality benefits of Digital along with improved geographical coverage with site connectivity. ▪ We would have exploited demand from all new areas and set up Digital PMRTS Infrastructure in new sites to aggregate demand from Tier 1-4 cities. This will give us a good idea of future national demand for the PMRTS service. ▪ Since there will be no analog subscribers left after 5 years, the entire 814-819MHz band (and its co-pair 45 MHz apart) shall be available for recasting for Digital PMRTS. Hopefully by then the interference issues would have also got sorted out. <p>Based on the above, it may then be possible to decide the exact quantum of spectrum necessary for the PMRTS Industry going forward. At that time, should the exercise throw up a surplus spectrum availability, PMRTS Industry shall be happy to accommodate. It may be noted PMRTS operators have already made huge investments in infrastructure equipment hardware and software, as well as radio terminals required to run analog PMRTS services in the allocated band of 814-819 MHz Any move to force the PMRTS Industry to relocate to a new band shall result in widespread protests from the end users , bulk of whom are in providing public utilities and services, disaster management and relief operations, oil and gas industry infrastructure maintenance etc. besides causing an estimated financial loss in excess of Rs 200 Crs .</p>
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Note.

5* . Construction service / Manufacturing service/ Shipping Service/Aeronautical Service etc

7* . Specify the operation of service (e.g Hand held radio/ Vehicle mobile radio/ point to point links/FM/Community Radio/Aeromobile/Short Rang Device etc

12* Amateur/Fixed/Land mobile/Aeronautical mobile/Maritime Mobile/Aeronautical radio navigation/FM broadcast/Community Radio Service etc

Date and Signature



Date and Signature

ANNEXURE-II

ANNEXURE - II

City-wise Allotment of RF Spectrum for PMRTS to TSPs

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

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

City-wise Allotment of RF Spectrum for PMRTS to TSPs

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

ANNEXURE-III

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

ANNEXURE - III

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

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

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

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

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

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

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

ANNEXURE IV

Consolidated LSA wise breakup for the demand of RF channels for existing cities and new cities

LSA	Existing networks			Upcoming networks		
	Name of cities for additional RF Channels assignments	Number of service providers	Total number of RF Channels assigned	Name of cities seeking fresh RF Channels assignments	Total number of RF Channels requested	Total number of channel
Andhra Pradesh	Hyderabad	1	5+15	Hyderabad	5+1+6	12
	Vishakahapatnam	1	30	Vishakahapatnam Nellore		
Bihar				Jamshedpur	1	1
Delhi	Delhi,	2	30+40	Delhi,	27+20	27
	Faridabad,	1	5	Faridabad,	0	
	Gurgaon	1	15	Gurgaon	0	
Gujarat		2			5	38
	Ahmedabad		10+5	Ahmedabad		
	Amreli	1	1	Amreli	0	
	Bharuch	2	5+1	Bharuch	5+5	
	Dahej	1	5	Dahej	5	
	Jamnagar	1	2	Jamnagar	0	
	Kutch	1	5	Kutch	0	
	Surat	2	15+5	Surat	5	
	Vadodara	2	10+2	Vadodara	5	
				Anand	1	
				Bhavnagar	1	
				Chhota Udaipur	1	
				Gandhinagar	1	
				Halol	5	
				Junagarh	1	
				Kheda	1	
				Navsari	1	
				Probandar	1	
				Rajkot	1	
				Sabarkatha	1	
			Shidpur	1		
			Sitapur	5		
			Surendernagar	1		
			Valsad	1		
Haryana				Rohtak	1	1
Karnataka	Bangalore	2	40+5	Bangalore	15	22
				Bellari	2	
				Mangalore	5	

LSA	Existing networks			Upcoming networks		
	Name of cities for additional RF Channels assignments	Number of service providers	Total number of RF Channels assigned	Name of cities seeking fresh RF Channels assignments	Total number of RF Channels requested	Total number of channel
Kerala	Alappuzha	1	5	Alappuzha	0	5
	Cochin	1	5	Cochin	5	
	Ernakulam	1	5	Ernakulam	0	
	Kollam	1	5	Kollam	0	
	Munnar	1	5	Munnar	0	
	Panniankara	1	5	Panniankara	0	
	Payyanur	1	5	Payyanur	0	
	Tirur,	1	5	Tirur,	0	
	Trichur	1	5	Trichur	0	
Trivandrum	1	5	Trivandrum	0		
Kolkata	Kolkata	1	20	Kolkata	5	5
Madhya Pradesh	Indore	1	10	1	5	5
Maharashtra	Khandala	1	5	Khandala	0	2
	Pune	2	15+10	Pune	0	
		Chanderpur		1		
		South Goa		1		
Mumbai	Belapur	1	5	Belapur	10+25	105
	Mumbai	3	40+10+10	Mumbai	10+25	
	Navi Mumbai	1	5	Navi Mumbai	0	
	Vashi	1	10	Vashi	10+25	
Orissa				Angul	5	7
				Jgatsinghpur	1	
				Jaipur	1	
Rajasthan	Jaipur	2	5+5	Jaipur	5	6
				Barmer	1	
Tamil nadu (including Chennai)	Chennai	2	40+5	Chennai	21	26
				Coimbatore	5	
West Bengal				Haldia	1	

ANNEXURE - I

Aryaomnitalk Service Area: Delhi Metro Service Area, WOL No PMRTS-20. RF Power Output 80-100 W

S.No.	Address of Base Stations under PMRTS-20	Frequencies allocated-WPC	Date of complaint submitted for Interference, Noise Problem	MHQ Assignment Ref No. & Date
1	BSNL MW Station Rajendra Nagar, New Delhi - Site Lat 28 37 41.36 ; Long 77 10 27.85	814.9125/859.9125	Our Letter to WMO dt 08/05/2019	668-670/2019-MON dt 17/05/2019
		815.9125/860.9125	Reg Problem faced wef 25/04/2019	
		816.9125/861.9125	Our Letter to WMO dt 06/06/2019	
		817.9125/862.9125	Reg Problem faced wef 25/04/2019	
		818.9125/863.9125	Our Letter to WMO dt 14/08/2019	
		814.8125/859.8125	Reg Problem faced wef 20/07/2019	
		815.8125/860.8125	Our Letter to WMO dt 23/09/2019	
		816.8125/861.8125	Reg Problem faced wef 25/04/2019	
		817.8125/862.8125	Our Letter to WMO dt 14/10/2019	
		818.8125/863.8125	Reg Problem faced wef 20/07/2019	
		814.4125/859.4125	Our Letter to WMO dt 02/12/2019	
		815.4125/860.4125	Reg Problem faced wef 20/07/2019	
		816.4125/861.4125	Our Letter to WMO dt 21/05/2020	
2	Hotel Le-Meridien, Mg Road, Sector-26, Delhi Gurgaon border, Gurugram. Site Lat 28 28 50 ; Long 77 06 29	817.4125/862.4125	Reg Problem faced wef 25/04/2019	1495/2020-MON dt 24.01.2020
		818.4125/863.4125	Our Letter to WMO dt 08/01/2020	
		814.1625/859.1625	Reg Problem faced wef 25/04/2019	
		815.1625/860.1625	Our Letter to WMO dt 24/08/2020	2103/2020-MON dt 11.09.2020
		816.1625/861.1625	Reg Problem faced wef 25/04/2019	
		817.1625/862.1625	Our Letter to WMO dt 03/06/2021	1131/2021-MON dt 09.06.2021
		818.1625/863.1625	Reg Problem faced wef 21/05/2021	
		814.3125/859.3125	Our Letter to WMO dt 14/09/2021	1859/2021-MON dt 17.09.2021
		815.3125/860.3125	Reg Problem faced wef 07/09/2021	
3	World Trade Tower, C1, Sector-16, G. B. Nagar Noida. Site Lat 28 34 36 ; Long 77 18 58	816.3125/861.3125	Our Letter to WMO dt 21/09/2021	1933-1935/2021-MON dt 30.09.2021
		817.3125/862.3125	Reg Problem faced wef 25/04/2019	
		818.3125/863.3125	Our Letter to WMO dt 15/02/2022	
		814.5625/859.5625	Reg Problem faced wef 25/01/2022	
		815.5625/860.5625	Our Letter to WMO dt 11/04/2022	1166/2022-MON dt 19.04.2022 &
		816.5625/861.5625	Reg Problem faced wef 25/03/2022	1188-1200/2022-MON dt 18.05.2022 &
		817.5625/862.5625	Our Letter to WMO dt 13/05/2022	1285-1307/2022-MON dt 02/06/2022
		818.5625/863.5625	Reg Problem faced wef 25/03/2022	
			Our Letter to WMO dt 14/12/2022	102-104/2023-MON dt 16.01.2023
			Reg Problem faced wef 25/10/2022	
			Our Letter to WMO dt 22/05/2023	487/2023MON dt 07.06.2023
	Reg Problem faced wef 15/05/2023			
	Our Letter to WMO dt 15/11/2023	1120-1122/2023MON dt 01.12.2023		
	Reg Problem faced wef 25/04/2019			
	Our Letter to WMO dt 26/02/2024	744/2024MON dt 29.04.2024		
	Reg Problem faced wef 25/04/2019			
	Our Letter to WMO dt 18/06/2024	1659-1661/2024MON dt 01.07.2024		
	Reg Problem faced wef 25/04/2019			